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# New Work Environments: The Economic Relevance of Flexible Office Space



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## Summary

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Technological, societal, and organizational changes have changed the way people accomplish work. Coworking spaces are a response to the new demands that come with these changes.

They are new, flexible workspaces where heterogeneous users work together. In addition to the physical workspace, users benefit from a community and a network of like-minded people. They are worldwide in scope and foster collaboration, creativity, and innovation.

To date, there has been a lack of in-depth understanding of how these workspaces contribute to work success and other outcomes such as entrepreneurial activity, or economic growth.

In order to comprehensively understand the impact of these new workspaces, it is necessary to grasp and categorize their influence on a wide variety of levels. For this purpose, this dissertation uses five research articles to analyze the significance of coworking spaces on a micro, meso, and macro level.

The first article analyzes user preferences in three different countries using stated choice experiments. This study serves first to understand why individuals use coworking spaces and second, what features of the workspaces are valued by users. This allows coworking space operators to design their spaces in a more targeted way and adapt them to local markets and conditions.

The second research article examines coworking spaces from a real estate perspective (meso level). From the perspective of commercial users, the value proposition for firms through the use of coworking spaces is outlined and empirically validated. Furthermore, the business model of flexible office space is examined and the implications for investors of this innovative operating model are elaborated.

The third study explores corporate coworking spaces and analyzes determinants that influence job satisfaction in this work environment. The study forms the interface between the micro and meso levels.

The fourth article situates coworking spaces for public administration, so-called “public coworking spaces,” in the scientific debate, as knowledge workers in public administration have special requirements that differ from the private sector.

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The fifth research article situates coworking spaces in an entrepreneurial context and examines these new work environments on a macro level. It explores how start-ups relate to coworking spaces and how the life cycle stage of start-ups is dependent on the product market competition of coworking spaces. The study finds a positive relation between the number of coworking spaces and start-ups in a region and thus has important implications for economic development and regional growth.

This dissertation therefore extends the understanding that coworking spaces are more than just physical workspaces. They represent a complex and multi-layered social system that influences individuals, firms, and society on different levels. The systematic examination across all actors and perspectives allows for a holistic picture of these new workspaces as well as their influence on the future development of new work. In addition to the scientific contribution, recommendations for practitioners are given. These are intended to assist decision-makers in the irreversible process of new ways of working.

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## Zusammenfassung

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Technologische, gesellschaftliche und organisatorische Veränderungen haben die Art und Weise, wie Menschen zusammenarbeiten, beeinflusst. Coworking Spaces sind eine Antwort auf die neuen Anforderungen, die mit diesem Wandel einhergehen.

Coworking Spaces sind neue, flexible Arbeitsflächen, in denen heterogene Nutzergruppen gemeinschaftlich zusammen arbeiten. Neben dem physischen Arbeitsplatz profitieren die Nutzer von einer Gemeinschaft und einem Netzwerk an Gleichgesinnten. Zudem ermöglicht es tiefgehende Kollaborationen und Innovationen.

Bisher mangelt es an einem tiefgreifenden Verständnis, wie diese Arbeitsflächen einen Beitrag für den Arbeitserfolg liefern können und welchen Einfluss sie auf unternehmerische Aktivitäten und regionales Wachstum haben.

Um die Auswirkungen dieser neuen Arbeitsflächen ganzheitlich nachvollziehen zu können, ist es notwendig, deren Einfluss auf verschiedensten Ebenen zu verstehen und einzuordnen. Hierzu wird in der vorliegenden Dissertation anhand von fünf Forschungsartikeln die Bedeutung von Coworking Spaces auf einer Mikro-, Meso- und Makroebene analysiert.

Der erste Artikel analysiert anhand von Entscheidungsexperimenten die Nutzendenpräferenzen von Coworking Spaces in drei unterschiedlichen Ländern. Diese Analyse dient zum einen dem Verständnis, warum Individuen Coworking Spaces nutzen, und zum anderen der Identifikation, welche Eigenschaften der Arbeitsflächen von den Nutzenden geschätzt werden. Hierdurch können Betreibende von Coworking Spaces ihre Flächen zielgerichteter designen und an die lokalen Zielgruppen und Gegebenheiten anpassen.

Aus einer immobilienwirtschaftlichen Perspektive (Mesoebene) werden Coworking Spaces im zweiten Forschungsartikel beleuchtet. Aus Sicht der gewerblichen Nutzer wird der Wertbeitrag für Unternehmen durch die Nutzung von Coworking Spaces dargestellt und empirisch validiert. Weitergehend wird das Geschäftsmodell von Flexible Office Space beschrieben. Für Immobilieninvestierende werden die Auswirkungen dieses innovativen Geschäftsmodells herausgearbeitet.

Die dritte Studie beschäftigt sich mit unternehmensinternen Coworking Spaces und analysiert Determinanten, die die Arbeitszufriedenheit in dieser Arbeitsumgebung beeinflussen. Sie bildet die Schnittstelle zwischen Mikro- und Mesoebene.

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Im vierten Artikel werden Coworking Spaces für die öffentliche Verwaltung, sogenannte Public Coworking Spaces, in den wissenschaftlichen Diskurs eingeordnet. Die Wissensarbeiter der öffentlichen Verwaltung benötigen spezielle Anforderungen, die vom Privatsektor abweichen.

Einen Beitrag aus der Makroperspektive auf Coworking Spaces leistet der fünfte Forschungsartikel. Er untersucht, wie Start-ups mit Coworking Spaces zusammenhängen, und zeigt im Speziellen auf, in welcher Phase der Unternehmensgründung Coworking Spaces für Firmen von Bedeutung sind. Die Studie stellt einen positiven Zusammenhang zwischen der Anzahl an Coworking Spaces und Start-ups in einer Region her und liefert damit wichtige Implikationen für die Wirtschaftsförderung und ökonomische Entwicklung von Regionen.

Damit erweitert die vorliegende Dissertation die Erkenntnis, dass Coworking Spaces mehr als nur physische Arbeitsräume sind. Sie stellen ein komplexes und vielschichtiges System dar, das auf verschiedenen Ebenen einzelne Personen, Unternehmen sowie die Gesellschaft beeinflusst. Die systematische Untersuchung aller Beteiligten und Perspektiven ermöglicht ein ganzheitliches Bild dieser neuen Arbeitsflächen sowie deren Einfluss auf die zukünftige Entwicklung der Arbeitswelt. Neben einer theoretisch-konzeptionellen Einordnung in den wissenschaftlichen Diskurs werden Handlungsempfehlungen für die Praxis gegeben. Diese sollen Personen mit Entscheidungsbefugnis im unumkehrbaren Prozess der Gestaltung neuer Arbeitswelten Hilfestellung geben.

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## List of Abbreviations

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ABW	activity-based working
AIC	akaike information criterion
ANOVA	analysis of variance/ Einfaktorielle Varianzanalyse/
AVE	average variance extracted
b	regression coefficient/ Regressionskoeffizient
$\beta$	standardized regression coefficient
BFuP	Betriebswirtschaftliche Forschung und Praxis
CBD	central business district
CR	Composite Reliability
CRA	Cronbach's Alpha
CREM	Corporate real estate management
CSR	Corporate social responsibility
CWS	Coworking space
e.g.	exempli gratia (for example)
ed.	Editor
et al.	et alii / und andere
GDP	gross domestic product
ICT	information and communications technology
i.e.	id est (that is to say)
IFRS	International Financial Reporting Standards
JLL	Jones Lang LaSalle
LL	Log Likelihood function
Ln	Logarithm
MMNL	Mixed multinomial logit model
NFOS	Nutzung von Flexible Office Space (use of flexible office space)
Nr.	Nummer
o.V.	ohne Verfasser:in
OLS	ordinary least square
PCA	principal component analysis
R	coefficient of determination/ Bestimmtheitsmaß
r	correlation coefficient/ Korrelationskoeffizient
SD	standard deviation/ Standardabweichung
sic!	sic erat scriptum (thus was it written)
SME	Small Medium Enterprises
sqm	square meter
VHB	Verband der Hochschullehrer für Betriebswirtschaft e.V.
VIF	variance inflation factor





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## Preface

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Real estate economics is experiencing a big shift. Recently, the real estate industry has taken a more finance-oriented focus, causing an increase in general awareness and economic importance. At the same time, an overemphasis on financial aspects also runs the risk that real estate would lose its efficiency as a resource in the context of service provision. Recently, this has flipped again and has significantly gone beyond. While the real estate industry often provides a supporting function that is not part of the core process of the company and is a (tiresome) supplement to the actual main business, an extreme change has taken place currently. Real estate has become an active resource for companies and not only provides support in the service creation process, but is in the foreground as an important factor for performance, work, and company value. A high degree of user orientation, holistic solutions, and as-a-service concepts are innovations in real estate. Considering the high capital requirement of the real estate industry, some of its assets have the potential to be used more intensively. The sharing economy that facilitates more intense use of existing assets is making headways in the sector. Only in the interplay of space, business development, market access, and services can real estate realize its full potential. Coworking spaces, for example, have perfectly embodied this idea. They now go far beyond offering space. Their success factor of socio-economic capital, which they provide with the infrastructure of office space and equipment, raises real estate to a new level. WeWork, probably the largest provider in this sector, sees itself not as a real estate firm, but as a tech start-up that has created a platform with artificial intelligence and know-how that is far away from a classic real estate service provider. The start-up combines technology, knowledge, and space provision in an entrepreneurial way that accelerates and supports firm growth.

This awareness of the real estate economy is also reflected in this cumulative dissertation. None of the studies have been published in real estate journals. The articles have been published in management, strategy, or entrepreneurial journals, demonstrating a readership that extends beyond the real estate focus.

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# 1 Introduction

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## 1.1 Motivation and research question

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A dynamic business environment, technical, social, and organizational change have forced organizations to adapt to new ways of working (Helmold, 2021). This has been particularly evident since the 2000s, when technology began to significantly change the way people work. Through the use of information and communications technology (ICT), employees are given freedom and flexibility in designing where and when they work (Rump and Eilers, 2017). Flexible work arrangements offer employees the possibility to deviate from regular working hours and locations (Groen *et al.*, 2018).

Besides this technological change, social changes have led to an individualization of the working environment (McGuigan, 2010; Ross, Ressler, and Sander, 2017). The rise of collaborative, flexible workspaces can be seen as part of a broader socio-economic shift, the so-called “sharing economy” (Botsman and Rogers, 2011; Stampfl, 2018). The term refers to a new paradigm of consumption based on collaboration and sharing of goods instead of owning them (Botsman and Rogers, 2011).

Additionally, organizational change describes the transformation of organizations driven by internal and external factors (Chen, Walker, and Sawhney, 2020). Collaboration, networking, interdisciplinary problem solving, partnership, and co-creation are central features in the delivery of services (Ansell and Torfing, 2014). Essential innovations are largely accomplished by teamwork. This increases the need for networks and knowledge dynamics (Pedersen and Johannsen, 2018). Further, the impact of labor deregulation and rapid technological advances have accelerated the pace of changes and innovation cycles, which require more entrepreneurial opportunities in contrast to traditional employer/employee relationships (Ross *et al.*, 2017). Last but not least, the COVID-19 pandemic has greatly accelerated the move toward flexible work and has acted as a catalyst for a highly distributed workforce.

In order to react to these changes and remain competitive in the labor market, organizations must adapt to these new requirements, thereby leading to a shift in how work environments are configured. Figure 1 summarizes this paradigm shift.

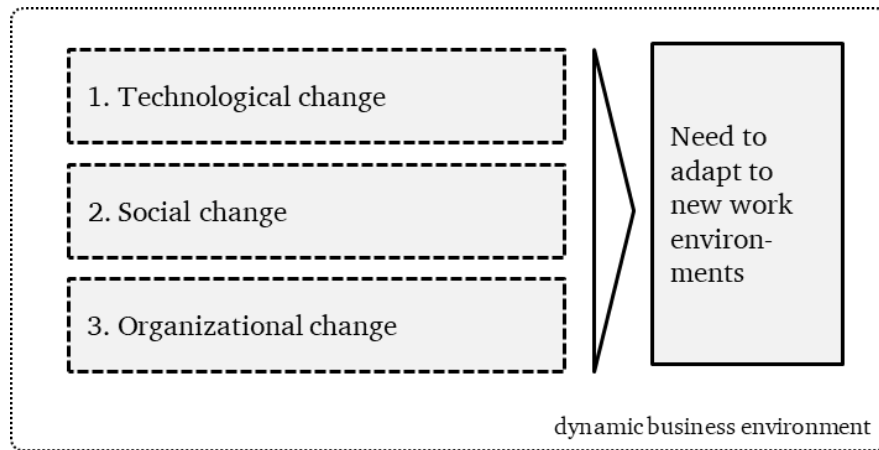


Figure 1: Changes driving the emergence of new work environments (own representation based on Gauger and Pfnür, 2019)

COVID-19 has brought unprecedented attention to the physical place of work (Pfnür *et al.*, 2021a). Distributed, mobile, and multi-locational are terms that refer to these “new ways of working,” which begs the question of where activities are carried out. Besides working at home (1<sup>st</sup> place), in the corporate office (2<sup>nd</sup> place), or another public place not necessarily meant for work but for social gatherings (3<sup>rd</sup> place), such as a coffee shop or library (Oldenburg, 1999) that lacks an active community, a new collaborative work environment emerged (Orel and Del Alonso Almeida, 2019). The drawbacks of working at home alone, commuting to a corporate office, or the crowded atmosphere in a coffee shop were overcome by a more flexible, shared, professionalized 3<sup>rd</sup> place to work. Hence, the idea of coworking was established.<sup>1</sup> In this regard, coworking spaces can be defined as follows:

Coworking spaces are “flexible, shared, rentable and community-oriented workspaces occupied by professionals from various sectors” (Fuzi, 2015: 462). They are particularly designed “to encourage collaboration, creativity, idea sharing, networking, socializing, and generating new business opportunities [...]” (Fuzi, 2015: 462). Coworking spaces offer a supportive and productive business climate, and provide an environment where creativity flourishes, and where business and social networking take place (Spinuzzi, 2012; Fuzi, 2015; Kojo and Nenonen, 2017; Bouncken and Reuschl, 2018; Gauger and Pfnür, 2019; Bouncken *et al.*, 2020a).

<sup>1</sup> Coworking is commonly defined as a 3<sup>rd</sup> place to work (Brown, 2017). Yet, literature also notes on a third-fourth place (Yang, Bisson, and Sanborn, 2019), and recent developments show trends toward a 4<sup>th</sup> place (Morisson, 2019; Orel and Dvoutletý, 2020).

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Addressing the physical organization of work requires urgent attention as even in 2021 new work environments still have not entered the mainstream (Helmold, 2021). Researchers and practitioners alike are interested in how these new work environments can unfold their potential and what business opportunities they bring to individuals, organizations, and society.

Many studies have shown that the spatial work environment of traditional workspaces exerts an essential impact on employees' performance, motivation, and well-being (Croon *et al.*, 2005; Riratanaphong and van der Voordt, 2015; Appel-Meulenbroek, Clippard, and Pfnür, 2018; Appel-Meulenbroek and Danivska, 2021b). However, there is scant research about coworking spaces, although their impact is immense and they can be a successful concept for knowledge workers, create a competitive advantage for corporates, and foster entrepreneurial activity.

Coworking spaces are a “complex social phenomenon” (Waters-Lynch *et al.*, 2016: 3) that require consideration from interdisciplinary fields and a multi-faceted perspective to understand the construct as a whole. Fuzi (2016: 1–6) states that “even the topic has raised the interest of scholars, academic research has not paid much attention to these newly emerging shared work environments” and Sankari (2019) argues that coworking is still a novel field in research.

Therefore, this dissertation aims to close this research gap and gain insights into coworking spaces as new paradigms for the physical organization of work. This research advances the theoretical understanding of coworking spaces and analyzes the impact of coworking spaces through different perspectives, i.e., the user, firm, and societal level at which the evolution of coworking plays out.

Hence, this dissertation attempts to answer the following research questions:

- (1) How do coworking spaces affect outcome dynamics at the individual level?
- (2) How do coworking spaces affect outcome dynamics at the organizational/firm level?
- (3) How do coworking spaces affect outcome dynamics at the societal level?

To answer these research questions, five studies were conducted with varying datasets and using different methods.

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## 1.2 Positioning of the thesis

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To date, coworking literature has mainly focused on individual aspects and not on all levels of consideration (Capdevila, 2013). In order to approach the research objective and achieve a holistic analysis of coworking, the economic concept of micro, meso, and macro level is used. Thus, the impact of coworking spaces is captured on all levels of analysis. This ontology, which is mainly used in social science, explains an innovative economic system in an ontologically coherent framework to enhance focus, clarity, and power of economic theory (Dopfer, Foster, and Potts, 2004). As Heller (1997: 613) states, raising an “analysis to the meso and macro levels, economic considerations will become more important.” As an innovative system is embedded in a broader environment, i.e., physical, behavioral, social, economic, political and so forth, it is a complex system to capture and explain. Hence, these systems can be structured by applying a framework with different analytical levels. Figure 2 shows the framework with the micro, meso, and macro levels of analysis.

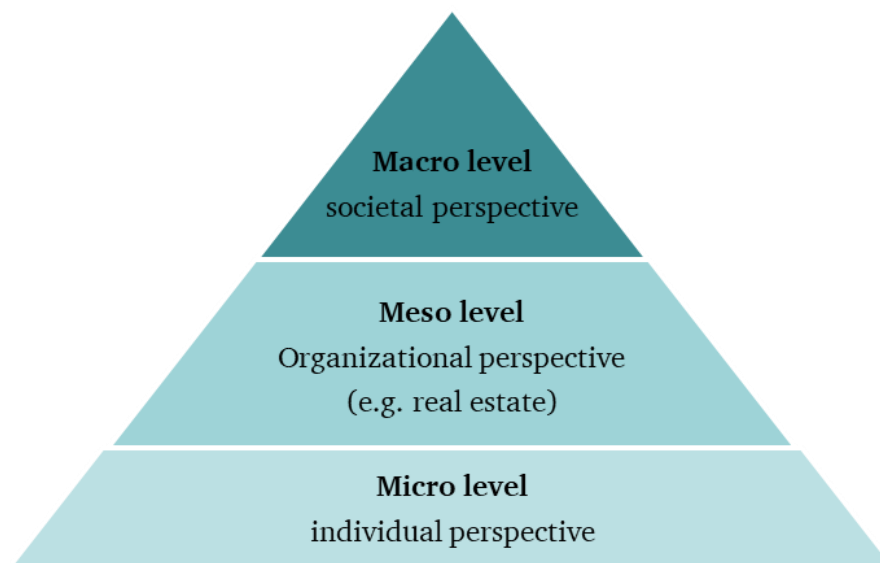


Figure 2: Analytical framework: levels of analysis (own representation)

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### 1.2.1 Micro level

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The micro level examines interactions at the smallest level, such as one-on-one interactions between individuals, self-esteem, or how the individual is influenced by his or her social context.

Literature shows that the work environment influences employee satisfaction and work performance on the individual level (Haynes, 2007, 2008; Rothe *et al.*, 2011; Appel-

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Meulenbroek and Danivska, 2021b). Rothe *et al.* (2011: 81) note that “as the employees are an organization’s most important asset, designing and managing the physical, virtual, and social work environment for productivity and satisfaction of the employees is becoming an imperative for organizations that want to achieve a competitive advantage.” Hence, “the challenge is to understand what kind of work environment leads to productivity and satisfaction” (Rothe *et al.*, 2011: 82).

Coworking space users are diverse with varying business backgrounds and experience levels such as self-employed people, individual professionals, entrepreneurs, and students (Weijs-Perrée *et al.*, 2018). They value coworking for social, novelty, business, or efficiency reasons (Weijs-Perrée *et al.*, 2018; Appel-Meulenbroek *et al.*, 2020). Therefore, the work environment needs to meet the needs and preferences of individuals that results in satisfied users.<sup>2</sup>

The micro perspective thus analyzes the individual user with regards to the work environment. It aims at “align[ing] the work environment to the office employee at the individual level, towards increasing individual outcomes such as satisfaction, wellbeing, and performance” (Appel-Meulenbroek and Danivska, 2021b: 8).

To date, scientists have mainly addressed the individual user perspective from an ethnographic and sociological perspective, Gerdenitsch *et al.* (2016) for example investigate social interaction in coworking spaces. Further research issues are, for example user preferences, the connective structure with its local work environment, or the investigation of the physical workplace<sup>3</sup> quality to explain user satisfaction.

Thus, user preferences, utility of attributes, motivations to work in coworking spaces are analyzed from this level of analysis. In a second study, factors that determine work satisfaction are the subject of investigation.

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<sup>2</sup> For the sake of clarity, “user” in this thesis is used interchangeably with “end-user” or “individual user.” In real estate economics, “user” often refers to the commercial user, which is not necessarily the individual person but the company or corporate real estate management as an entity.

<sup>3</sup> There is a recent ongoing debate between the terms “workspace” and “workplace.” For the sake of clarity, within this thesis these terms are used interchangeably. Nevertheless, some refer to the “workplace as the overall place where work is done and workspaces as the physical space allocated for the work to be done” (Appel-Meulenbroek and Danivska, 2021b: 9). Others use “workspace” as a smaller subset within the physical office, where “workplace” describes the entire building (Appel-Meulenbroek and Danivska 2021).

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### 1.2.2 Meso level

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The meso level abstracts from such detail in order to focus on the organizational level (Riemer, Schellhammer, and Meinert, 2019). Generally, the meso level includes group-level characteristics such as teams, organizations, or firms as entities and forms the link between the individual and the macro level (Richter and Dragano, 2018).

Consequently, the firm level and corporate real estate management are investigated as a unit. Research issues are for example how the work environment can contribute to firm success, shareholder value, or organizational outcomes, such as productivity, or value-adding mechanisms. This domain, for example, is helpful for corporate real estate management (CREM) on the firm level.

Several conceptual frameworks and process models explain value creation in real estate management (Lindholm, Gibler, and Leväinen, 2006; Vries, Jonge, and van der Voordt, 2008; Den Heijer, 2012; Jensen and van der Voordt, 2016; Pfnür, Seger, and Appel-Meulenbroek, 2021b). Den Heijer's theoretical concept model, for example, illustrates the positive influence of real estate projects and office environment on satisfaction, productivity, and added value of corporates (Den Heijer, 2012). Pfnür *et al.* (2021b) explain CREM success with specific performance drivers on specific organizational levels. In this case, the use of coworking as an operating source in the service provision process is analyzed. The mechanisms of coworking are illustrated from a real estate perspective and the benefits and downsides that contribute to firm success when using coworking spaces are shown.

Further on, public units as entities are regarded as a use-case, to show how public administration can adopt coworking. As public servant values and motivations differ from those of the private sector, such as higher altruistic motives, this prompts separate consideration of the work environment for their needs.

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### 1.2.3 Macro level

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The relation between the meso and macro level is similarly telescopic and focuses on a more aggregate level of perspective (Dopfer *et al.*, 2004). Typically, the analysis of macro level considers society as a whole and does not consider interactions that occur on a micro level (Javaid, Javed, and Kohda, 2019). It is, for example, concerned with value creation through allocating resources, with issues such as long-term growth, welfare optimization,

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and other economic factors. Decisions have an impact on regions, the society or an economy, and not directly on the individual, person or specific organization.

From this perspective, coworking can be regarded as part of a broader entrepreneurial ecosystem that impacts not only ventures, but interplays with other socio-economic factors, with organizations, the market, competition, and other infrastructure and thus has a role in achieving economic welfare (Böhm *et al.*, 2019). This way, coworking is captured on societal, regional, and economic levels. To tackle this challenging task, coworking may be explained through the economic magnitude of effects, the impact through spillover effects on regions (Gauger, Pfnür, and Strych, 2021), or through applying institutional patterns (Appel-Meulenbroek *et al.*, 2020; Bouncken *et al.*, 2020a).

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### 1.3 Thesis structure and synopses

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By using this micro–meso–macro architecture, the impact of these new working environments as multi-layered systems can be captured and presented in a structured and foremost holistic way. Each level is analyzed with a separate study. To provide a comprehensive overview of the relationships among the five research articles in the cumulative dissertation, Figure 3 presents the research articles in relation with the micro–meso–macro architecture.

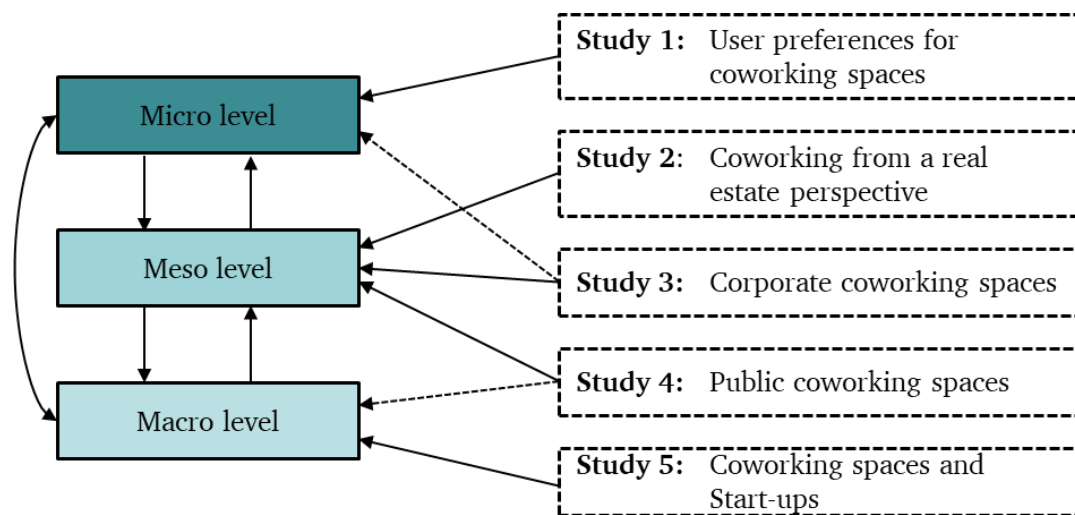


Figure 3: Overall framework including positioning of articles

Not every study can be exclusively assigned to only one level and also influences the other levels, which has already been observed by Capdevila (2013: 13) who argues that: “cross-scale analysis contribute to fill the [sic!] a void in the current literature, that often ignores



the constant shift of levels [...]. This aspect is especially evident in the case of CWS, where coworkers often act simultaneously as individuals and as the firms they represent.”

The thesis contains eight chapters. In the introduction (Chapter 1) the motivation of the thesis and the formulation of the research aim are presented. In the second chapter, the theoretical foundations are outlined. In chapters three to seven, five distinct research articles are presented. All of them contribute to the body of knowledge in coworking spaces.<sup>4</sup> A final chapter concludes the thesis with a theoretical and practical contribution, limitations, and potential starting points for future research.

The corresponding articles are included in this thesis and have been submitted to double-peer-reviewed research outlets. Article 3 is under advanced review, whereas all other articles are accepted or published. To ensure a consistent layout in this dissertation, the originally published versions of the five articles were slightly revised. The included articles are listed in Table 1.

Table 1: Overview of the included research articles

Chapter 3	<b>User preferences for coworking spaces; a comparison between the Netherlands, Germany and the Czech Republic</b> Appel-Meulenbroek; Rianne; Weijs-Perrée, Minou; Orel, Marko; Gauger, Felix; Pfnür, Andreas (2020), In: Review of Managerial Science. DOI: <a href="https://doi.org/10.1007/s11846-020-00414-z">https://doi.org/10.1007/s11846-020-00414-z</a> , Pages 2025-2048.	<b>Published</b> <b>(VHB: B)</b>
Chapter 4	<b>Flexible Office Space als immobilienwirtschaftliche Innovation – Eine konzeptionelle und empirische Analyse (Flexible office space as real estate economic innovation – conceptual and empirical analysis)</b> Wagner, Benjamin; Gauger, Felix; Pfnür, Andreas (2021): Flexible Office Space als immobilienwirtschaftliche Innovation – Eine konzeptionelle und empirische Analyse. In: Betriebswirtschaftliche Forschung und Praxis (BFuP), NWB Verlag, 73. Jg. (2012), Heft 6, S.671-706	<b>Accepted</b> <b>(VHB: C)</b>
Chapter 5	<b>Corporate Coworking Spaces – Determinants of Work Satisfaction in Future Workspaces</b>	<b>Accepted</b> <b>(VHB: C)</b>

<sup>4</sup> In the following article presentation, the term coworking space and flexible office space is used interchangeable. For a further classification, see Chapter 2.1

	Gauger, Felix; Voll, Kyra; Pfnür, Andreas (2021), In: Swiss Journal of Business Research and Practice (Die Unternehmung)	
Chapter 6	<b>Coworking Spaces for Public Administration</b> Gauger, Felix; Pfnür, Andreas (2021): In: Orel, M./Dvouletý, O./Ratten, V. (eds.): The flexible workplace: Coworking and other modern workplace transformations, Springer Nature. ISBN: 978-3-030-62166-7, Pages 45-58. DOI: <a href="https://doi.org/10.1007/978-3-030-62167-4_3">https://doi.org/10.1007/978-3-030-62167-4_3</a> ;	<b>Published (Book Chapter)</b>
Chapter 7	<b>Coworking spaces and Start-ups: Empirical evidence from a product market competition and life cycle perspective</b> Gauger, Felix; Pfnür, Andreas; Strych, Jan-Oliver (2021) In: Journal of Business Research, Vol. 132, August 2021, Pages 67-78. DOI: <a href="https://doi.org/10.1016/j.jbusres.2021.04.008">https://doi.org/10.1016/j.jbusres.2021.04.008</a> .	<b>Published (VHB: B)</b>

In addition to the research articles listed above, the following articles were also published or submitted for publication during the time as a research assistant and doctoral student. However, these articles are not part of the dissertation:

1. **Gauger, F.; Pfnür, A.:** Wachstumsdeterminanten von Start-ups am Beispiel von PropTechs in der DACH-Region. In: Zeitschrift für KMU und Entrepreneurship (ZfKE), (VHB: C). Revised and resubmitted
2. **Heidt, L; Gauger, F; Pfnür, A:** Work from Home Success: Agile Work Characteristics and the Mediating Effect of Supportive HRM. In: Review of Managerial Science (VHB: B). 2. Review round.
3. **Gauger, F.; Strych, J.O.; Pfnür, A. (2021):** Linking real estate data with entrepreneurial ecosystems: Coworking Spaces, funding and founding activity of Start-ups. In: Data in Brief, DOI: 10.1016/j.dib.2021.107185, published.
4. **Pfnür, A.; Gauger, F.; Bachtal, Y.; Wagner, B. (2021):** Homeoffice im Interessenkonflikt – Ergebnisbericht einer empirischen Studie. In: Andreas Pfnür (Hrsg.): Arbeitspapiere zur immobilienwirtschaftlichen Forschung und Praxis, Band Nr. 41, Technische Universität Darmstadt.

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5. **Weijs-Perrée, M.; Appel-Meulenbroek, R.; Gauger, F.; Pfnür, A.; Orel, M. (2020):** Differences in user preferences across European coworking spaces. In: Annette Kämpf-Dern and Mascha Will-Zocholl (eds.): **FUTURE WORKSPACES | Proceedings of the Transdisciplinary Workplace Research (TWR) Conference 2020.** 2. Edition. Frankfurt am Main, S. 14–25, published.
  6. **Heidt, L.; Gauger, F.; Wagner, B.; Pfnür, A. (2020):** Widerstände gegen Agilität: Agiles Change Management als Erfolgsfaktor in Projekten der digitalen Transformation. *Die Unternehmung* 74(2): 155-172. DOI: doi.org/10.5771/0042-059X-2020-2-155. (VHB: C), published.
  7. **Gauger, F./Pfnür, A./Skarabi, J. (2020):** Arbeitswelten im Wandel: Coworking Spaces. Eine empirische Befragung der Eigenschaften und Nutzerpräferenzen von Coworking Spaces. *Arbeitspapiere zur immobilienwirtschaftlichen Forschung und Praxis*, Band Nr. 39, Technische Universität Darmstadt.
  8. **Gauger, F./Pfnür, A. (2019):** Coworking Spaces - Arbeitsräume zur Initiierung von Netzwerken. *Zeitschrift Führung + Organisation (zfo)*, 88(1), 9–15. (VHB: D), published.

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#### **1.4 Presentation of the research articles**

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In the remainder of this chapter, summaries of the five research articles are presented.<sup>5</sup> Each summary of an article includes the motivation for the respective study, the methodological approach, the main findings, and the main contributions.

#### **Article 1 – Chapter 3: User preferences for coworking spaces; a comparison between the Netherlands, Germany and the Czech Republic**

The first research article examines individual user preferences of coworking spaces and thus analyzes coworking from an individual micro level. By showing user preferences, operators can derive coworking space characteristics and get insights about the motivations of using coworking spaces.

As more and more large international chains of flexible office space are established, the study examines if user preferences are consistent across countries, which the uniformity

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<sup>5</sup> In the following presentation of the articles, the 3<sup>rd</sup> singular form is used to show that the statements also reflect the co-authors opinion, as the results were achieved together.

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of these chains seem to suggest. We therefore compare the preferences between three countries empirically and find significant differences and only some consistencies across the countries.

Methodologically, a stated-choice experiment is used to design the questionnaire. Data for this model are collected in the Netherlands (219 respondents), Germany (98 respondents), and Czech Republic (79 respondents) over three years (2016-2019). Respondents had to choose between different hypothetical coworking spaces with different attributes, such as accessibility, atmosphere, layout, diversity in spaces, hospitality, events, diversity in tenants, and lease contracts. The responses are analyzed in a mixed multinomial logit model (MMNL) for each country. Motivations of users are analyzed and the results show that novelty-based and efficiency-based user motivations came forward.

The attribute quality levels and differences in user preferences help coworking spaces to position themselves more specifically and to adapt to local markets.

#### **Article 2 – Chapter 4: Flexible office space as real estate economic innovation – conceptual and empirical analysis (Flexible Office Space als immobilienwirtschaftliche Innovation)**

The second research article examines flexible office space from a real estate perspective. After a definition of shared spaces in the real estate industry and coworking spaces in particular, the requirements of commercial users for flexible office space are examined. Subsequently, the business model of flexible office space and how it affects real estate investors is examined. For this purpose, theoretical–conceptual analyses of commercial user requirements as well as potentials and challenges for investors are carried out. These theoretical analyses are then empirically validated.

The article addresses the increasing demand for holistic solutions of space provision and real estate-as-a-service. It analyzes the new form of space provision from a meso perspective for corporates in the real estate industry and for commercial users from a firm perspective.

In order to investigate the commercial user requirements, we analyze which requirements and value contributions of space provision for corporate success have to be fulfilled. For this purpose, decision-makers of Corporate Real Estate Management were interviewed within two questionnaires. Correlation analyses and mean comparisons as well as linear regression analyses were used to empirically investigate which of these user requirements

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are related to the use of flexible office space. Overall, the use of flexible office space is associated with strategic flexibility to respond quickly to changing user needs.

The theoretical–conceptual analysis of investors is conducted by outlining the potentials and challenges when leasing space to flexible office space operators. This is supplemented by an empirical analysis that provides insights into investors' assessments of the operator model. For this purpose, data from a questionnaire of 111 real estate investors are analyzed. A one-way analysis of variance (ANOVA), and regression analyses are used to investigate how the flexible office space provision model affects real estate investors. Results show the relation between flexibility, innovation, collaboration, and employee satisfaction of the users with flexible office space.

For investors, the operator model means long-term leases, the ability to respond to changing user requirements, and marketing of space that was previously difficult to lease because, the office space is used by a wide variety of user groups. For institutional investors, the operator models seem to be less relevant due to the higher risk while non-institutional investors consider flexible office space operators as a relevant, future, and important customer group.

### **Article 3 – Chapter 5: Corporate Coworking Spaces – Determinants of Work Satisfaction in Future Workspaces**

The third research article examines coworking spaces as part of a corporate work environment and explains the impact of coworking on a meso level. Companies are increasingly confronted with structural and dynamic changes in their environment and work environments need to constantly adapt to these changes. Thus, activity-based work environments and corporate coworking spaces have gained traction in the latest decade. The aim of this article is to introduce these work settings into literature and obtain a deeper understanding of factors that determine work satisfaction in these new work environments. The empirical study uses data of a quantitative survey that was conducted in a holding with five corporates using a collaborative workspace. We investigate the significance of different factors by applying a factor analysis and regression analysis. The results of the 200 respondents indicate that physical environment factors have the most important influence on job satisfaction. Communication, collaboration, and concentration also have a significant effect, indicating that a mix of informal meeting spaces, as well as workspaces for concentrated work is highly valued. The contribution of this article is highly relevant for workplace practitioners and gives insights on how to design modern

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workplaces. We also add an exemplary floor plan to highlight the practical relevance of the article.

#### **Article 4 – Chapter 6: Coworking Spaces for Public Administration**

The fourth research article focuses on the application of coworking in public management. As public management differs from the private sector and has other (public) values, coworking has to be regarded specifically for the public sector. Public units face severe difficulties in the war for talents and are in the need for high-quality work environments to retain and attract talent. We derive the needs of public management for a “next-generation workplace for public units” by applying the case of Berlin’s public management. The research methodology follows a mixed-methods approach with multiple data sources for triangulation. We use survey data and focus groups within a design thinking workshop. The results show the attitude of public workers toward collaborative working and derive the user needs of public employees. Finally, success factors for public coworking spaces are derived and presented in a theoretical framework. Based on these findings, the article proposes a transition path to coworking and gives examples of public coworking spaces. The article focuses on the organizational and societal levels and gives policy implications for public units.

#### **Article 5 – Chapter 7: Coworking spaces and Start-ups: Empirical evidence from a product market competition and life cycle perspective.**

The fifth research article examines the spatial relationship between coworking spaces as infrastructure for firms in an entrepreneurial ecosystem and start-ups. As firm use of office infrastructure depends on their life cycle stage, we analyze in which stage of the firm coworking spaces support entrepreneurial activity. In particular, we are interested in the matching between ventures and coworking spaces and how this occurs. To explain this relation, the study builds on buyer-seller relationship theory. We argue that trust is needed to establish a partnership between ventures and coworking spaces.

The study uses hand-collected data about all coworking spaces from 2010 to 2019 across the seven German A-cities.<sup>6</sup> We extend this data with data from entrepreneurial research by using start-up data and their funding data from the Crunchbase database. The funding

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<sup>6</sup> The seven A-cities are the most important cities in Germany for the real estate industry. These are: Berlin, Düsseldorf, Frankfurt am Main, Hamburg, Cologne, Munich and Stuttgart.

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type provides us with information about the life cycle stage of the firm. Panel regressions with fixed-effects are applied to show the proposed relationship.

The results show that due to low trust and the novelty of both actors, trust must be established first and that matching between start-ups and coworking spaces slowly increases as trust increases. While this relationship is continuously positive for mature firms, we find a crowding-out effect for nascent start-ups. This is reflected in a hump-shaped relation between coworking spaces and nascent start-ups, which declines in a highly competitive coworking space market in favor of more mature start-ups.

We also crawled data about all WeWork coworking spaces in Europe to conduct robustness analysis. WeWork is the biggest operator of flexible coworking space and has flexible office space in most large cities around the world. The results show empirically that WeWork spaces are related with more mature firms and high trust is established between these two actors.

The implications of the study are not only useful for research but also for economics as a basis for regional analysis. With this study, we extend the impact of real estate factors on entrepreneurship research. In our analysis, we apply the buyer-seller relationship theory for the first time on a real estate issue and are able to explain the relationship between ventures and coworking spaces in a theoretically grounded way via the existence of trust. The study highlights the impact of coworking spaces from a macro level and shows the regional value contribution of the infrastructure for entrepreneurial activities. It also explains spill-over effects that occur by the existence of coworking spaces as part of an entrepreneurial ecosystem. The following Table 2 provides a summarized overview of the articles.

Table 2: Article overview

Study	Level of analysis	Topic/Research question	Theoretical background	Methodology	Main contribution
I	micro	What are user preferences of coworking space attributes and how do they differ between countries?	Organizational theory and sourcing decision of the firm	Stated choice experiment with mixed multinomial logit model (MMNL)	Showing the motivations to work in a coworking space, which are efficiency-focused and novelty-focused. Significant attributes for users differ between countries, such as accessibility in Germany and type of lease contract in the Netherlands.
II	meso	What is the changing demand of occupiers/ commercial users when using flexible office space? How do investors react to these demands?	Holistic CREM concept based on the resource-based view of the firm	Quantitative survey data and bivariate regression analysis	User highly demand flexibility which is provisioned by the use of flexible office space. Investors appreciate the long-term lease agreements and risk diversification. Flexible office space is regarded as as new customer segment for investors, rather than as competitors.
III	micro/ meso	Obtain an understanding of corporate coworking spaces and analyzing factors that determine work satisfaction in these work environments.	Workplace and environmental psychology theory	Quantitative survey with ordinary least square (OLS) regression analysis	Physical environmental factors, communication, collaboration and concentration possibilities determine work satisfaction in corporate coworking spaces.
IV	meso/ macro	Analyzing new forms of workplace provision for public units. Deriving user needs and success factors for public administration.	Public Value Management	Case study and mixed-methods	Showing a transition path for public units to offer coworking and possibilities for collaborating within public administration.
V	macro	What is the spatial relationship between coworking spaces and start-ups?	Buyer-seller relationship theory	Quantitative econometrical analysis. Panel regression model	Identification of the matching between start-ups and coworking spaces that is dependent on trust. The relation is relying on the stage of the start-up.



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## 2 Theoretical Foundation and Review of the Literature

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This chapter creates the basis for further understanding of the studies and introduces important definitions and characteristics of coworking. Moreover, a short review of the literature is given to understand the context of the individual studies.

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### 2.1 The evolution of the office

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The migration from a manufacturing-based economy toward a knowledge- and service-based economy has resulted in a dramatic transformation of the office landscape. In the 1960s, open plan offices were predominant as the earliest modern office (Brookes and Kaplan, 1972; Walsh, 2015). Research illustrated the negative aspects of open spaces that lacked privacy and concentration communities. As a consequence, communication decreased and employees showed low levels of satisfaction (Bernstein and Turban, 2018). With increasing knowledge regarding the workforce, a cubicle system that provided workers with a walled-off personal space was established, called the “Action Office,” which provides a level of privacy and personal space within a large open space. In the 1990s, a new office concept arose under the term “activity-based working.” The office design had a focus on collaboration and increased creativity, knowledge sharing, engagement, and productivity. Different physical spaces provide different functionalities, e.g., concentration spaces, formal meeting rooms, and activity areas to suit the different activities. Workspaces are not assigned to individuals but can be occupied on an as-needed basis (“hot desking” or “desksharing”) where employees share a fixed number of workstations. Such configuration supports a high degree of flexibility through the lack of a fixed desk allocation and where it is not possible to personalize the workplace.

Because employees nowadays spend more time with informal communication than formal meetings, it has become essential to provide various types of workspaces where serendipitous interactions can take place and uninterrupted work can be performed (Davis, Leach, and Clegg, 2011).

Coworking spaces are a logical further development of these office environments and reflect the current demands of knowledge workers (Gauger and Pfnür, 2019). These working environments offer both tangible and intangible resources, e.g., they provide furnished office space, infrastructure, knowledge sharing, collaboration, and networking. Table 3 lists the main differences of characteristics between the traditional office and coworking spaces as new work environments.

Table 3: Differences between coworking spaces and the traditional office (own representation based on Bouncken, Aslam, and Qiu, 2020b)

Characteristic	Coworking Space	Traditional Office
<b>Layout</b>	Open plan and private offices with social space, networking areas  Dedicated and non-dedicated workplaces	Half-open layout or enclosed office space with mainly dedicated desks  Activity-based work settings with non-dedicated work space and more common areas
<b>Design</b>	Innovative design, often multifaceted seat arrangements	Orderly work settings, more traditional work design
<b>Functional areas</b>	Diverse functional areas to create a dispersed, flexible work environment  Common areas to promote spontaneous social and business interactions	Work areas and functional areas (copier, tea kitchen), few recreational areas  Focus on efficiency
<b>Facilities/ Services</b>	Additional facilities such as coffee bars, sometimes gym, childcare, postal service, community manager, after-work events	Mainly basic facilities and infrastructure (desks, internet, copier, canteen)
<b>Ownership structure</b>	Short-term lease agreements	Long-term lease agreements or ownership
<b>Accessibility</b>	Mainly in CBD	At the corporate office site

Serviced offices and business centers are considered the precursors of coworking spaces.<sup>7</sup> They differ from coworking spaces by the absence of open workspaces and a higher focus on corporate clients. The focus is less on the community and more on formal office spaces. There is usually no community manager, no social events, and fewer informal spaces. They generally arrange longer rental periods with their users.

<sup>7</sup> The dropped hyphen in coworking is a non-trivial distinction in the coworking community. It differentiates the specific use of the term 'coworking' from the meaning of 'co-working', that is a generic synonym for colleagues, or members of the same formal organization (Waters-Lynch *et al.*, 2016).



Traditional coworking spaces differ from the current, mostly hybrid models. Earlier traditional coworking spaces, such as those first established 2005 in San Francisco<sup>8</sup>, were small-scaled, micro-initiatives that arose independently from each other. They hosted freelancers (often creative people) and computer programmers that suffered loneliness and needed to be surrounded by a work community (Waters-Lynch *et al.*, 2016). The communities in these earlier spaces developed coworking values such as collaboration, openness, community, accessibility, and sustainability, which were kept in a coworking manifesto (Spinuzzi, 2012; Waters-Lynch *et al.*, 2016; Peuter, Cohen, and Saraco, 2017). Hybrid models are now predominant and provide open spaces and private offices, and integrate social exchange into their business model. Only the social network, the community as a supporting element, converts flexible offices into coworking spaces. A typical hybrid coworking space also has a community manager whose job is to create a sense of community and to maintain a coworking culture (Garrett, Spreitzer, and Bacevice, 2014). Figure 4 provides an overview of the different characteristics based on the most important distinguishing features.

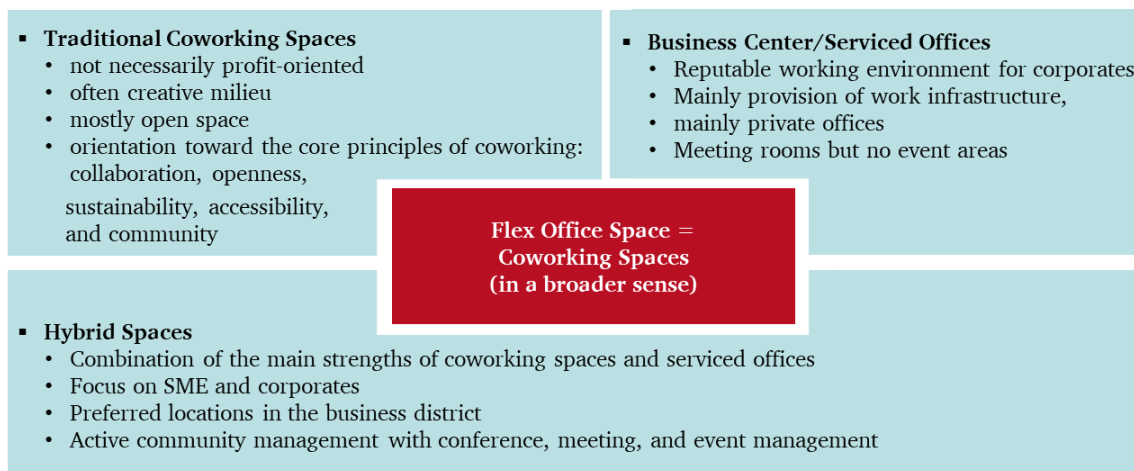


Figure 4: Business center, hybrid spaces, and coworking spaces (own representation based on Weber, 2019b)

In the following, the terms “flexible office space” and “coworking space” are used synonymously. While flexible office space emphasizes the real estate perspective on the coworking model, coworking space is probably the most generic term, used equally by all research disciplines. Today, there are around 19,000 coworking spaces worldwide and in

<sup>8</sup> Whereas literature mainly considers the Spiral Muse by Brad Neuberger as the first coworking space in 2005 in San Francisco, collaborative working communities were established far earlier. See Orel and Dvouletý (2020) for a narrative review on the emergence of the coworking movement.

cities such as New York, London, and Berlin, there are sometimes more than 60 providers (Statista, 2021).

## 2.2 Coworking spaces and entrepreneurial ecosystems

Prahalad (2009) coins the term “entrepreneurial ecosystem”, a combination of various stakeholders, including individuals, entrepreneurial teams, ventures, and supporting organizations. This entrepreneurial ecosystem includes tangible and intangible environmental factors that influence the performance of ventures who jointly work toward economic growth and emerge through successful interaction (Gnyawali and Fogel, 1994; Fogel, 2001; Goetz and Freshwater, 2001; Scaringella and Radziwon, 2018). Figure 5 illustrates the different environmental factors of an entrepreneurial ecosystem. The concept of intermediaries in an entrepreneurial ecosystem gains traction in the latest debate of research (Mason and Brown, 2014; Kant and Kanda, 2019). Besides accelerators and incubators (Goswami, Mitchell, and Bhagavatula, 2018; Brown *et al.*, 2019), coworking spaces are increasingly part of these intermediaries (Autio *et al.*, 2018). Figure 5 shows the relation between ventures, the market, and their environmental- and spatial-related factors.

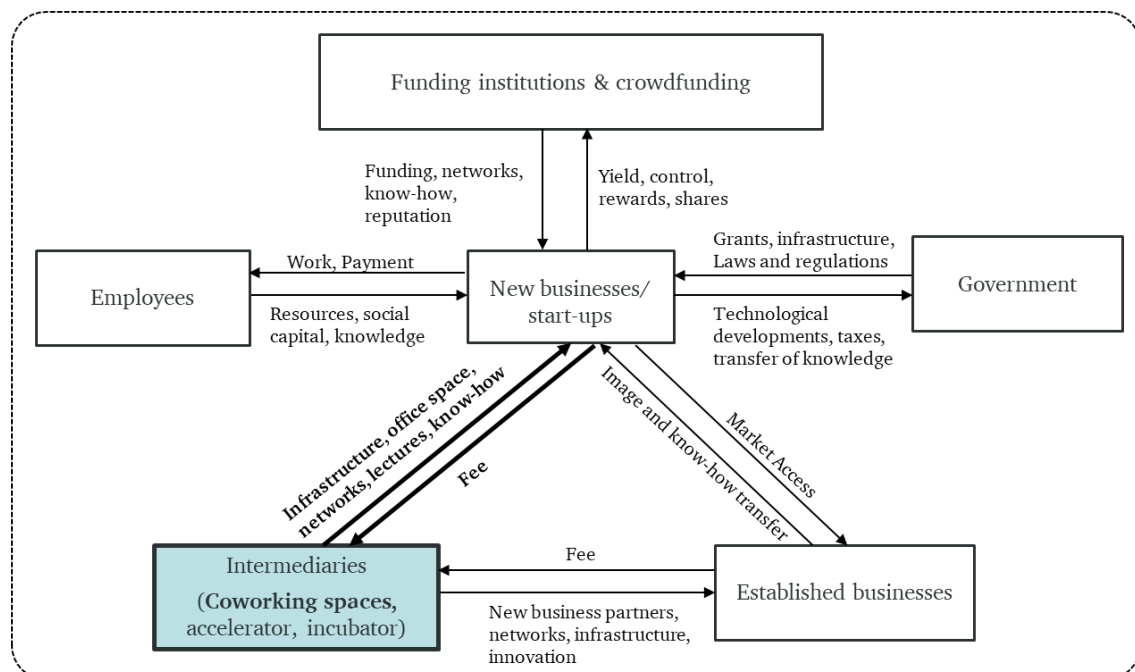


Figure 5: Coworking spaces and entrepreneurial ecosystems (based on Böhm *et al.*, 2019)

Bouncken and Reuschl (2018) conclude that the agglomeration of entrepreneurship in coworking spaces has similarities with entrepreneurship in incubation centers, yet the

community aspect is strong and essential in coworking spaces. Surman (2013) shows the case of building social entrepreneurship through the power of coworking. Hence, access to these spaces for self-employed, start-ups, and corporates is a key resource for businesses (Gauger, Strych, and Pfnür, 2021). Coworking spaces also provide access to a network of firms and partners to create valuable partnerships with external and internal actors (Jakonen *et al.*, 2017; Riemer *et al.*, 2019). In this way, coworking spaces support knowledge transfer and sharing among firms. Moriset (2014: 1) argues that coworking spaces are regarded as “serendipity accelerators”, designed to “host creative people and entrepreneurs who endeavor to break isolation and find a convivial environment that favors meetings and collaboration.” Mitev *et al.* (2019: 18) note that coworking spaces are a “solution for entrepreneurs and freelancers looking to build a network and collaborate with like-minded people.” They are beneficial for firms that desire an environment that facilitates social support, innovation, creativity, knowledge sharing, and collaboration (Fuzi, 2015; Halvitigala, Antoniades, and Eves, 2018). Besides the main characteristic of a physical workspace, coworking is also referred to a place with strong attachment, a community, and emotional support (Mitev *et al.*, 2019). Table 4 presents an overview of the various aspects of value contribution of coworking environments for social, business, and entrepreneurial opportunities.

Table 4: Added value contribution of coworking spaces (own representation)

Factor	Value contribution	Reference
<b>Spatial</b>	Workspace (flexible desks, furniture, meetings rooms)	Weijs-Perrée <i>et al.</i> (2018)
	Infrastructure (internet, printer, etc..)	Weijs-Perrée <i>et al.</i> (2016)
	(Novel) institutions for entrepreneurship and innovation	Bouncken and Reuschl (2018); Rief <i>et al.</i> (2014)
<b>Social</b>	Know-how transfer, partnerships, collaboration, social support	Gerdenitsch <i>et al.</i> (2016)
	Knowledge exchange through direct, physical contact; collective inspiration	Bouncken and Reuschl (2018)
<b>Economic</b>	Access to financial intermediaries	Waters-Lynch <i>et al.</i> (2016)
	Provision of space, flexible cost structure, maturity and risk transformation, flexibility	Weber (2019b) Wagner, Gauger, and Pfnür (2021)

	Legal requirements, less pre-contractual transaction costs	Zahrnt (2017)
<b>Ecological</b>	Sharing of resources, flexible, on-demand use, reducing commuting time	Hopkins and McKay (2018); Berbegal-Mirabent (2021)
<b>Psycho-social</b>	Work-life balance, sense of autonomy, sense of belonging, concentration and health-related outcomes	Garrett et al. (2014); Robelski et al. (2019)

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### 2.3 Life cycle stages and the use of office space

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Office space is a very significant resource for businesses because it is the location for all service provision processes and represents the working environment of knowledge workers (Krupper, 2015). Besides human capital, the office as real estate represents the second largest cost factor for ventures (McCoy, 2005; Krupper, 2015; Appel-Meulenbroek *et al.*, 2018). However, not only does office space drive a large fraction of overall fixed costs, but is also relatively inflexible, especially for young ventures (Green, 2014).

In most cases, the use of office infrastructure reflects the life cycle stage of a firm (see Figure 6). Specifically, freelancers, entrepreneurs, and nascent start-ups tend to start their ideas within their home office (Schürmann, 2013). Although this might be economical, the literature refers to the isolation that occurs at home (Bloom *et al.*, 2015). Spinuzzi (2012) reports that users had feelings of isolation, experienced distractions, and self-motivation problems at home. Recent findings confirm the relation that the home office is not a suitable work environment for every type of person (Bloom, 2020; Pfnür *et al.*, 2021a).

When using traditional office space, lease agreements for office premises are generally concluded with a medium to long-term lease agreement of between 10 to 15 years on average (Gibson *et al.*, 2000; Crosby, Gibson, and Murdoch, 2003). Entrepreneurs with large growth intentions face two decisions. They can rent space that is initially too large; once their business model has been successfully scaled up, it can provide sufficient space in the long-term. Alternatively, they can rent the appropriate space, which may become too small for a growing company after a while. Both options are inflexible and resource inefficient (Wagner, Gauger, and Pfnür, 2021). Thus, the use of coworking space as office space is flexible and extendable at short notice. It can grow with the firm's activity and adapt to the business environment at short notice. Furthermore, in the founding stage, the use of coworking spaces can contribute through their specific environment toward

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inspiring and motivating interesting relationships and encouraging entrepreneurship (Fuzi, 2015; Crittenden, Crittenden, and Crittenden, 2019).

Even firms reaching a more mature stage choose to stay in coworking environments for two reasons. First, there is an increasingly competitive situation in real estate markets. Suitable office space is rare and the selection of the right space can be time-consuming and costly. In order to create office space in prime locations where space is scarce, flexible workspaces such as coworking spaces is an answer to the lack of space (Roßdeutscher, 2018). Firms need a high level of flexibility and want to make use of fast and scalable space in a highly dynamic business environment (Green, 2014; Crittenden *et al.*, 2019; Wagner *et al.*, 2021). Second, firms in a more mature stage recognize the advantages by cooperating and retaining start-ups in a common working environment.

On the other hand, these features are paid for by the tenants with a premium. Downsides of working in these shared spaces include less privacy and tighter premises (in terms of square feet per workstation). Therefore, coworking spaces are not suitable for all units and all types of work. Nevertheless, the fast growth rate of coworking spaces shows that firms welcome this new form of office space provision. Especially start-ups that do not have to rent their own premises can take advantage of the entrepreneurial environment, access to resources and, therefore can concentrate on their competitive advantage and core business. Figure 6 illustrates the relation between the use of office infrastructure and the life cycle stage of a firm.

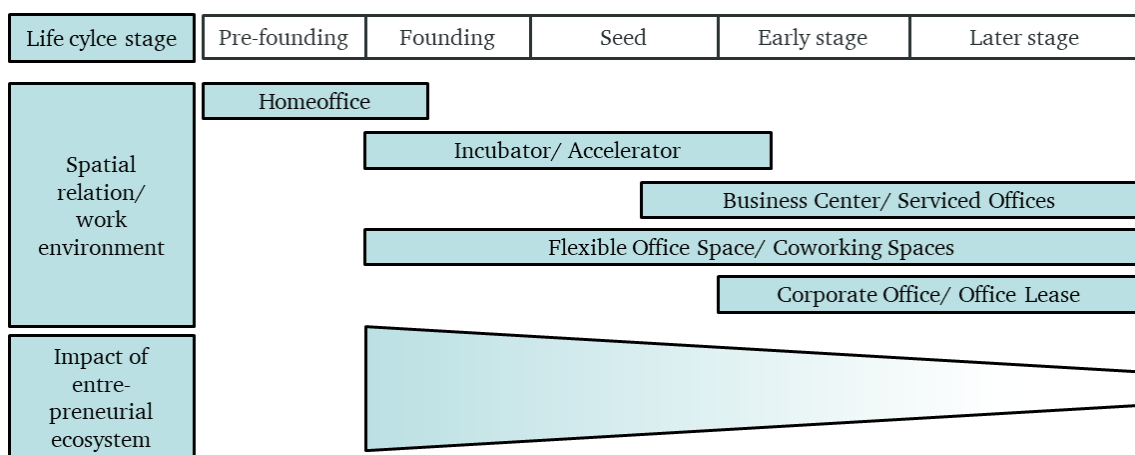


Figure 6: The relation between life cycle stage of a firm and use of office infrastructure (own representation)

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### 3 Article 1: User preferences for coworking spaces; a comparison between the Netherlands, Germany and the Czech Republic

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Title: User preferences for coworking spaces; a comparison between the Netherlands, Germany and the Czech Republic<sup>9</sup>

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#### Abstract

Coworking spaces have become a central component of new work environments, with large international chains. The purpose of this study is to investigate whether user preferences for the physical workspace design are consistent across countries, which the uniformity of such chains seems to suggest. A comparison between the user preferences of coworking spaces between the Netherlands (n=219), Germany (n=98) and the Czech Republic (n=79) is performed using a mixed multinomial logic model for each country. Besides statistical utility of attributes, also motivations for working in coworking spaces are analysed.<sup>10</sup> The findings show that there are some consistencies in preferences across countries. Typical real estate characteristics like accessibility and contract options came forward to be the most important attributes in choosing which coworking space to work at in all three countries. However, significant differences in the desired quality levels of specifically these attributes were found between the countries as well, and only the less important attributes showed similar preferences internationally. This suggests that identical world-wide implementations of the same concept, might serve multi-nationals but possibly will not attract local users. The identified differences in preferences can help to position more specific, dedicated coworking spaces within local markets.

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<sup>10</sup> Please note that this article is written in British English and therefore differs from the rest of the dissertation, which uses American English.



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### 3.1 Introduction

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For the last two decades, work practices have changed due to the collaborative economy and new forms of collaboration (Mitev *et al.*, 2019). One of the consequences is the continuing rise of coworking spaces. While the contemporary versions of these collaborative and shared workplaces started to gain visibility around the year 2005 in San Francisco (The Spiral Muse) and London (The Hub) (Merkel, 2015; Waters-Lynch *et al.*, 2016) their existence can be tracked to the mid-90s (Orel and Dvouletý, 2020). Nonetheless, Deskmag's yearly global coworking survey showed that 29% of all coworking spaces available in 2018 were opened over the last year (Deskmag, 2018). Up until 2022, the number of coworking spaces is expected to grow at an annual rate of 6% in the U.S. and 13% elsewhere (pre-COVID-19 expectations).

This new model of working alone-together (Spinuzzi, 2012) is not only elusive to practitioners but also increasingly an intrigue of academics (Waters-Lynch *et al.*, 2016). Based on the concept of the urban sociologist Ray Oldenburg who coined the term *third places* (Oldenburg, 1999), several authors deal with the classification of coworking spaces (Moriset, 2014; Merkel, 2015; Bouncken *et al.*, 2018). Coworking spaces have been studied extensively in the USA (Spinuzzi, 2012), different European countries (Rus and Orel, 2015; Gerdenitsch *et al.*, 2016; Marx, 2016; Bouncken *et al.*, 2018; Weijs-Perrée *et al.*, 2018), Asia (Soerjoatmodjo *et al.*, 2015; Bouncken, Clauss, and Reuschl, 2016), and Australia (Butcher, 2013; Waters-Lynch and Potts, 2017). These studies are related to many different theories and extant literature, mainly based on the disciplines of management, psychology/sociology and economics. However, they generally lack a clear insight in the user preferences for the physical workspace design and especially whether this differs between countries, because of their single country focus. Bouncken *et al.* (2016: 319–320) state that: “So far it is unclear how such spaces should be set up, [...] and which business models suit the users and providers of coworking-spaces”. Even if the decision of using coworking spaces is done by the management of a company, the extent to which coworking space benefits suit end-users heavily relies on their expectations and preferences. The workplace support of end-users influences several organizational outcomes such as productivity and collaboration (Appel-Meulenbroek *et al.*, 2018).

From an operator's view, user preferences can serve as a foundation for value propositions of coworking business models (Clauss, Harengel, and Hock, 2019). Attracting new members has been and remains the number one challenge for operators (Deskmag, 2018).

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However, as Bouncken *et al.* (2016) mentioned, there is limited understanding of how coworking space operators can design their business models for differing user demands. As Yang, Bisson, and Sanborn (2019) state, coworking space users prefer different services and spaces. Local, small coworking operators are specializing in specific local user groups and show a high diversity in terms of strategy, location and set-up (Bouncken *et al.*, 2020a). At the same time, several coworking operators have started providing nearly identical looking coworking spaces worldwide (e.g. WeWork, Impacthub, Spaces) to cater multi-nationals. As a result, Bouncken *et al.* (2020a) call for the identification of global success factors of coworking spaces. As research has not yet identified whether user preferences for coworking spaces are consistent across countries (Bueno, Rodríguez-Baltanás, and Gallego, 2018; Mitev *et al.*, 2019), it remains unclear whether the international models are able to cater multi-national and local needs. Therefore, this paper aims to answer the research question: Are user preferences consistent among coworking space users across different countries? The main contribution of this paper is its international comparison of user preferences and motivations, identifying which are consistent and which change regionally. Data were gathered among users of several coworking spaces in three different countries, namely the Netherlands (Western Europe), Germany (Western Europe) and the Czech Republic (Eastern Europe), to test hypotheses on assumed consistency in preferences across these countries.

After a literature review of the coworking phenomenon and its users, the most important space characteristics were drawn from literature for a stated choice experiment. A stated choice-based questionnaire among 219 coworkers from the Netherlands, 98 coworkers from Germany and 78 coworkers from the Czech Republic (396 coworkers in total) was performed to identify preferences for hypothetical coworking spaces described by their most relevant characteristics. Multinomial logit modelling was used to analyse the preferences for coworking space characteristics and to see whether the countries show differences in user preferences regarding accessibility, atmosphere, layout, diversity of spaces and of tenants, services and contracts. The research has practical implications for corporates, individual user and operators and enhances theoretical understanding of coworking spaces as institutions in an entrepreneurial ecosystem.

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### **3.2 Theoretical background**

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Every operational activity requires not only a distribution of tasks to the personnel resources, but always also a spatial organisation of the task completion in workplaces,

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rooms, buildings and locations (Krüger, 1994). Whereas in larger companies the task of the spatial organisation of work is usually performed by a separate department known as corporate real estate management (Brown, Lapides, and Rondeau, 1994), in smaller organisations this task is performed by the management itself. The core task in both cases is to manage the planning, provision, use, operation and exploitation of workspace. The provision of office space is a secondary process that optimally supports the core process of a company. Kämpf-Dern and Pfnür (2014) show that in corporate practice there is no one-best model, but there is a best fit. Coworking spaces are an innovative alternative form of space provision to the traditional provision forms of office space. From the point of view of the organisation, the use of coworking spaces is a sourcing decision. Companies must consider whether it makes more sense and is more efficient to provide internal services or to use external services for their spatial organisation of work.

Nowadays, the users of coworking spaces include a wide range of actors as predicted by Sargent *et al.* (2018). Larger companies show increased propensity to support their employees and their tendencies for work on a dislocated, telework basis (Walden, 2019) to blend in with independent workers and their networks (Leclercq-Vandelannoitte and Isaac, 2016) (Leclercq-Vandelannoitte and Isaac 2016). Gauger, Pfnür, and Strych (2020) analysed that particularly in mature coworking markets, start-ups are almost being crowded out by users from large enterprises. Small-to-mid sized enterprises pursue the usage of coworking spaces to allow cost savings through the use of shared office facilities, and to interconnect their employees in various collaborative networks (Arora, 2017). Other users include independent workers such as freelancing individuals, seniors, unemployed and others (Mitev *et al.*, 2019).

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### **3.2.1 Benefits of coworking**

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By bundling all real estate services into a space-as-a-service package, coworking providers offer external service provision. In the entrepreneurship literature, this space-as-a-service concept is considered as one component of an entrepreneurial ecosystem. Coworking spaces as the spatial entity of an entrepreneurial ecosystem can add value by knowledge management and networking opportunities. Bouncken *et al.* (2018) term coworking spaces within the framework of institutional theory. Coworking spaces can be regarded as (prototype) institutions for entrepreneurship and innovation, that not only create and appropriate value, but also give space for tensions (Bouncken *et al.*, 2018; Bouncken *et al.*, 2020a). Fuzi (2015) describes these spaces as environments that facilitate social

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support, innovation, creativity, knowledge sharing and collaboration. Besides attracting people with different profiles and social interactions being central to the concept, coworking spaces also enhance productivity (Bueno *et al.*, 2018), stimulate knowledge transfer among coworkers (Kopplin, 2021), and create a working community (Weijs-Perrée *et al.*, 2016) that can be perceived as a source of social support for coworking space users leading to higher quality and satisfaction of work (Gerdenitsch *et al.*, 2016).

Not all end-users have the same motivations for choosing a coworking space though. Spinuzzi (2012) found that coworkers seek many benefits from using a coworking space related to interaction, feedback, trust, learning, partnerships, encouragement and referrals. The gathering of users in coworking spaces strategically increases the likelihood of unpredictable encounters and offers the possibility of "social learning". Fabbri (2015) adds that belonging to a coworking space can also increase credibility and access to partners through a 'labelling' and 'window' effect. Bouncken *et al.* (2016) divided the sought benefits of coworking users in two business models, namely those seeking for efficiency and those seeking for novelty. Regarding efficiency, existing studies have mentioned motivations to use a coworking space such as affordable accommodation (Fuzi, 2015; Merkel, 2015), the professional appearance for the company (Fabbri, 2015), a professional supportive work environment (Spreitzer, Bacevice, and Garrett, 2015), looking for a workplace outside the home/separating work and private life (Fuzi, 2015) and flexibility regarding rental period and number of square meters (Sykes, 2014). Regarding novelty, motivations that come forward from existing studies are the feeling of being part of a community (Spreitzer *et al.*, 2015), the vibrant and creative atmosphere in the coworking space (Merkel, 2015), the opportunity to network with coworkers (Fuzi, 2015) and to have social- (Merkel, 2015) and work-related interactions (Fuzi 2015). But the main added value of a coworking space is suggested not to be a favorable rent or a more pleasant working environment than home, but the possibility of collaborating with other coworkers when ideas, resources and necessary information are lacking (Waters-Lynch and Potts, 2017). Therefore, we pose the following hypothesis:

*H1: Novelty based motivations to work at a coworking space are more important than those based on efficiency.*

As there is no previous research comparing such motivations across countries, the apparently successful 'uniformity approach' by large international coworking chains is used to pose the next hypothesis:

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*H2: The ranking of motivations to work at a coworking space is consistent across countries.*

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### **3.2.2 Coworking space attributes**

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To study preferences of users, it is important to identify the most important attributes of coworking spaces that can satisfy or frustrate certain user preferences. Although many hybrids between coworking spaces and other business centre concepts are increasingly present, Waters-Lynch *et al.* (2016) point out differences from other shared office concepts in the aesthetic design of coworking spaces. Weijs-Perrée *et al.* (2016) also showed a clear difference with serviced offices, which are all located in modern office spaces, while coworking spaces can also be located in former industrial era warehouses or factories (Deskmag, 2016) and are thus more diverse in outside and inside appearance (Bouncken, Kraus, and Martínez-Pérez, 2020c).

First, like many offices, most coworking spaces are positioned in highly accessible locations, but more ‘remote’ spaces exist as well (Bouncken *et al.*, 2020a). Generally, accessibility by car and/or by public transport can be distinguished as relevant attribute levels. Regardless of their location, as a second distinguishing attribute coworking spaces can be located in new, modern offices but also in former industrial era warehouses (Deskmag, 2016) with more complex structural elements (Gertner and Mack, 2017). Early coworking spaces made use of practical furniture when setting-up typical home-like environments with couches, kitchen desks and other home-based furniture (Neuberg, 2005; Brown, 2017). In regard to that, it could be emancipated that early coworking environments have had a very different atmosphere and aesthetics in contrast to modern coworking centres that tended to incorporate social and emotional meanings within the spatial design of the workspace that could positively affect users (Bouncken *et al.*, 2020b). A third attribute is the layout of the space, as openness has been shown to influence face-to-face interactions in offices (Rashid *et al.*, 2006) and thus possibly how the social component is experienced (Bouncken *et al.*, 2020a). Generally, coworking spaces have an open layout (Gertner and Mack, 2017), as this is likely to stimulate interaction between coworkers as intended, but a half-open layout can also be present and even individual, closed spaces are offered in some coworking spaces (Deskmag, 2016) to cater all possible preferences (Wright, 2018).

Besides the regular workspace, the majority of coworking spaces are combined with private meeting rooms and a kitchenette. However, the trend is progressively shifting in

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a way that many contemporary buildings offer additional types of spaces, such as informal break out zones and spaces for specific events (Deskmag, 2016; Kojo and Nenonen, 2016) and provide their users additional leisure and well-being services such as recreational facilities (e.g., gym, spa, etc.) and guided sport activities (e.g., yoga, meditation classes, etc.) (Spinuzzi, 2012; Cabral and van Winden, 2020). Coworking space providers principally tend to construct value capturing strategies and shape various offerings to introduce efficiency-centred, development-centred and user-centred coworking environments (Bouncken, Qiu, and Clauss, 2020). Especially the latter, user-centred form of a coworking space commonly integrates the position of a mediator or community manager who curates the interpersonal interactions and interconnects regular users in supportive networks (Merkel, 2015; Rus and Orel, 2015; Spinuzzi *et al.*, 2019) with the aim of establishing collective action amongst coworking space users (Blagoev, Costas, and Kärreman, 2019). Mediation activities are integrated through either spatial mechanisms (Bouncken and Aslam, 2019), digital tools (Kopplin, 2021), or actively used in the forms of communal events that promote interaction and participation in selected undertakings (Parrino, 2015; Waters-Lynch and Potts, 2017; Cheah and Ho, 2019). According to Irving, Ayoko, and Ashkanasy (2020), the expected benefits of spatial interventions frequently fail to materialize, making human intervention a considerable factor when accelerating the rate of formal or informal interactions and knitting collaborative relationships. By that, community managers regularly play an essential role in coworking space development and positioning on the market (Bouncken *et al.*, 2018; Gregg and Lodato, 2018; Gauger *et al.*, 2020). Depending on the business model behind the selected coworking spaces as well as the capacity of mediation mechanisms, Kojo and Nenonen (2016) separate coworking spaces in the category of third places, public offices, collaboration hubs, coworking hotels, incubators and shared studios. Despite the classification, all coworking spaces are characterised by array of diverse user-base with individuals having different professional and personal backgrounds.

With that in mind, the last two attributes concern the diversity of tenants and the lease contract. The description of coworking spaces by Parrino (2015) emphasized a diversity of users regarding their sector, although some coworking spaces focus on a specific sector. According to multiple studies (Spinuzzi, 2012; Sykes, 2014; Fuzi, 2015), a short contract is also a typical coworking space characteristic. Some even have no contract at all, but longer contracts can also be an option (Durante and Turvani, 2018). The following hypothesis is posed:

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*H3: Accessibility, atmosphere, layout, diversity in spaces, hospitality, events, diversity in tenants and the lease contract are significant attributes when choosing between different coworking space options.*

As there is no previous research comparing user preferences for these attributes across countries, the apparently successful ‘uniformity approach’ by large international coworking chains is used to pose the last hypothesis:

*H4: User preferences for coworking space attributes are consistent across different countries.*

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### **3.3 Methodology**

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#### **3.3.1 Data collection**

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Data were collected with an online questionnaire consisting of two parts. First, respondents were asked to indicate their top 3 of motivations to work at a coworking space from a pre-determined list (to test H1 and H2). They also had to answer personal questions (gender, age, education level) and indicate work-related characteristics (user group, position within the organization, sector of the organization, and number of hours working at the coworking space). The second part of the questionnaire was setup as a stated-choice experiment (Hensher, Rose, and Greene, 2015) to be able to test H3-H4 on preferences for the coworking space attributes. In stated choice experiments, respondents chose between hypothetical alternatives, which are described by the quality levels for a list of relevant attributes for the offer that is studied. In this case, that ‘offer’ was a coworking space. Respondents were asked to choose between 3 different alternatives, plus they were offered the option to choose to rather work from home or at another location/coworking space than those alternatives that were presented. The alternatives varied based on the possible quality levels of the identified coworking space attributes from literature (see Table 5). Figure 7 shows an example of such a choice set.

Table 5: Attributes and their levels

<b>Attribute</b>	<b>Attribute level</b>
Accessibility	Level 0: By car and public transport
	Level 1: By car
	Level 2: By public transport
Atmosphere and interior aesthetics	Level 0: Industrial

	Level 1: Modern
	Level 2: Homey
Layout of the space	Level 0: Open layout
	Level 1: Half open layout
	Level 2: Closed layout
Diversity in supply spaces	Level 0: Basic coworking space
	Level 1: Standard coworking space
	Level 2: Premium coworking space
Reception and hospitality	Level 0: No reception and no host
	Level 1: Reception but no host
	Level 2: Reception and active host
Events	Level 0: None
	Level 1: Sometimes
	Level 2: Often
Diversity of tenants	Level 0: No diversity of tenants
	Level 1: Moderate diversity of tenants
	Level 2: Strong diversity of tenants
Lease contract	Level 0: No contract
	Level 1: Short-term contract
	Level 2: Long-term contract

	Coworking space 1	Coworking space 2	Coworking space 3	None
Accessibility	By car and public transport	By car	By car	
Atmosphere and interior aesthetics	Industrial	Modern	Homey	
Layout of the space	Open layout	Open layout	Half open layout	
Diversity in supply spaces	Basic coworking space	Standard coworking space	Basic coworking space	
Reception and hospitality	No reception and no host	Reception but no host	Reception and active host	
Events	None	Sometimes	Often	
Diversity of tenants	No diversity of tenants	Moderate diversity of tenants	Moderate diversity of tenants	
Lease contract	No contract	Short-term contract	Long-term contract	
Your choice:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 7: Example of a choice set in the stated choice part of the questionnaire

As each attribute has three levels, asking respondents to choose between each potential configuration of the attributes' quality levels would result in  $(3^8 =)$  6,561 possible alternatives. Therefore, an orthogonal fraction of this design was constructed (Hensher *et*



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*al.*, 2015), consisting of 27 alternatives. These alternative spaces were randomly divided over 9 choice sets, with each 3 alternatives. So, each respondent thus evaluated all hypothetical workspaces (meaning a complete design) in only 9 questions.

The survey was spread in the Netherlands, Germany and the Czech Republic, within a period of three years (2016-2019). Throughout Germany and the Netherlands, the samples were collected in many different regions/cities and coworking spaces to provide a spatial heterogeneity of the participants. In Berlin, for example, there is a very mature coworking space market, which attracts many users from the IT sector, while in Frankfurt many users come from the financial sector. Furthermore, the survey was conducted in small and medium-sized cities, so that a cross-section of coworking spaces was achieved.

In Czech Republic, data was collected only in the main capital Prague. The city of Prague has been selected due to its geographic position and current situation of the coworking industry. Centrally positioned and with a mid-sized urban area, Prague has seen a swift growth of coworking spaces and users in recent years (Šindelářová and Kubíková, 2018). In order to have a diverse sample, five different coworking spaces were selected, ranging from student-style coworking cafes to corporate coworking spaces.

The coworking spaces in all countries were visited personally to achieve a high response rate. In the Netherlands, a total of 219 respondents successfully completed the questionnaire, in Germany 98 respondents, and in Czech Republic 79 respondents.

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### **3.3.2 Analytic strategy**

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To study the assumptions on motivations (H1 and H2), first the rankings were studied themselves, after which the top 3 choices were added for each possible motivation per country to test H2 with a Chi-square analysis.

To study user preferences (H3) and their consistency across countries (H4), a mixed multinomial logit model (MMNL) for each country was estimated. A MMNL is a very efficient and flexible discrete choice model (McFadden and Train, 2000; Hensher *et al.*, 2015) for analysing data with a panel structure (i.e. multiple choices by the same respondent). Furthermore, using this approach, it is possible to capture unobserved heterogeneity (Train, 2009). It estimates a constant utility parameter that reflects the alternative 'none of these options' in which a respondent rather would work at home or somewhere else than in one of the three hypothetical coworking spaces. The equation for the utility for user  $i$  for coworking space  $j$  on choice occasion  $t$  is:

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$$U_{ijt} = \beta' \mathbf{X}_{ijt} + \varepsilon_{ijt}$$

where  $X_{ijt}$  represents all attributes of the coworking space with relative weights (parameters  $\beta$ ) to be estimated. The error term,  $\varepsilon_{ijt}$ , represents unobserved heterogeneity. This equation assumes that all the estimated parameters are equal for all users. Since the parameters relating to different levels of the same attribute are conceptually interrelated, a random parameter is estimated for only one of the parameters related to the same attribute to capture possible heterogeneity related to that attribute. As a somewhat arbitrary choice, the random parameters in the model relate to the significant, first levels of the attributes. A normal distribution is assumed for each random parameter. The non-random parameters in the model represent the second levels, plus non-significant first levels of the attributes. To estimate the parameters of the model, 1,000 Halton draws were used (Bhat, 2001).

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## 3.4 Results

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### 3.4.1 Sample description

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Table 6 shows the characteristics of the samples from the Netherlands, Germany and the Czech Republic. The samples consist of a larger share of men with 52% in the Czech Republic, 57% in Germany and even 68% in the Netherlands, comparable to Deskmag's (2018) worldwide statistics. The average age in the countries is 29 (SD=6.8) in Czech Republic, 33 (SD=9.4) in Germany and 35 (SD=11.2) in the Netherlands, so a bit younger than Deskmag's average of 36 years. The higher share of students (38%) in the Czech Republic sample explains the lower average age in this sample. Education levels of the users are generally high. On average the respondents worked 22 hours per week in a coworking space.

In all countries, many coworkers are self-employed workers (ranging from 31-54%). In Germany, many respondents (33%) work for a company with more than 11 employees and over half is a regular employee, while in the Netherlands 42% is owner/board member of their organisation. This could also be related to the fact that the hours spent in a coworking space is the highest in Germany (approximately 24 hours, versus 21 in the Netherlands and 19 in the Czech Republic). With regard to sector, in the sample of the Netherlands coworkers are more frequently working in the consultancy sector compared to coworkers from Germany or the Czech Republic.

Table 6: Sample characteristics

	Netherlands (N=219)			Germany (N=98)			Czech Republic (N=79)			Total sample (N=396)
	%	Mean	SD	%	Mean	SD	%	Mean	SD	% / Mean
Gender										
Male	68			57			52			62
Female	32			43			48			38
Age		34.6	11.2		33.0	9.4		28.8	6.8	33.0
≤ 24 years	16			12			32			20
25-34 years	39			64			53			52
35-44 years	25			13			13			17
≥ 45 years	20			10			2			11
Education level										
Low education (i.e. secondary vocational education, pre- university education and intermediate vocational education)	14			8			0			9
High education (i.e. higher vocational education, university bachelor, master, PhD)	86			92			100			91
Hours working at coworking space		21.3	14.3		23.9	15. 5		19.1	10. 8	22.4
Position in organization										
Supporting staff	3			3			1			2
Regular employee	22			52			24			32
Manager	8			12			1			8
Board/owner	42			10			20			26
Does not apply	25			23			53			32
User type										
Self-employed worker, freelancer or entrepreneur	54			31			35			44
Employee of company (2-10 employees)	18			18			17			17
Employee of company (11 or more employees)	18			33			10			20

Student	12			18			38			19
Sector										
Consultancy (legal advice, organizational advice etc.)	25			14			6			19
Design (art, graphic, web, product, games etc.)	12			8			9			10
IT (software engineer, web developer etc.)	21			11			19			18
Education (coaching, training, teaching, etc.)	9			10			4			8
Research (scientist, analyst, researcher, etc.)	5			9			3			6
Project management, PR, marketing, sales, advertising, communication	8			12			15			9
Other sector	20			36			44			30

### 3.4.2 Main motivations

Figure 8 shows the main motivations per country to work at a coworking space. The percentages show the total share of choosing three main motivations to work at a coworking space. Overall, most respondents mentioned the vibrant and creative atmosphere as one of their main three motivations, which is a novelty-focused motivation. However, this was followed by several efficiency-focused motivations, such as separating work-and private life, affordable accommodation, and flexibility. Then, again novelty-focused motivations came forward regarding community and interactions. The bottom of the list also showed efficiency-focused motivations, regarding a professional, supportive work environment and appearance. So H1 (novelty-based motivations to work at a coworking space are more important than those based on efficiency) is not very clearly confirmed. Although a vibrant/creative atmosphere is top of the list, it is immediately followed by several efficiency-focused motivations.

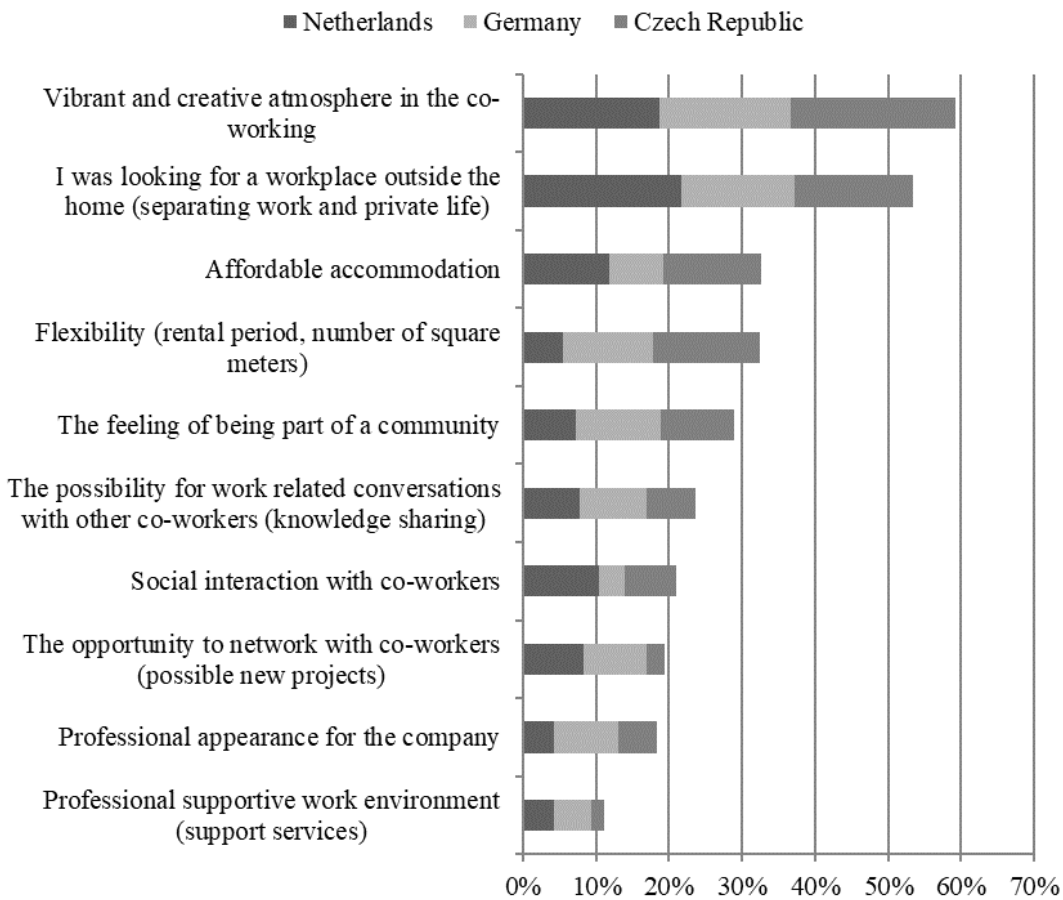


Figure 8: Main motivations per country to work at a coworking space

As can be seen in Figure 8, there are differences between countries. For example, respondents from the Netherlands, choose “I was looking for a workplace outside the home” as the most crucial motivation to work at a coworking space, while in Germany and the Czech Republic this was the novelty-focused “vibrant and creative atmosphere”. A chi-square test shows that differences in the top 3 of motivations are significant ( $F(20,1172)=69.935, p \leq 0.000$ ), so H2 (The ranking of motivations to work at a coworking space is consistent across countries) must be rejected. Both some novelty-focused motivations and some efficiency-focused motivations show particularly large differences between the observed and expected values. Regarding efficiency-focused motivations, respondents from the Netherlands more often chose flexibility (in rental period and/or number of square meters) in their top 3 motivations than in Germany and the Czech Republic. German coworkers particularly seemed to select professional appearance for the company and affordable accommodation more often, while in the Czech Republic the supportive services of a professional supportive work environment were selected relatively more often. Regarding novelty-focused motivations, the

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coworkers from the Netherlands relatively less often put social interaction with coworkers in their top 3, while Germans selected this relatively more often. Those from the Czech Republic relatively more often mentioned the opportunity to network with coworkers towards possible new projects.

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### **3.4.3 User preferences of the countries**

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Table 7 shows the results from the three MMNL models of the different countries. As can be seen, based on the samples of the three countries, one or more levels of all attributes were found to be significant. This finding suggests that all attributes are important for choosing a coworking space and thus H3 (Accessibility, atmosphere, layout, diversity in spaces, hospitality, events, diversity in tenants and the lease contract are significant attributes when choosing between different coworking space options) is accepted.

Figure 9 shows the utility impacts of all attributes per country, which are computed using the difference between the lowest and highest part-worth utility of the attribute levels. These utilities refer to the importance of each attribute when choosing a coworking space to work at. As can be seen, the accessibility of the location is the most important coworking space attribute for coworkers in the Czech Republic and Germany. For coworkers in the Netherlands, the type of lease contract is more important. When these two main attributes meet one's preferences, layout and diversity of tenants are also important for choosing between alternatives. Events, reception and hospitality, atmosphere and interior aesthetics and diversity of supply spaces were found to be the least important when choosing between alternative coworking spaces.

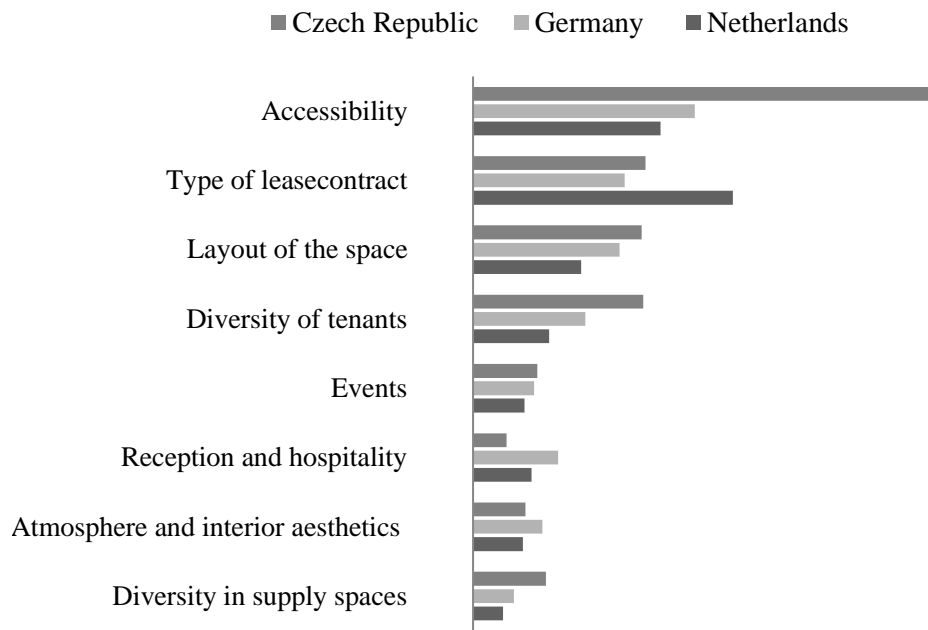


Figure 9: Total utility of attributes per country

Not only the importance of different attributes but also the preferred ‘quality’ level for 3 of the 8 attributes differs between the countries. As 2 of these 3 attributes are at the top of the importance ranking when choosing a specific coworking space, H4 (User preferences for coworking space attributes are consistent across different countries) must be rejected. Concerning accessibility, the MMNL models showed that the part-worth utility of the level accessibility by car and public transport is the highest for the Netherlands and Germany, while in the Czech Republic the probability that coworkers choose a coworking space that is accessible only by public transport is higher. Also, coworkers in the Netherlands and the Czech Republic prefer a homey atmosphere and interior, while coworkers in Germany prefer a more modern interior. An industrial interior is the least preferred by coworkers from the Netherlands and Germany, while a modern interior is the least preferred by coworkers from the Czech Republic. And last, regarding the lease contract, differences were found between the countries as well. Coworkers from the Netherlands and the Czech Republic prefer no lease contract, while coworkers from Germany prefer a short-term lease contract.

No differences were found in preferences related to the other 5 attributes: layout of the space, diversity in supply of spaces, reception and hospitality, events, and diversity of tenants. Coworkers from all the three countries prefer a coworking space with a half-open layout, which consists of open workspaces in combination with spaces for concentration

and for formal meetings. Also, no differences were found with regard to the diversity in supply of spaces. Coworkers from all countries prefer a standard coworking space that offers office space with informal meeting areas and event spaces. Moreover, coworkers from all three countries mostly prefer a reception but no host, only sometimes an event (not too often) and a moderate diversity of tenants.

Table 7: Results MMNL country models

		<i>Netherlands</i> ( <i>N=219</i> )	<i>Germany</i> ( <i>N=98</i> )	<i>Czech Republic</i> ( <i>N=79</i> )
<b>Attributes</b>	<b>Attribute level</b>	<b>Coefficient</b>	<b>Coefficient</b>	<b>Coefficient</b>
<b>Random parameters</b>				
Constant	Constant	1.3388***	1.1891***	-0.3915
Accessibility	By car and public transport	0.5949***	0.5770***	0.9137***
Atmosphere and interior aesthetics	Industrial	-0.1587***	-0.2869**	0.0190
Layout of the space	Open layout	0.0551	0.0424	0.3010**
Diversity in supply spaces	Basic coworking space	-0.0595	-0.1692**	-0.0180
Reception and hospitality	No reception and no host	-0.2109***	-0.3542***	-0.1008
Events	None	-0.1727***	-0.1334*	-0.2315**
Diversity of tenants	No diversity of tenants	-0.3239***	-0.4287***	-0.6606***
Type of lease contract	No contract	0.6638***	0.1683	0.4671***
<b>Non-random parameters</b>				
Accessibility	By car	-0.6118***	-0.8506***	-1.9389***
Reference level	By public transport	0.0169	0.2736	1.0252
Atmosphere and interior aesthetics	Modern	-0.004	0.1590*	-0.1785*
Reference level	Homey	0.1627	0.1279	0.1595
Layout of the space	Half open layout	0.3200***	0.4508***	0.3918***
Reference level	Closed layout	-0.3751	-0.4932	-0.6928
Diversity in supply spaces	Standard coworking space	0.1261**	0.0945	0.2433**
Reference level	Premium coworking space	-0.0666	0.0747	-0.2253
Reception and hospitality	Reception but no host	0.1665***	0.1930**	0.1150
Reference level	Reception and active host	0.0444	0.1612	-0.0142
Events	Sometimes	0.1586***	0.2604***	0.181



Reference level	Often	0.0141	-0.127	0.0505
Diversity of tenants	Moderate diversity of tenants	0.1660***	0.3511***	0.2265
Reference level	Strong diversity of tenants	0.1579	0.1356	0.4341
Type of lease contract	Short term contract	0.3440***	0.4199***	0.1749
Reference level	Long term	-1.0078	-0.5721	-0.642
Parameters		26	26	26
Log Likelihood function (LL( $\beta$ ))		-2122.0810	-993.1682	-733.5122
Restricted Log Likelihood function (LL(0))		-2732.3862	-1222.7116	-985.6553
$\rho^2$		0.223	0.188	0.256
$\rho^2$ adjusted		0.220	0.180	0.247
AIC		4296.2	2038.3	1519.0

Note: The grey coloured cells refer to the highest utility per attribute; \*significant at  $p \leq 0.1$  level, \*\*significant at  $p \leq 0.05$  level, \*\*\* significant at  $p \leq 0.01$  level.

The standard deviations of the random parameters from Table 7 are visible in Table 8. These show that there also still exists unobserved heterogeneity in preferences between coworkers from a specific country for these attributes. High standard deviations imply that even within the country groups, preferences are quite heterogeneous.

Table 8: Standard deviations random parameters

		<i>Netherlands</i> ( <i>N=219</i> )	<i>Germany</i> ( <i>N=98</i> )	<i>Czech Republic</i> ( <i>N=79</i> )
Constant	Constant	3.3089***	2.4871***	1.7316***
Accessibility	By car and public transport	0.3426***	0.2482*	0.1986
Atmosphere and interior aesthetics	Industrial	0.25018**	0.4502***	0.2670
Layout of the space	Open layout	0.26087***	0.5934***	0.3606**
Diversity in supply spaces	Basic coworking space	0.02709	0.1586	0.5850***
Reception and hospitality	No reception and no host	0.46216***	0.20860	0.6168***
Events	None	0.14715	0.0942	0.3119*
Diversity of tenants	No diversity of tenants	0.35329***	0.3492***	0.6179***
Type of lease contract	No contract	0.91284***	0.7799***	1.2669***

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### 3.5 Discussion

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The analyses have shown several significant differences in preferences and motivations of coworking space users in the three countries that were included in this study. However, regarding motivations, the main attractiveness of coworking spaces in all countries appears to be the vibrant atmosphere and separating work from private life. A bit surprisingly, the novelty-focused motivation of a vibrant, creative atmosphere was followed by typical efficiency-focused real estate arguments of affordability and flexibility, instead of other novelty-focused motivations such as being part of a community, networking and interacting. Regarding efficiency, the Dutch seem to care more about flexibility, the Germans about affordability and the professional appearance for the company, and the Czech about the supportive services of a professional supportive work environment. As Cabral and van Winden (2020) showed with a content analysis of coworking operator websites, operators are well aware of these more individual-level benefits that are sought after. The combination of physical space and co-location is claimed by operators to have an activating effect that pushes workers to bring out the best in themselves, while these operators less often claim to actually create a connection with other people with their spaces (Cabral and van Winden, 2020). Nonetheless, the same study showed that they do claim that the community would stimulate individual productivity and growth. These new findings now add that apparently networking and interacting are also a less important motivation to use a coworking space for many users. Both social and work-related interactions and networking are located at the bottom half of the motivation list, only above the professional image gained by using a coworking space. In this sample, the German coworkers did put social interaction with coworkers more often in their top 3 and the Czech coworkers the opportunity to network. As community formation and networking is what distinguishes coworking spaces from other business centres (Weijs-Perrée *et al.*, 2016), the first contribution of this article is that its data raise the question whether the younger, more independent coworking users are really seeking something different than those established companies using regular serviced offices for decades or not.

The second contribution is that the significant differences found in preferences for specific coworking space attributes seem to imply that international chains with uniform coworking space offerings might not satisfy local preferences to the full extent. This suggestion is particularly supported by the fact that especially those attributes coming forward as most important when choosing between different coworking space

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alternatives, showed significant differences in preferences between countries, namely accessibility and the type of lease contract. The main consistency across countries that came forward is that these two generally important (corporate) real estate choice attributes are indeed the most important ones in all three countries, followed by layout and the diversity of tenants in the coworking space. Only when these aspects are to one's liking, the more typical coworking space characteristics (events, host, atmosphere, and diversity of spaces) potentially determine the preference for one alternative over the other. Interestingly, for these more typical coworking space attributes, coworkers from all three countries did show similar preferences (atmosphere excluded). They generally seem to prefer a coworking space with a half-open layout, which consists of open workspaces in combination with spaces for concentration and formal meetings. A standard space that offers such spaces, plus a reception, some informal meeting areas and some event space appears to be preferred over a more premium alternative with a host and many events. Also, the diversity of tenants is appreciated, but only at the 'moderate diversity' level. Apparently, there is also something as too much diversity in tenants. So, regarding the design/service offer it seems that coworking spaces could be uniform across countries, while for accessibility, contracts and the atmosphere/aesthetics it would be wise to follow more local 'habits'. This sample suggests that the Czech Republic coworkers care less about accessibility by car and the German coworkers prefer a more modern work environment than the 'homey' alternative preferred by the other two countries' samples. It could however be, that the higher share of students in the Czech sample caused the first difference and the higher share of users from large enterprise in Germany the second one. The sample size did not allow to control for such interaction effects.

The overall consistent preference for the 'average/standard' quality levels of these typical coworking space attributes might be explained by the fact that this sample often chose 'to find affordable accommodation' as a motivation for using coworking spaces in general. Additional offerings in the higher quality levels could be expected to (and most likely will) be more expensive. Repeating the study with larger samples needs to check whether this is the case for all coworking users or that this sample was specific in that. It does become clear that regarding the top ranked motivation for using coworking spaces - their vibrant and creative atmosphere - the physical support of such an atmosphere (the interior design either being modern, industrial or more like a living room at home) might show different preferences across the countries but is not influencing the choice for a specific coworking space much (see Figure 9). So, international uniformity in design should not

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hurt satisfaction of preferences that much. It is especially the accessibility and the contract, that deserve a local flavour to coworking spaces' offer.

In all three countries the coworking spaces seem to attract young, highly educated users, with a balance between male and female. Coworking spaces do not seem to be a place for full-time work, as the average hours spend there during the week in each country was about 20 hours, which is consistent with other research (Kopplin, 2021). This sample showed an evident attractiveness to students in the Czech Republic and less so in the Netherlands and Germany, although this could be due to the sampling in the three countries. The trend of more corporates allowing their employees to work in coworking spaces, seems most visible in the German sample, while self-employed workers dominate the Dutch sample. This might be caused by the limitation of this research that the Dutch sample was gathered first (2016) and the German sample later (2018), although the Czech Republic sample which was gathered last (2019) does not show increased corporate use like in Germany. Another explanation could be, that in the Netherlands several large corporates are opening up the ground floor of their own offices for independent workers to create a coworking community, instead of sending their workers to existing coworking spaces.

Overall, the main contribution of this paper is that its findings imply that coworking space user preferences are not that different from those using other office types as assumed, with accessibility and contract being the most important attributes to choose between coworking spaces. It seems that they go through similar decision-making processes.

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### **3.5.1 Limitations and recommendations for future research**

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This study did not aim to draw representative samples from coworking spaces in each country and was not able to do so (due to time limits and a limited willingness to participate among coworking providers). Rather, this paper wanted to analyse whether assumptions about internationally consistent user preferences are true, even when looking at a relatively small sample of coworking spaces in only a few countries. Future research should identify significant differences between more countries and based on representative samples, to identify successful coworking space alternatives for more 'local' situations. It would be interesting to look at differences between and within continents, as this paper only contains data from within Europe. Larger samples also allow for using more than 8 attributes, because one could randomly show a selection of attributes to respondents instead of showing all respondents all quality levels of all attributes.

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Additionally, larger samples would allow testing interaction variables in an overall model for all involved countries. Last, large samples would make it possible to do additional analyses in the form of latent class modelling, where groups of respondents with highly similar preferences are identified, and then tested on their individual demographics and other user characteristics to describe more clear target groups for certain coworking space business models.

Future research should also identify why the identified differences exist and whether they are based on nationality, culture or other individual or group characteristics. The standard deviations for the standard utility parameters show that there is still more unobserved heterogeneity within the groups and thus that socio-demographic and other characteristics of individuals need to be included to help explain the choice decisions in more detail. Although some of these were included in this dataset already, the sample size did not allow for testing their prediction of certain preferences.

It would be interesting to include rental prices in future research and do willingness to pay analyses for all attributes, including those that were not that high in the ranking of importance (e.g. a host). This gives providers insights in potential cost savings, that could be invested in more important attributes to attract their target group. In that sense, the clear interest in coworking spaces amongst Czech students suggests to study whether/how students can be an attractive population for coworking operators in other countries, given their limited budget to pay a fee. Besides costs, future research could study the decision-making processes of different types and sizes of companies/entrepreneurs in more detail as well, to provide more insight in sought benefits and compromises that are made in seeking goals.

From a macro-organizational view, Bouncken *et al.* (2020a) argue that institutional patterns in a coworking space like participation, autonomy and sense of community affect work satisfaction. Future studies should link the underlying space attributes with institutional patterns to show how they rely on the spatial attributes. Additionally, they could make further comparisons on combinations of business models, especially as an increased merge of serviced offices and coworking offices is visible in practice and a rise of new types of corporate coworking initiatives in corporate offices.

Finally, the empirical part of this study was conducted before the beginning of the current COVID-19 pandemic. It cannot be ruled out that user preferences in the countries studied

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have changed permanently due to the pandemic. However, this question can only be answered by further empirical analyses after the current situation has ended.

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### **3.6 Conclusion and recommendations for practice**

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This study has shed light on preferences for coworking spaces in different countries. The gathered user preferences can be used as precedents for value propositions of coworking business models that can lead to a higher loyalty of coworking users (Clauss *et al.*, 2019). From a corporate real estate management perspective, the preferences identified can form the basis for sourcing decisions, facilitate location decisions and provide information on which employees feel most comfortable in which form of workplace. For some of the aspects the preferences seem to be consistent and perhaps not that different from preferences for more traditional office types (e.g. a combination of openness and places to concentrate and meet; high importance of accessibility and type of rental contract). Nonetheless, the coworking population is very different from the regular office population, because it is much more diverse. This diversity of users, the variety of facilities and the space design might be additional benefits for corporates through the use of coworking spaces.

Coworking spaces are one of the unique work arrangements that can be used by users all over the world. Large operators are increasingly offering coworking space with a generic standard in their offices worldwide, which however might not serve users from all countries to a similar extent because of the findings here. They provide conformity in standards worldwide for large corporates using these coworking spaces but might not attract local users in all countries this way. Coworking operators can use the identified preferences as guidance on their path from a product-centered to a user-centric environment and help them to find their competitive advantage. Irrespective of country and user type, operators benefit from a good accessibility and can determine the success of their spaces through variable contract periods and a design with half-open layouts. The early, smaller coworking space providers are perhaps still serving a more locally and culturally determined need, which caused the rise of these spaces. The future will tell which users they will continue to attract versus the large global serviced office providers and corporates opening up coworking spaces inside their buildings as well. All will have to meet user preferences in order to compete in this fast-growing, competitive market. The decision to focus on a specific target group can be guided by the results of the study.

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## 4 Article 2: Flexible Office Space als immobilienwirtschaftliche Innovation

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Title: Flexible Office Space als immobilienwirtschaftliche Innovation – Eine konzeptionelle und empirische Analyse<sup>11</sup>  
Flexible office space as real estate economic innovation – conceptual and empirical analysis

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### Abstract

This article examines whether the use of flexible office space meets the (new) requirements of users for space provision and how flexible office space affects real estate investors. We perform theoretical analyses for the user and investor and validate them empirically. The results show that users with requirements for flexibility, innovation, collaboration, and well-being are related with flexible office space. While non-institutional investors consider shared space operators as an important customer group, the operating model is less interesting for institutional investors. The article enables users to assess which requirements correspond with flexible office space. For investors the changing demand of space provision and the operating model are discussed and evaluated.

### Zusammenfassung

Dieser Artikel untersucht, inwieweit Flexible Office Space die (neuen) Anforderungen von Nutzern an Flächenbereitstellung erfüllt und wie sich dieses Betreibermodell auf Immobilieninvestoren auswirkt.<sup>12</sup> Hierzu erfolgen theoretisch-konzeptionelle Analysen der Nutzeranforderungen sowie der Potenziale und Herausforderungen für Investoren. Diese werden durch Befragungsergebnisse von immobilienwirtschaftlichen Entscheidungsträgern mithilfe von Mittelwertvergleichen sowie Korrelations- und Regressionsanalysen empirisch ergänzt. Die Ergebnisse zeigen, dass Nutzer mit Anforderungen an Flexibilität, Innovation, Kollaboration und Zufriedenheit der

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<sup>11</sup> This article is provided with permission from NWB Publishing. The original article will appear in BFuP - Betriebswirtschaftliche Forschung und Praxis in Vol.74, Issue 6/2021.

<sup>12</sup> Die Dissertation nutzt geschlechtergerechte Sprache. An dieser Stelle wird darauf hingewiesen, dass der bereits veröffentlichte Artikel wortwörtlich eingefügt und dementsprechend nicht sprachlich angepasst wurde. Bei der Verwendung von beispielweise Betreiber, Investoren, Dienstleister, etc. werden keine natürlichen Personen, sondern Unternehmen und damit juristische Personen gemeint.

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Mitarbeiter einen Zusammenhang mit Flexible Office Space als Flächenbereitstellungsform sehen. Während nichtinstitutionelle Investoren Flexible Office Space-Betreiber als relevante Kundengruppe einschätzen, scheint das Betreibermodell für institutionelle Investoren weniger von Bedeutung zu sein. Einerseits ermöglichen die Ergebnisse Nutzern eine Einschätzung, welche Anforderungen durch Flexible Office Space als Flächenbereitstellungsform adressiert werden, andererseits geben sie Investoren Hinweise darauf, wie diese auf die veränderten Anforderungen der Nutzer und die damit einhergehende veränderte Flächennachfrage durch neue Arbeitswelten reagieren können.

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#### **4.1 Einleitung**

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In der heutigen Wissensökonomie stellen Mitarbeiter das relevanteste Kapital von Unternehmen dar (Petty and Guthrie, 2000). Technologische, organisatorische und gesellschaftliche Veränderungen führen dazu, dass Individuen zeitlich und flexibel arbeiten können.(Green, 2014; Kojo and Nenonen, 2016). Diese Veränderungen erfordern eine Weiterentwicklung der Flächen, in denen die Arbeit verrichtet wird (Appel-Meulenbroek *et al.*, 2018). Als betriebliche Ressource liefern die Immobilie und deren Management einen immer bedeutsameren Wertbeitrag zum Unternehmenserfolg (Vries *et al.*, 2008; Krupper, 2015; Pfnür, 2019). Somit manifestiert sich ein Wandel dahingehend, dass die Bereitstellung von Fläche an mehr als den reinen Kosten gemessen wird und zunehmend Faktoren wie Mitarbeiterzufriedenheit, Qualität und Services, Kollaboration und soziale Interaktion einfließen (van der Voordt, 2004). Vor dem Hintergrund der Sharing Economy(Botsman and Rogers, 2011) bildet die gemeinsame Nutzung von Flächen, in denen Wissensarbeiter aus verschiedenen Unternehmen und Branchen gemeinschaftlich zusammenarbeiten, einen Trend, der vor allem die Arbeit in Büros verändert. (Baum, 2017). Über diesen Wandel der Arbeitswelt hinaus erfordern wirtschaftliche Veränderungen, ein steigender Wettbewerbsdruck sowie eine zunehmende Dynamik in Unternehmen auch in der Immobilienwirtschaft eine flexible und effiziente Ressourcenbereitstellung (Pfnür and Wagner, 2018). Diese Anforderungen erfüllen traditionelle Flächenbereitstellungsformen in der Regel nicht (Green, 2014), da Investoren langfristige Mietvertragslaufzeiten mit minimalen Ausfallrisiken anstreben und weniger Wert auf Flexibilität, inkludierte Dienstleistungen und skalierbare Flächen legen.

In der Praxis haben sich Shared Spaces, die im allgemeinen Sprachgebrauch auch als Coworking Spaces bezeichnet werden, entwickelt, die sich durch eine zeitlich und

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räumlich flexible Flächenbereitstellung mit einer hohen Serviceorientierung auszeichnen. Shared Spaces werden in Form eines Betreibermodells bereitgestellt. Der Betreiber mietet größere Flächen langfristig an, vermietet einzelne gemanagte Arbeitsplätze an den Nutzer und erbringt damit eine Risiko- und Fristentransformation. Mit einem Betreiber als Intermediär wandelt sich die Art und Weise der gewerblichen Flächenbereitstellung, bei der Dienstleistungen rund um die Fläche vermehrt im Vordergrund stehen. Diese Serviceorientierung ist in anderen Branchen bereits unter dem Schlagwort *as-a-Service* geläufig (Buxmann, Hess, and Lehmann, 2008). Tradierte Investoren werden durch diese neuen Akteure herausgefordert (Green, 2014). Andererseits können Investoren durch die Nachfrage nach flexiblen, kleinteiligen und kurzfristigen Arbeitsplätzen neue Märkte und Kundengruppen erschließen.

Diesbezüglich befindet sich die Forschung noch in den Anfängen. Josef and Back (2019: S.783) stellen fest, dass „trotz der zunehmenden Nachfrage von etablierten Firmen [...] die Perspektive von Unternehmen auf Coworking weder wissenschaftlich untersucht noch als eigenständiger Forschungsstrang identifiziert“ wurde.

Der vorliegende Artikel verfolgt den Zweck, durch eine ganzheitliche Betrachtung die unterschiedlichen Perspektiven auf Shared Spaces zu analysieren. Im Weiteren werden daher folgende Forschungsfragen untersucht:

- Welche Zusammenhänge zeigen Shared Spaces mit Nutzeranforderungen an Flächenbereitstellung?
- Welche Potenziale und Herausforderungen ergeben sich für Immobilieninvestoren aus dem Betreibermodell und welche damit zusammenhängenden Veränderungen liegen vor?

Um die Nutzeranforderungen zu untersuchen, erfolgt eine theoretisch-konzeptionelle Analyse, welche die aus der Literatur dargestellten Anforderungen und Wertbeiträge der Flächenbereitstellung für den Unternehmenserfolg im Hinblick auf Shared Spaces prüft. Die anschließende empirische Analyse untersucht, welche dieser Anforderungen mit der Nutzung von Flexible Office Space im Zusammenhang stehen.

Die theoretisch-konzeptionelle Analyse der Investoren erfolgt über die Darstellung von Potenzialen und Herausforderungen bei der Vermietung an Shared Space-Betreiber. Diese wird um eine empirische Analyse ergänzt, die Erkenntnisse über die Einschätzungen der Investoren zu dem Betreibermodell liefert. Die Analyse stellt außerdem dar, ob Shared Space-Betreiber von Investoren als Kundengruppe oder Wettbewerber wahrgenommen

werden. Vorausgehend erfolgen eine Begriffsbestimmung sowie eine Erläuterung des Betreibermodells.

## 4.2 Shared Space oder Coworking? – Eine Begriffsbestimmung

Shared Spaces entwickelten sich vor über 15 Jahren als Unternehmen ihr Know-how bündelten und begannen, Flächen gemeinsam zu nutzen, um gemeinschaftlichen Mehrwert zu generieren (Assenza, 2015). Shared Spaces sind nicht nur im Bürosegment, sondern auch vermehrt im Wohn- und Produktionssektor anzutreffen (Feth and Gruneberg, 2018). Einen Überblick über die verschiedenen Ausprägungen von Shared Spaces gibt Tabelle 9.

Tabelle 9: Beispiele und Anwendungen von Shared Spaces

Segment	Ausprägung	Beispiel Betreiber	Typisiert von
Büro	Coworking Spaces	Beehive	Capdevila (2013) Kojo and Nenonen (2016)
	Serviced Office/ Business Center	Regus	Weijs-Perrée <i>et al.</i> (2016)
	Hybridmodell	WeWork	Zahrnt (2017) Weijs-Perrée <i>et al.</i> (2016)
Produktion	Makerspaces	CoMakingSpace	Waters-Lynch <i>et al.</i> (2016)
	Fablabs	HappyLab	Bates (2011)
	Hackerspaces	c-base	Schmidt, Brinks, and Brinkhoff (2014)
Wohnen	Serviced Apartments	Pierre & Vacances	Foxley (2001)
	Coliving	rent24	Pechlaner and Innerhofer (2018)

Die größte Aufmerksamkeit in Forschung und Praxis erfahren Shared Spaces im Bürosegment. Sie werden auch als Flexible Office Space bezeichnet. Die einzelnen Ausprägungen von Flexible Office Space sind: Coworking Spaces, Serviced Office/Business Center und Hybridmodelle. Diese werden im Folgenden vorgestellt.

Für den Begriff Coworking, der wörtlich übersetzt *zusammen* oder *gemeinsam arbeiten* bedeutet, existiert eine Vielzahl von Definitionsansätzen. Botsman and Rogers (2011) beschreiben Coworking als eine Vereinigung der besten Eigenschaften aus Café (sozial und kreativ) und Arbeitsplatz (produktiv und funktional) (Botsman and Rogers, 2011). Spinuzzi (2012) definiert Coworking als neue Form der verteilten Arbeit. Etwas weiter geht Pohler (2012), und definiert Coworking als *jeden Arbeitsraum mit flexiblen*

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*Strukturen, der für Menschen mit neuen atypischen Arbeitsformen konzipiert ist und der nicht ausschließlich von Menschen aus einem einzigen Unternehmen genutzt wird.* Pohler (2012) Ihre Definition erfasst die Neuartigkeit der Arbeitsform, in der Menschen verschiedener Berufsgruppen und Unternehmen zusammenarbeiten. Jeder Arbeitsraum kann vom virtuellen bis zum physischen Raum jeden *dritten Arbeitsort* einschließen (Oldenburg, 1999). Rief *et al.* (2014) definieren Coworking als flexibles Arbeiten weitgehend voneinander unabhängiger Wissensarbeiter an einem gemeinsamen, institutionalisierten Ort, an dem ein hierarchiefreies soziales Netzwerk für die Beteiligten vielfältige Kooperationsvorteile ermöglicht. Diese Definition beinhaltet einen institutionalisierten Ort der Leistungserbringung und damit aus immobilienwirtschaftlicher Sicht eine Bereitstellung von Flächen sowie eine soziale Sichtweise auf das Netzwerk und die Kooperationsvorteile.

Serviced Offices und Business Center fokussieren sich hauptsächlich auf die Bereitstellung der Fläche und Büroinfrastruktur (Weijs-Perrée *et al.*, 2016; Zahrnt, 2017). Ihr Geschäftsmodell besteht aus der Vermittlung flexibler, voll ausgestatteter und möblierter Arbeitsplätze in Form von standardisierter Büroeinrichtung und -infrastruktur sowie weiteren zentralen Funktionen wie Empfang und Besprechungsräumen (Weber, 2019b). Eine häufige Ausprägung von Flexible Office Space sind Hybridmodelle, die die Struktur der Business Center mit dem Community-Gedanken der Coworking Spaces vereinen. 2017 machten Business Center in Deutschland mit 63 % noch den größten Marktanteil aus. Bereits ein Jahr später lag dieser bei 44 %, während sich der Marktanteil von Hybrid Spaces auf 43 % fast verdoppelt hatte (Weber, 2019b). Die Zielgruppe von Hybridmodellen sind neben Freiberuflern und Start-ups auch große Unternehmen (Zahrnt, 2017; Weber, 2019b). Gemeinschaft und Kollaboration, unterstützt durch regelmäßige vom Betreiber ausgerichtete Events, spielen eine relevante Rolle.

Die Funktion der Betreiber fehlt in den bisherigen Definitionen. Sie verfolgen neben der Bereitstellung der Fläche das grundlegende Ziel, zusätzliche Dienstleistungen und Atmosphäre zu vermarkten (Cross-Selling-Potenzial). Im Folgenden werden unter dem Begriff Flexible Office Space alle Arten flexibler Büroarbeitsplatzmodelle verstanden. Daher wird Flexible Office Space wie folgt definiert:

*Flexible Office Space ermöglicht flexibles Arbeiten weitgehend voneinander unabhängiger Wissensarbeiter an einem gemeinsamen, institutionalisierten Ort. Die Bereitstellung nutzerfokussierter Dienstleistungen, eines sozialen Umfelds und einer hohen*

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*Arbeitsplatzqualität ermöglichen Zufriedenheits- und Produktivitätssteigerungen und somit Potenziale für den Unternehmenserfolg.*

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### **4.3 Die Flächenbereitstellung von Flexible Office Space als Betreibermodell in der Immobilienwirtschaft**

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Die Bereitstellung von Büroflächen ist ein Sekundärprozess, der das Kerngeschäft von Unternehmen optimal unterstützen soll (Kämpf-Dern and Pfnür, 2009; Pfnür, Seger, and Appel-Meulenbroek, 2019). Der wirtschaftliche Erfolg dieses Sekundärprozesses wird neben einer Kosteneffizienzbetrachtung durch den Einfluss der immobilien Ressourcen auf die Zufriedenheit sowie Arbeitsproduktivität der Mitarbeiter determiniert. Traditionell ist der Nutzer Eigentümer der Büroflächen oder mietet diese direkt vom Investor an. Flexible Office Space hingegen ist ein Betreibermodell. Der Investor vermietet die Fläche an einen Betreiber, der sie wiederum an Nutzer weitervermietet. Während der Investor großflächig und langfristig an den Betreiber vermietet, teilt der Betreiber die Fläche in einzelne Büros und Arbeitsplätze auf und vermietet diese kleinteilig und kurzfristig an Nutzer. Der Investor hat daher keine Vertragsbeziehungen zum Nutzer der Fläche. Die Nutzer gehen mit dem Betreiber nicht zwangsläufig einen Mietvertrag ein, sondern einen Nutzungsvertrag, in der Regel in Form von Mitgliedschaften. Die Laufzeiten können dabei von wenigen Stunden, einigen Monaten (z. B. Nutzung eines Hot Desk im Open Space-Bereich) bis hin zu einigen Jahren für ganze Etagen oder Teambüros reichen.

Immobilienwirtschaftlich lässt sich das Geschäftsmodell Flexible Office Space als Fristentransformation beschreiben, indem die Betreiber langfristige Anmietungen von Flächen vornehmen und flexibel einzeln gemanagte Arbeitsplätze weitervermieten. Hierdurch geht das Mietausfall- und Leerstandsrisiko an den Betreiber über (Risikotransformation), der dem Investor aufgrund langfristiger Mietverträge einen vertraglich fixen Mietzins schuldet. Der Betreiber kann dieses Risiko besser beherrschen, da er die Flächen in flexible Nutzungsoptionen aufteilt und damit individuellere Flächen ermöglicht und näher am Nutzer agiert.

Während bei der traditionellen Bereitstellungsform die reine physische Bereitstellung von Fläche im Fokus steht, steigt im Zuge der Entwicklung hin zu Flexible Office Space die Bedeutung von Dienstleistungen rund um die Fläche (Zahrnt, 2017). Somit erbringt der Betreiber neben der Fristen- und Risikotransformation eine Managementleistung. Der Betreiber WeWork erfasst beispielsweise Belegungsdaten der Arbeitsplätze und

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Meetingräume und optimiert dadurch die Zusammensetzung der Arbeitsflächen (CBInsights, 2018). Er leistet damit einen Beitrag in der Entwicklung innovativer Flächen und von Effizienzsteigerungen der Fläche, was zunehmend von Flächenbereitstellung erwartet wird (Feth and Gruneberg, 2018; Pfnür and Wagner, 2018). Community-Manager sorgen darüber hinaus für die Vernetzung der Mitarbeiter auf der Fläche. Die Kombination aus Managementleistungen, Services und Flächenbereitstellung führt zu einer höheren Spezifität der Flächen, die zu einem Betreiberrisiko führen kann, da der Investor eine höhere Abhängigkeit vom Betreiber hat.

In der Regel besitzen die Betreiber keine Immobilien, sondern treten als Mieter und Dienstleister auf (Ellenfors and Waller, 2018). Als technologiefokussierte Unternehmen entwickeln sie ihr Geschäftsmodell auf Grundlage von Nutzerbedürfnissen. Diese Professionalisierung führt in Verbindung mit der umfangreichen Expansionsstrategie dieser Betreiber zu einer erhöhten Aufmerksamkeit und Einfluss auf dem Büroimmobilienmarkt. Dies zeigt sich in den hohen Vermietungsaktivitäten in diesem Sektor. In einigen Metropolregionen wie London, Paris und Berlin machten diese 2017 mehr als 5 % des Büromarktes aus. Vor allem bei Neuvermietungen bilden Flexible Office Space den größten Anteil (Kiese, Belza, and Seiler, 2018).

Diese Veränderungen der immobilienwirtschaftlichen Flächenbereitstellung werden zunächst für Nutzer und anschließend für Investoren theoretisch-konzeptionell und empirisch herausgearbeitet.

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#### **4.4 Anforderungen der Nutzer an Flexible Office Space**

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Die Büroimmobilie stellt für Nutzer eine Ressource dar, die für das Arbeiten und damit zur Unterstützung des Kerngeschäfts zur Verfügung stehen muss (Zeckhauser and Silverman, 1983). Sie hat einen wesentlichen Einfluss auf die Arbeitsproduktivität und damit auf den Unternehmenserfolg. In der heutigen Wissensarbeit steigt die Bedeutung der Büroimmobilie von einem Ort der reinen Leistungserstellung und Produktivität zu einem sozialen Ort, der weitere Faktoren wie soziale Interaktion, Kreativität und informelle Treffen ermöglicht (Morgan and Anthony, 2008; Waber, Magnolfi, and Lindsay, 2014). Um diese Anforderungen der Nutzer an Flexible Office Space als Flächenbereitstellungsform zu beurteilen, gilt es, herauszuarbeiten, welche Wertbeiträge für den Unternehmenserfolg mit ihr verbunden sind.

#### 4.4.1 Theoretisch-konzeptionelle Analyse

In Unternehmen übernimmt in der Regel das betriebliche Immobilienmanagement bzw. das Corporate Real Estate Management (CREM) die Bereitstellung von Immobilien und Fläche. Auch wenn Selbstständige und kleinere Unternehmen nicht über eine eigene Abteilung verfügen, leistet auch hier die Fläche als strategische Ressource den gleichen Wertbeitrag zum Unternehmenserfolg. Pfnür *et al.* (2019) haben aus der bestehenden CREM-Literatur ein ganzheitliches Modell entwickelt, das Mechanismen aufzeigt, wie die Ressource Immobilie und deren Management einen Wertbeitrag zum Unternehmenserfolg liefern (Pfnür *et al.*, 2019). Diese Mechanismen bilden die Anforderungen der Nutzer an Flächenbereitstellung. Die Bedeutung einzelner Mechanismen und Anforderungen kann abhängig von den Unternehmenszielen und damit Immobilienmanagementstrategien variieren. Um zu analysieren, inwiefern diese Wertbeiträge mit der Nutzung von Flexible Office Space in Zusammenhang stehen, werden in Tabelle 10 alle Mechanismen aus dem entwickelten Modell im Hinblick auf die neue Flächenbereitstellungsform Flexible Office Space beschrieben. Die zweite Spalte stellt dar, ob der Wertbeitrag bei der Nutzung von Flexible Office Space als positiv oder negativ eingeschätzt wird.

Tabelle 10: Theoretisch-konzeptionelle Betrachtung der CREM-Mechanismen und der Wertbeiträge von Flexible Office Space<sup>13</sup>

Von Pfnür <i>et al.</i> (2019) beschriebene Mechanismen		Wertbeitrag bei der Nutzung von Flexible Office Space
Unterstützungsfunktion des Kerngeschäftes	+	Generische Bereitstellungsform für (fast) alle Arten von Wissensarbeit. Einschränkungen für Bereiche mit sensiblen Daten und hohen Anforderungen an Geheimhaltung.
	+	Die Unternehmen können sich auf ihr Kerngeschäft konzentrieren, da neben dem reinen Arbeitsplatz ganzheitliche Services nutzerzentriert bereitgestellt werden (Space-as-a-Service).
Beitrag zur Corporate Identity	-	Gemeinsam genutzte Ressourcen (wie gemeinsamer Empfang, gemeinsame Besprechungsräume, Kaffeebar etc.) erschweren eine eigene Corporate Identity für das Unternehmen.
	-	Manche Betreiber ermöglichen ein begrenztes Corporate Branding des Arbeitsraumes. Generell ist eine Corporate Identity erschwerend

<sup>13</sup> Eigene Darstellung in Anlehnung an (Pfnür, Seger, and Appel-Meulenbroek, 2019).

		möglich, da die Betreiber selbst die Immobilien zum Zweck des Corporate Branding nutzen.
	+	Indirekt können Unternehmen von der Identity des Flexible Office Space-Betreibers profitieren, beispielsweise hat WeWork eine eigene Corporate Identity aufgebaut, die Unternehmen bewusst veranlasst, deren Räumlichkeiten zu nutzen.
Beitrag zur Corporate Social Responsibility (CSR)	+	Flexible Office Space unterstützt den CSR-Gedanken durch eine ressourcenschonendere Nutzung der Arbeitsplätze, u.a. durch Desksharing (Orel and Kubátová, 2019) und eine effizientere Auslastung nach dem Sharing-Prinzip (Kojo and Nenonen, 2016; Beyerle, 2018).
Stärkung des Employer Branding	-	Den Unternehmen stehen die Instrumente einer gezielten Standortwahl, einer eigenen Architektur und eigens gestalteter Bürokonzepte nicht mehr direkt zur Verfügung.
	-	Talente können aufgrund geringerer Barrieren (kein Arbeitsplatz-/Standortwechsel, keine spürbare Unternehmenskultur) und hoher Kontaktmöglichkeiten einfacher abgeworben werden.
	+	Flexible Office Space-Flächen gelten im Wettbewerb um Arbeitskräfte als zeitgemäß und attraktiv.
Schaffung strategischer Flexibilität	+	Flexible Office Space ermöglicht gegenüber langfristigen Bereitstellungsformen wie Eigentum das „Atmen“ bei Bedarfsanpassungen (Gibson and Lizieri, 1999; Byrne, Lizieri, and Worzala, 2002; Dabson and McAllister, 2014). Unternehmen können je nach Bedarf und Marktdynamik ihre Fläche kurzfristig erweitern oder verkleinern.
	-	In Bezug auf die Umgestaltung und Individualisierung von Flächen verliert der Nutzer jedoch Einflussmöglichkeiten.
	+	Flexible Flächenkonzepte und Arbeitsplatzumgebungen dienen als Managementinstrument, um flexibleres Arbeiten in sich ständig verändernden Geschäftsprozessen zu unterstützen (Gibson, 2003).
Wertsteigerung der Immobilien	-	Das Heben von Wertschöpfungspotenzialen der Immobilie ist nicht von Bedeutung, da Flexible Office Space nicht im Eigentum gehalten wird, sondern Nutzer die Arbeitsplätze anmieten.
	+	Zunehmend werden jedoch unter dem Begriff Corporate Coworking Space auch eigene Immobilien als Flexible Office Space bereitgestellt, die auch für Nutzer außerhalb des eigenen Unternehmens zur Verfügung stehen (Josef and Back, 2019);

		(Gauger and Pfnür, 2019). Hierbei kann durch die Bereitstellung von Flexible Office Space eine Wertentwicklung der Immobilie antizipiert werden.
Optimierung der Immobiliennutzungskosten	+	Flexible Office Space bietet das Potenzial, Kernflächen zu verringern, um beispielsweise den Bedarf einzelner Projekte abzudecken (Worthington, 2006). Insbesondere bei einer hohen Marktdynamik müssen keine (leeren) Flächen vorgehalten werden.
	+	Konferenz- und Besprechungsräume können variabel hinzu gebucht und müssen nicht mehr in eigenen Flächen bereitgestellt werden.
	-	Ein Mehrpreis der flexiblen Nutzung kann zu höheren operativen Kosten führen. Ob die Kosten eines Arbeitsplatzes im Flexible Office Space teurer sind als in eigenen Räumlichkeiten bedarf einer individuellen Betrachtung über einen längeren Zeitraum, der die bedarfsgerechte, flexible Nutzung einbezieht.
	+	Die bedarfsgerechte und flexible Bereitstellung von Arbeitsplätzen führt zu einer besseren Ressourceneffizienz, da die Auslastung hoch ist und gemeinsame Ressourcen geteilt werden (Worthington, 2006; Stampfl, 2018).
Einflussnahme durch Eigentümermanagement	+	Flexible Office Space wird nicht im Eigentum von Unternehmen gehalten, sodass Effekte wie Empire Building nicht auftreten können (Pfnür <i>et al.</i> , 2019).
	-	Unternehmen nutzen bereitgestellte Flexible Office Space-Flächen nicht im Eigentum oder als alleinige Mieter. Damit entziehen sie sich dem Managementeinfluss des unternehmenseigenen Immobilienmanagements.
Optimierung der Kapitalstruktur und -kosten	+	Durch die Anmietung von Flexible Office Space kann eine Optimierung der Kapitalstruktur erreicht werden, da die Nutzung kurzfristiger Bürofläche in Bilanzen nach IFRS 16 nicht als Vermögensgegenstand ausgewiesen werden muss (Morris, 2018).
	-	Für Fremdkapitalgeber dienen im Eigentum gehaltene Immobilien als Sicherheit. Falls die Nutzung von Flexible Office Space Eigentumsimmobilien substituiert, kann eine steigende Risikoprämie die Folge sein (Brounen and Eichholtz, 2005).
	+	Die kurzfristigen, monatlich kündbaren Nutzungsverträge von Flexible Office Space anstelle von langlaufenden Mietverträgen oder Kapitalbindung in Eigentumsimmobilien können die Liquidität optimieren (Gibson, 2003; Lasfer, 2005).



Verbesserung der Innovationsfähigkeit, der Kollaboration und Kreativität	+	Unternehmen generieren verstärkt Vorteile, wenn einige ihrer Mitarbeiter in dynamischen, inspirierenden Umgebungen arbeiten (Ellenfors and Waller, 2018). Unternehmen in Flexible Office Space werden als dynamisch und innovativ wahrgenommen.
	+	Neue Ideen entstehen im Zusammenspiel mit der Community und den Nutzern aus verschiedenen Branchen in der gleichen Fläche (Bilandzic and Foth, 2013; Bouncken and Reuschl, 2018).
	+	Eine inspirierende Arbeitsumgebung und innovative Flächen, wie beispielsweise agile Raumkonzepte, verhelfen dem Nutzer zu höherer Kreativität (Gauger and Pfnür, 2019).
Verbesserung der Arbeitsproduktivität	+	Eine Kombination aus Einzel- und Kollaborationsflächen unterstützt produktive Arbeit.
	+	Eine hohe Zufriedenheit in Flexible Office Space wirkt sich positiv auf die Produktivität aus (Haynes, 2007).
Steigerung des Wohlbefindens der Mitarbeiter und der Zufriedenheit mit dem Arbeitsplatz	+	Für Nutzer steigt die Bedeutung der Arbeitsplatzqualität (Pfnür and Wagner, 2018). Das Serviceniveau in Flexible Office Space ist hoch, die Arbeitsplätze gelten als modern auf die aktuelle Wissensarbeit ausgelegt und unterstützen eine kollaborative Arbeitsweise. Hinzu kommen weitere Annehmlichkeiten wie Gratisverpflegung, Feierabendevents, Paketannahme etc.
	-	Allerdings stehen aufgrund der effizienten Flächennutzung in Flexible Office Space häufig kleinere Schreibtische und weniger personalisierte Arbeitsplätze zur Verfügung.
	-	Häufig wird die Arbeitsstättenrichtlinie nicht eingehalten.

Die Analyse zeigt, dass Flexible Office Space als neue Flächenbereitstellungsform eine Vielzahl von Mechanismen und damit Nutzeranforderungen erfüllen kann. Mechanismen wie die Unterstützung des Kerngeschäfts, strategische Flexibilität, Verbesserung der Innovationsfähigkeit, Kollaboration und Kreativität sowie Arbeitsproduktivität scheinen mit der Nutzung von Flexible Office Space in einem positiven Zusammenhang zu stehen. Vor allem da es den Unternehmen an Kapital und Know-how fehlt, um die geforderten Flächen selbst bereitzustellen (Just, Pfnür, and Braun, 2016).

Je nach Charakteristika des Unternehmens und der daraus abgeleiteten Immobilienstrategie sind einzelne Mechanismen mehr oder weniger bedeutsam. Unternehmen mit hohen Anforderungen an Flexibilität sowie innovative und kreative Arbeitsumgebungen bewerten den Nutzen durch Flexible Office Space damit voraussichtlich höher als Unternehmen, die Wert auf ein ausgeprägtes Employer Branding

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– in bestenfalls eigen gehaltenen Immobilien mit Möglichkeiten zur Wertsteigerung –  
legen.

Gleichzeitig stehen die Wertbeiträge bei der Nutzung von Flexible Office Space auch in Wechselwirkung zueinander und beeinflussen sich gegenseitig. Somit hat beispielsweise der positive Aspekt der Mitarbeitergewinnung durch die modernen und inspirierenden Flächen des Flexible Office Space gleichzeitig den Effekt, dass eine Abwerbung von Mitarbeitern aufgrund des Austauschs der Unternehmen untereinander und geringer Barrieren wahrscheinlicher wird.

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#### **4.4.2 Empirische Analyse**

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Die empirische Analyse untersucht zum einen, welche veränderten Nutzeranforderungen in der Immobilienwirtschaft im Allgemeinen vorherrschen (1. Befragung) und zum anderen, welche Mechanismen innerhalb der Immobilienmanagementstrategie von Unternehmen mit dem Wertbeitrag durch die Nutzung von Flexible Office Space in Zusammenhang stehen (2. Befragung).

Für die zweite Befragung wurden die in der theoretisch-konzeptionellen Analyse identifizierten Mechanismen als Einflussfaktoren verwendet und deren Zusammenhänge mit der Nutzung von Flexible Office Space mittels einer Korrelations- und Regressionsanalyse ermittelt. Abbildung 10 zeigt die zu überprüfenden Einflussfaktoren (Mechanismen bzw. Nutzeranforderungen) auf die Zielgröße Nutzung von Flexible Office Space. Mit diesem aufgestellten Wirkungsmodell wird untersucht, welche Mechanismen im Immobilienmanagement im Zusammenhang mit der Nutzung von Flexible Office Space stehen.

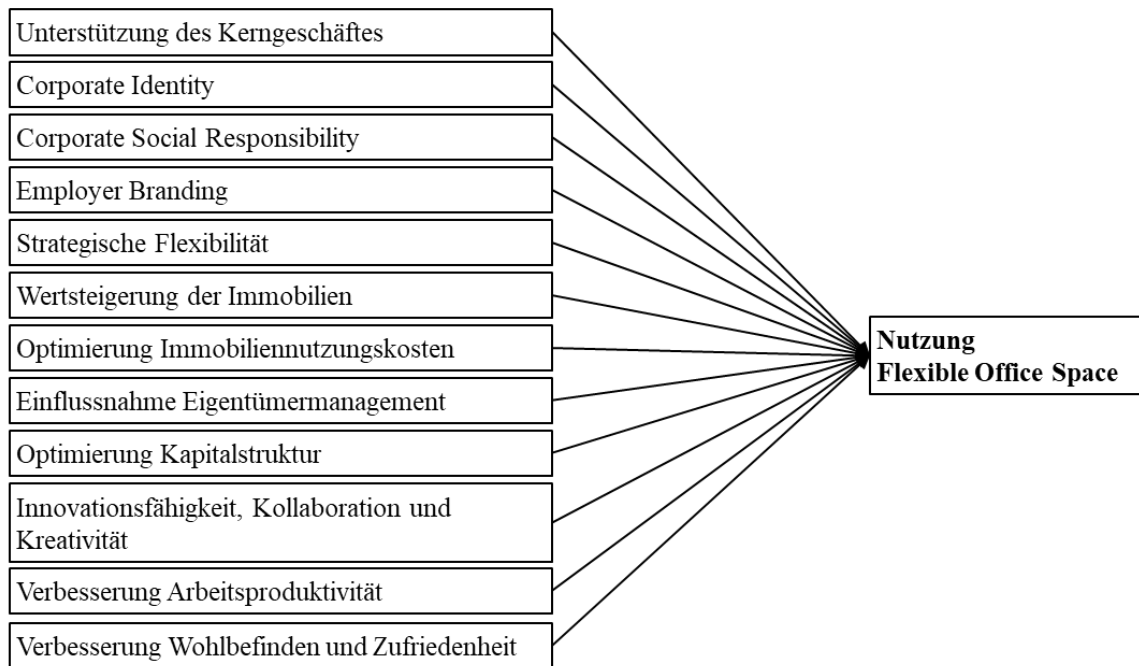


Abbildung 10: Wirkungsmodell des Zusammenhangs zwischen den Mechanismen bzw. Nutzeranforderungen und der Nutzung von Flexible Office Space

#### 4.4.2.1 Datenerhebung und methodisches Vorgehen

Für die empirischen Analysen der Nutzer wurden im Rahmen von zwei Befragungen innerhalb eines Forschungsprogramms zu Veränderungen in der Immobilienwirtschaft und im Immobilienmanagement Entscheidungsträger des CREM deutscher Unternehmen mit mindestens 7.000 Mitarbeitern befragt, da für Flexible Office Space insbesondere die Wahrnehmung großer deutscher Unternehmen als Nutzergruppe von Interesse ist (Josef and Back, 2019). Die Bruttostichprobe betrug für beide Befragungen dieselben 200 angeschriebenen Entscheidungsträger. An der 1. Befragung nahmen 42 Personen teil (Rücklaufquote 21,0 %). In der 2. Befragung betrug die Teilnehmerzahl 59 (Rücklaufquote 29,5 %).<sup>14</sup>

Die 1. Befragung hatte zum Ziel, wesentliche Veränderungsbedarfe immobilienwirtschaftlicher Dienstleistungen und veränderte Nutzeranforderungen aufzudecken. Hierzu wurden die Nutzer auch nach ihren Einschätzungen zu Anforderungen an Flächenbereitstellung und Flexible Office Space befragt. Die gestellten Fragen sind in Abbildung 11 und Abbildung 12 dargestellt.

<sup>14</sup> Maßnahmen zur Vermeidung eines Common-Method und Non-Response Bias wurden nach Podsakoff et al. (2003) getroffen. Ein Non-Response-Bias-Test nach Armstrong and Overton (1977) ergab keine signifikanten Unterschiede.

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Die 2. Befragung vertiefte diese Ergebnisse mit dem Ziel, die Mechanismen und Nutzeranforderungen des betrieblichen Immobilienmanagements darzustellen (vgl. Tabelle 11). Dabei wurden die CREM-Entscheidungsträger auch zur Nutzung von Flexible Office Space befragt. Die Items der 2. Befragung sind im Anhang dargestellt. Die Befragungen erfolgten mithilfe von computerunterstützten Telefoninterviews auf der Grundlage eines strukturierten Fragebogens. Die Entscheidungsträger beantworteten geschlossene Fragen mittels einer sechsstufigen Likert Skala mit 1 = *stimme voll zu* und 6 = *stimme überhaupt nicht zu*.

Die Auswertung der 1. Befragung erfolgte deskriptiv durch einen Top-2-Box-Wert. Dieser beschreibt die Prozentanzahl der Befragungsteilnehmer, die auf der sechsstufigen Likert-Skala mit 1 oder 2 geantwortet haben und damit der jeweiligen geschlossenen Frage zustimmen. Die Auswertung der 2. Befragung verfolgte das Ziel, die Zusammenhänge zwischen den Mechanismen zum Wertbeitrag des Unternehmenserfolges und der Zielgröße Nutzung von Flexible Office Space (NFOS) zu untersuchen. Dazu wurden eine Korrelationsanalyse sowie in einem zweiten Schritt bivariate lineare Regressionsanalysen mit folgendem Regressionsmodell durchgeführt:

$$\text{NFOS}_i = \beta_{0j} + \beta_{1j} * \text{Mechanismus}_{ij} + \varepsilon_{ij} \quad i = 1, \dots, 52; j = 1, \dots, 12$$

Alle Analysen erfolgten mit IBM SPSS Statistics. Die Koeffizienten wurden mithilfe eines t-Tests auf ihre Signifikanz überprüft. Zusätzlich wurden die Variablen mittels des Tests nach Breusch and Pagan (1979) auf Heteroskedastizität überprüft. Bei sieben Beobachtungen führten fehlende Werte zum Ausschluss aus den Analysen. Fokusgruppengesprächen ermöglichten eine kritische Reflektion aller Ergebnisse, um sie in ihrer praktischen Bedeutung einordnen und interpretieren zu können.

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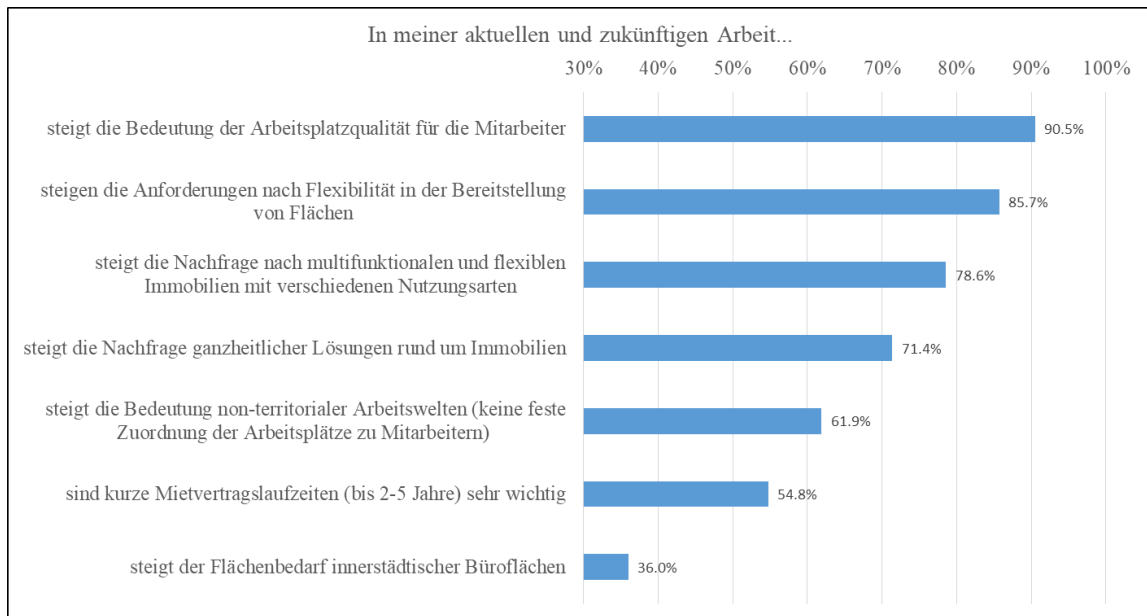
#### 4.4.2.2 Ergebnisse und Interpretation

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Die deskriptive Analyse der 1. Befragung zeigt, dass für die befragten Entscheidungsträger aus dem Immobilienmanagement die Bedeutung der Arbeitsplatzqualität am höchsten ist (90,5 %). Der Steigerung der Flexibilität in der Flächenbereitstellung schreiben 85,7 % eine hohe Bedeutung zu. Hierbei sind multifunktionale und flexibel nutzbare Gebäude (78,6 %), non-territoriale Arbeitswelten (61,9 %), aber auch kürzere Mietvertragslaufzeiten (54,8 %) von hoher Relevanz. Mit 71,4 % ist ein Großteil der Nutzer auf der Suche nach ganzheitlichen Lösungsansätzen rund um ihre Immobilien. Die Interpretation über Fokusgruppengespräche ergab, dass sich diese ganzheitlichen Lösungen auf Dienstleistungen aus einer Hand, aber auch zukünftig vermehrt auf die

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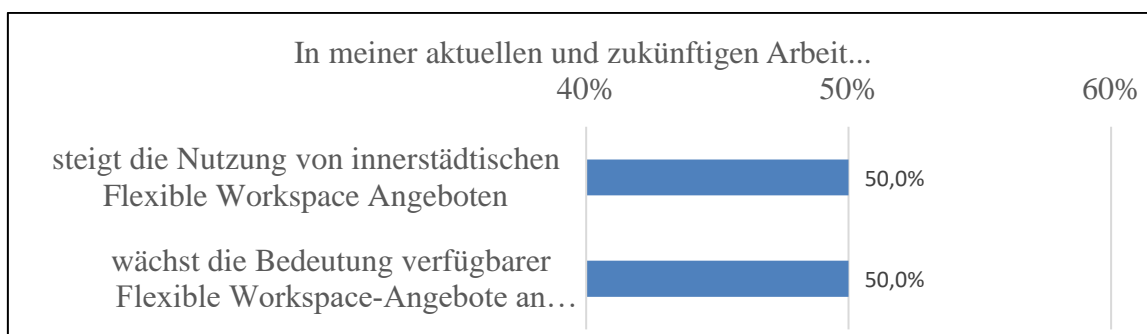
flexible Bereitstellung der genutzten Immobilien beziehen. Die hohe Bedeutung von Flexibilität im Zusammenhang mit multifunktionalen Flächen und ganzheitlichen Lösungen zeigt, dass deutsche Unternehmen auf der Suche nach neuen Arbeitsplatzlösungen und Flächenbereitstellungsformen sind. Gleichzeitig rechnen 36,0 % der Befragten mit einem zunehmenden Flächenbedarf innerstädtischer Büroflächen (Abbildung 11).



Hinweise: Die Prozentzahlen zeigen den Top-2-Box-Wert, der die höchste und zweithöchste Zustimmung zusammenfasst.

Abbildung 11: Nutzereinschätzungen zu Anforderungen an Flächenbereitstellung (n=42)

Darüber hinaus steigt bei 50,0 % der Befragten die Nutzung innerstädtischer Flexible Office Space-Angebote. Lediglich 7,2 % verneinen die Nutzung dieser, wodurch deutlich wird, dass zumindest die allerwenigsten Unternehmen die Nutzung von Flexible Office Spaces generell ausschließen. Auch der Bedeutung verfügbarer Flexible Office Space-Angebote an Verkehrsknotenpunkten, wie bspw. Flughäfen oder Autobahnkreuzen, stimmen 50,0 % der Befragungsteilnehmer zu (vgl. Abbildung 12).



Hinweise: Die Prozentzahlen zeigen den Top-2-Box-Wert, der die höchste und zweithöchste Zustimmung zusammenfasst.

Abbildung 12: Nutzereinschätzungen zu Flexible Office Space (n=42)

Somit rechnet jeder zweite Entscheidungsträger aus dem Immobilienmanagement deutscher (Groß-)Unternehmen mit einer steigenden Bedeutung von Flexible Office Space.

Tabelle 11 stellt die Ergebnisse der 2. Befragung dar, in der die Bedeutung der Mechanismen des Wertbeitrags der Immobilie zum Unternehmenserfolg abgefragt wurde. Die zweite Spalte zeigt mithilfe des Mittelwerts die Bedeutung der jeweiligen Mechanismen. Die dritte bzw. vierte Spalte stellen die Korrelations- bzw. Regressionskoeffizienten der Zusammenhänge zwischen den jeweiligen Mechanismen und der Variable Nutzung von Flexible Office Space dar. Eine Korrelationstabelle der Mechanismus-Variablen untereinander ist im Anhang dargestellt. Streudiagramme der statistisch signifikanten Mechanismen sind ebenfalls im Anhang dargestellt.

Tabelle 11: Empirische Auswertung der Zusammenhänge von Mechanismen bzw. Nutzeranforderungen und der Nutzung von Flexible Office Space

Mechanismus	M (SD)	Korrela- tions- koeffi- zient r	Regressions- koeffizient b	R <sup>2</sup>
Unterstützung des Kerngeschäfts	2,75 (0,711)	0,330**	0,660** (0,267)	0,109
Corporate Identity	2,37 (1,085)	0,086	0,113 (0,185)	0,007
Corporate Social Responsibility (CSR)	2,35 (0,988)	0,055	0,079 (0,203)	0,003
Employer Branding	2,17 (0,965)	0,114	0,168 (0,207)	0,013
Strategische Flexibilität	2,32 (1,224)	0,415**	0,726*** (0,225)	0,172
Wertsteigerung der Immobilien	3,21 (1,377)	0,167	0,173 (0,144)	0,028
Optimierung Immobilienutzungskosten	2,52 (1,163)	0,236**	0,288* (0,168)	0,055
Einflussnahme Eigentünermanagement	2,65 (0,926)	-0,133	-0,204 (0,215)	0,018
Optimierung Kapitalstruktur	3,46 (1,069)	0,321*	0,427** (0,178)	0,103
Innovationsfähigkeit, Kollaboration und Kreativität	3,02 (1,075)	0,370**	0,490*** (0,174)	0,137
Verbesserung	1,94	0,148	0,241	0,022

Arbeitsproduktivität	(0,873)		(0,228)	
Wohlbefinden und Zufriedenheit der Mitarbeiter	1,93 (0,728)	0,233*	0,478* (0,285)	0,054

Hinweise: Die Grundgesamtheit beträgt N = 52. Dargestellt sind die Mittelwerte (M) (Skala: 1 = stimme voll zu, 6 = stimme überhaupt nicht zu), Standardabweichung (SD) der Bedeutung des jeweiligen Mechanismus. Spalte 3 bzw. Spalte 4 stellen Pearson Korrelations- und nicht standardisierte Regressionskoeffizienten (r bzw. b) der einzelnen Mechanismen hinsichtlich des Wertbeitrags zum Unternehmenserfolg mit der abhängigen Variable Nutzung von Flexible Office Space dar. Standardfehler werden in Klammern unter dem Regressionskoeffizienten angegeben. Der Kürze halber sowie aufgrund der bei einfachen Regressionen nicht sinnvollen Interpretation werden die Regressionskonstanten nicht dargestellt. \*, \*\* und \*\*\* bezeichnen Signifikanzen auf dem 10 %-, 5 %- und 1 %-Niveau.

Nach der Einschätzung der Entscheidungsträger haben Wohlbefinden und Zufriedenheit der Mitarbeiter (M=1,93; mit 1 = höchster Zustimmungswert) und Verbesserung der Arbeitsproduktivität (M=1,94) als Mechanismus des Wertbeitrags der Immobilie zum Unternehmenserfolg die höchste Bedeutung. Dem folgen das Employer Branding (M=2,17), die strategische Flexibilität (M=2,32) sowie die Einflussnahme durch das Eigentümermanagement (M=2,65). In Kombination mit den Ergebnissen der 1. Befragung (vgl. Abbildung 11) stehen damit der einzelne Mitarbeiter, die Flächen- und Arbeitsplatzqualität sowie die Flexibilität im Fokus der Flächenbereitstellung bei den CREM-Entscheidungsträgern.

Für sechs der Mechanismen ergibt sich ein statistisch signifikanter Zusammenhang mit der Nutzung von Flexible Office Space. Auf dem 1 %-Signifikanzniveau ist der Zusammenhang zwischen strategischer Flexibilität und Nutzung von Flexible Office Space statistisch signifikant (b = 0,726, p < 0,01). Mit steigender Bedeutung der strategischen Flexibilität steigt für die Befragten auch die Zustimmung zur künftigen Flächenbereitstellung in Flexible Office Space, da Unternehmen benötigte Kapazitäten kurzfristig auf- und abbauen können. CREM-Entscheidungsträger, die die Steigerung der Innovationsfähigkeit, Kreativität und Kollaboration durch die Immobilienstrategie für bedeutsam halten, stimmen einem steigenden Anteil der Flächenbereitstellung durch Flexible Office zu (b = 0,490, p < 0,01). Auch zwischen der Unterstützung des Kerngeschäftes und der flexiblen Bereitstellungsform ergibt sich in der Befragung ein positiver Zusammenhang (b = 0,660, p < 0,05). Durch die betreiberseitige Übernahme des Flächenmanagements können sich Unternehmen auf das eigene Kerngeschäft fokussieren. Die Flexibilität in der Fläche macht sich auch im Zusammenhang mit der Optimierung der Kapitalstruktur bemerkbar (b = 0,427, p < 0,05), wobei hier auch veränderte Bilanzierungsvorschriften einflussgebend sein können. Darüber hinaus signalisieren die Ergebnisse den Zusammenhang zur Optimierung von

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Immobiliennutzungskosten ( $b = 0,288$ ,  $p < 0,10$ ). Die hohe Bedeutung ( $M=1,93$ ) und der Zusammenhang des gesteigerten Wohlbefindens und Zufriedenheit der Mitarbeiter ( $b = 0,478$ ,  $p < 0,10$ ) deuten darauf hin, dass das CREM vermehrt den Mitarbeiter als Individuum in den Mittelpunkt von Entscheidungsprozessen stellt und bei der Nutzung von Flexible Office Space als erfüllt betrachtet. Dieser Aspekt spielt möglicherweise auch im Wettbewerb um Arbeitskräfte eine Rolle.

Ein Zusammenhang zwischen der als bedeutend eingestuften Verbesserung der Arbeitsproduktivität ( $M=1,94$ ) und der Nutzung von Flexible Office Space ergibt sich zumindest anhand dieser Ergebnisse nicht. Auch die empirisch nicht messbaren Zusammenhänge zwischen den Mechanismen Corporate Identity, Corporate Social Responsibility und Employer Branding sowie Wertsteigerung durch Immobilieneigentum und die Einflussnahme durch Eigentümermanagement legen die Interpretation nahe, dass die befragten CREM-Entscheidungsträger diese nicht mit Flexible Office Space verbinden.

Die empirischen Ergebnisse lassen darauf schließen, dass die in der theoretisch-konzeptionellen Analyse dargestellten Wertbeiträge bei der Nutzung von Flexible Office Space im Zusammenhang mit einigen Mechanismen für den Beitrag des Immobilienmanagements zum Unternehmenserfolg stehen. Insbesondere die Nutzeranforderungen nach der aktuell geforderten strategischen Flexibilität, die allgemeine Unterstützung des Kerngeschäfts sowie die Verbesserung der Innovationsfähigkeit, Kollaboration und Kreativität scheinen mit der Nutzung von Flexible Office Space in Zusammenhang zu stehen.

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#### **4.5 Potenziale und Herausforderungen von Flexible Office Space für Immobilieninvestoren**

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Um ganzheitlich darzustellen, wie Flexible Office Space die gewerbliche Flächenbereitstellung verändert, erfolgt auch eine Untersuchung der Potenziale und Herausforderungen für die Immobilieninvestoren. Diese besteht ebenfalls aus einer theoretisch-konzeptionellen Analyse, die um empirische Analysen ergänzt wird. Die theoretisch-konzeptionelle Analyse untersucht, welche Potenziale und Herausforderungen für die Investoren mit dem Betreibermodell einhergehen, wenn sie an Betreiber vermieten. Die empirische Analyse untersucht übergreifend, ob Investoren Flexible Office Space-Betreiber für bedeutsam halten und ob sie die Betreiber als Kundengruppe, Wettbewerber oder Partner in ganzheitlichen Betreibermodellen wahrnehmen. Aus diesen Investoreneinschätzungen lassen sich Rückschlüsse bezüglich



der untersuchten Potenziale und Herausforderungen der theoretisch-konzeptionellen Analyse sowie der Relevanz der neuen Flächenbereitstellungsform schließen.

#### 4.5.1 Theoretisch-konzeptionelle Analyse

Die Potenziale und Herausforderungen von Flexible Office Space lassen sich anhand von Potenzialen und Herausforderungen für Renditen und das Investmentrisiko beschreiben. Die Betrachtung der Rendite erfolgt anhand der Kriterien *laufende Erträge* und *Wertsteigerung einer Immobilie* (Thomas, 1997). Die Kriterien für die Risiken ergeben sich in *Abhängigkeit der Nutzung* sowie nach der Immobilienart als *Betreiberimmobilie* (Sotelo, 2008). Diese bilden die Untersuchungskriterien bei der theoretisch-konzeptionellen Analyse der Investoren (vgl. Tabelle 12).

Tabelle 12: Untersuchungskriterien der Potenziale und Herausforderungen von Flexible Office Space für Investoren

	Rendite		Risiko	
	Laufende Erträge	Wertsteigerung der Immobilie	Nutzung	Betreiberimmobilie
Potenziale	Tabelle 13			
Herausforderungen	Tabelle 14			

Um die Potenziale und Herausforderungen von Flexible Office Space für Investoren zu untersuchen, wird ein systematischer Überblick als Best Practice erstellt. Aufgrund der Neuartigkeit wird auch auf praxisorientierte Managementliteratur referenziert. Die jeweiligen Analysen erfolgen getrennt nach Potenzialen in Tabelle 13 und Herausforderungen in Tabelle 14.

Tabelle 13: Potenziale von Flexible Office Space für Rendite und Risiko der Investoren

	Rendite		Risiken	
	Laufende Erträge	Wertsteigerung	Abhängigkeit der Nutzung	Betreiberimmobilie
<b>Potenziale</b>	<ul style="list-style-type: none"> <li>• Höhere erzielbare Miete aufgrund höherer Zahlungsbereitschaft der Flexible Office Space-Betreiber (French, 2001)</li> </ul>	<ul style="list-style-type: none"> <li>• Steigerung des Verkehrswerts durch lange Mietvertragslaufzeiten (15 bis 20 Jahre), während die durchschnittliche Mietvertragslaufzeit seit</li> </ul>	<ul style="list-style-type: none"> <li>• Diversifikation durch die Vermietung an unterschiedliche Nutzergruppen aus verschiedenen Branchen</li> </ul>	<ul style="list-style-type: none"> <li>• Vermietungsrisiko übernimmt Betreiber</li> <li>• Risiken weiterer delegierter Manage-</li> </ul>

Rendite		Risiken		
Laufende Erträge	Wertsteigerung	Abhängigkeit der Nutzung	Betreiberimmobilie	
<ul style="list-style-type: none"> <li>• Betreiber zahlen in Innenstadtlagen teilweise über der Spitzenmiete (Gauger, Strych, and Pfnür, 2019).</li> <li>• Steigerung der Mieteinnahmen aufgrund hohem/effizientem Nutzungsgrad der Fläche durch flexible Nutzung</li> <li>• Öffnung für größeren Mietermarkt, da Start-ups und Freelancer aufgrund von fehlendem Kapital, einer mangelnden Kreditwürdigkeit und der Notwendigkeit skalierbarer Flächen selten traditionelle Büroflächen mit langen Mietverträgen belegen</li> <li>• Aufgrund großflächiger Anmietungen der Betreiber können die von Banken zur Finanzierung geforderten Vorvermietungsquoten erreicht werden</li> </ul>	<p>den 2000er-Jahren von sieben auf viereinhalb Jahre gesunken ist (Fröba, 2017).</p> <ul style="list-style-type: none"> <li>• Steigerung des Gebäudewerts durch Flexible Office Space-Betreiber in Multi-Tenant-Immobilien: Flexibel nutzbare und innovative Flächen bieten Bestandsmietern Flexibilität am Standort (Ellenfors and Waller, 2018).</li> <li>• Aufwertung und Branding einer Immobilie durch angesagtes Vermietungskonzept (Weber, 2019b).</li> <li>• Vermietung von Flächen in Stadtrandlagen mit einfacher Ausstattung bisher schwierig (eher Coworking anstatt Flexible Office Space) (Hackelberg and Kirsten, 2019).</li> <li>• Steigerung des Bekanntheitsgrads einer Immobilie durch intensive Nutzung, was zu einer Wertsteigerung führt</li> </ul>	(Multi-Tenant-Immobilien), ohne Verwaltungsaufwand & Transaktionskosten	mentaufgaben übernimmt der Betreiber	

Tabelle 14: Herausforderungen von Flexible Office Space für Rendite und Risiko der Investoren

Rendite	Risiken
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	Laufende Erträge	Wertsteigerung	Abhängigkeit der Nutzung	Betreiberimmobilie
Herausforderungen	<ul style="list-style-type: none"> <li>• Gewährung mietfreier Zeiten und höherer Mieterausbaukosten im Gegenzug zu langfristigen Mietvertragslaufzeiten (Brinckmann, 2018).</li> <li>• Starke Verhandlungsposition international großer und erfolgreicher Betreiber (Weber, 2019b).</li> <li>• Höhere Auslastung und Abnutzung des Gebäudes führen zu steigendem Reinigungs- und Wartungsaufwand sowie Instandhaltungskosten (Weber, 2019b).</li> </ul>	<ul style="list-style-type: none"> <li>• Modernisierungsentscheidungen zur Wertsteigerung liegen beim Betreiber</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible Nutzung kann zu einem Auslastungsrisiko für die Flexible Office Space-Betreiber führen (Engerstam and Hungria-Gunnelin, 2019).</li> <li>• Aktuell arbeitet weniger als die Hälfte der Flexible Office Space-Betreiber profitabel (Foertsch, 2018).</li> <li>• Unsicherheit der Nachfrage nach flexiblen Arbeitsplätzen in konjunkturellen Krisen</li> </ul>	<ul style="list-style-type: none"> <li>• Fristentransaktionsgeschäft kann aufgrund der kurzfristigen Nutzungsverträge und geringer Sicherheiten zu einem Ausfallrisiko führen</li> <li>• Bei nicht ausreichender Bonität des Betreibers überträgt sich das Vermietungsrisiko bzw. Auslastungsrisiko auf Investoren (Agarwal <i>et al.</i>, 2011). (Betreiberisiko (O’Roarty, 2001; Väh and Hoberg, 2005))</li> <li>• Die Bonität der Betreiber ist schwierig einzuschätzen: Kerngeschäft besteht aus der Weitervermietung zzgl. Dienstleistungen</li> <li>• Verstärkung des Bonitäts- bzw. Ausfallrisikos, da Betreiber meistens standortgebundene GmbH gründen, sodass Investoren keine globalen Sicherheiten bleiben</li> <li>• Drittverwendungsfähigkeitsrisiko bei starker Ausrichtung auf den Betreiber (Wenzel, Frechen, and Koineke, 1998).</li> <li>• Verlust der Kontrolle über die Immobilie</li> <li>• Verlust der Potenziale des Mietermanagements: kein direkter Austausch mit Nutzergruppen, um zukünftige Anforderungen abzuleiten oder gemeinsam zu erarbeiten</li> </ul>

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Die Analyse zeigt, dass die wesentlichen Potenziale im Abschluss langfristiger Mietverträge zu einem hohen Mietzins sowie in der Vermarktung neuer Multi-Tenant-Gebäude liegen. Diese bieten eine Risikodiversifikation, da die Büroflächen von unterschiedlichen Nutzergruppen genutzt werden. Darüber hinaus lassen sich Managementaufgaben outsourcen und veränderte Nutzeranforderungen an Flexibilität im Gebäude und in Mietvertragslaufzeiten abbilden. Gleichzeitig ist der höhere Mietzins, den der Investor vom Betreiber erhält, nicht nur auf dessen Zahlungsbereitschaft zurückzuführen, sondern auch als Entschädigung für das noch nicht einschätzbare Risiko zu verstehen. In der Einschätzung des Risikos bei der Vermietung an Flexible Office Space-Betreiber und dem Verlust des Mietermanagements liegen die wesentlichen Herausforderungen.

Wie drittverwendungsfähig Flexible Office Space-Flächen tatsächlich sind, wird sich erst noch zeigen müssen. Darüber hinaus könnte ein Konkurrenzrisiko entstehen. Indem Betreiber dieselben Nutzer als Mieter ansprechen, können sie zu Wettbewerbern werden. Gleichzeitig zeigen am Markt etablierte Betreiber Bestrebungen, selbst zum Eigentümer der Immobilien zu werden (Brown and Kapner, 2019).

Zusammenfassend liegen die wesentlichen Aspekte für Immobilieninvestoren in der Möglichkeit des Abschlusses langfristiger Mietverträge, der Einschätzung des Risikos bei der Vermietung an Flexible Office Space-Betreiber sowie in der Wahrnehmung der Betreiber als Konkurrenz für das eigene Geschäftsmodell. Ob Investoren eher die Potenziale und damit Flexible Office Space-Betreiber als wichtige Kundengruppe oder ob sie die Betreiber eher als Wettbewerber sehen, soll mithilfe der empirischen Analyse dargestellt werden.

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#### **4.5.2 Empirische Analyse**

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Neue Arbeitswelten, die zu neuen Nutzeranforderungen und einer veränderten Flächennachfrage führen (vgl. 4.1), beeinflussen auch Immobilieninvestoren. Die bisherigen Ergebnisse haben gezeigt, dass in diesem Kontext Flexible Office Space als Betreibermodell von Bedeutung ist.

Grundsätzlich verfügen Investoren über drei Möglichkeiten, Flexible Office Space und damit flexible und innovative Flächenbereitstellungsformen als Reaktion auf veränderte Anforderungen in das eigene Geschäftsmodell zu integrieren (Yang *et al.*, 2019). Sie können ihre Flächen an einen Flexible Office Space-Betreiber vermieten, der als Intermediär die Flächen auf kurzfristiger Basis weitervermietet. Weiterhin besteht die

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Möglichkeit, die Leistungen des Flexible Office Space-Betreibers selbst zu übernehmen. Hierfür wird jedoch das entsprechende Know-how benötigt, über das Investoren nicht zwangsläufig verfügen (Green, 2014). Darüber hinaus verhindern Regulierungen und Steuerpolitik das Auftreten von (institutionellen) Investoren als Gewerbetreibende in der eigenen Fläche und damit als ganzheitliche Betreiber. In der dritten Ausprägung können Investoren mit Betreibern eine Kooperation eingehen, bei der sie Einnahmen aus einer Grundmiete und einem zusätzlichen Umsatzanteil vereinbaren, was eine beidseitige Teilung von Risiken und Erträgen auf Grundlage der Geschäftsentwicklung ermöglicht (CBRE Research, 2018).

Die empirische Analyse untersucht daher, wie deutsche Immobilieninvestoren den Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage sowie die Bedeutung von Flexible Office Space-Betreibern bewerten. Von besonderem Interesse ist, ob die Betreiber von Investoren eher als Kundengruppe oder als Wettbewerber wahrgenommen werden oder ganzheitliche Betreibermodelle von Bedeutung sind.

Speziell für institutionelle Investoren, die bei Immobilieninvestitionen häufig Core-Strategien verfolgen sowie gewissen Sicherheitsrestriktionen unterliegen, ist die Bewertung des Risikos im Zusammenhang mit dem Potenzial, langfristige Mietverträge abzuschließen, entscheidend (Wheaton and Krasikov, 2019). Daher untersucht die empirische Analyse im Besonderen, inwiefern sich die Einschätzungen zu Flexible Office Space zwischen institutionellen und nichtinstitutionellen Investoren unterscheiden.

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#### **4.5.2.1 Datenerhebung und methodisches Vorgehen**

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Für die empirische Analyse der Potenziale und Herausforderungen für Investoren wurden im Rahmen eines Forschungsprogramms zu Veränderungen in der Immobilienwirtschaft und im Immobilienmanagement Entscheidungsträger deutscher Immobilieninvestoren (institutionelle Investoren, Banken, Asset-Manager und Transaktionsberater) befragt. Von den 338 kontaktierten Entscheidungsträgern nahmen 111 an der Befragung teil (Rücklaufquote 32,8 %).<sup>15</sup>

Auch diese Befragung erfolgte durch computerunterstützte Telefoninterviews mittels geschlossener Fragen auf einer sechsstufigen Likert-Skala mit 1 = *stimme voll zu* und 6 = *stimme überhaupt nicht zu* in einem strukturierten Fragebogen. Die Fragen beinhalteten

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<sup>15</sup> Maßnahmen zur Vermeidung eines Common-Method und Non-Response Bias wurden nach Podsakoff *et al.* (2003) getroffen. Ein Non-Response-Bias-Test nach Armstrong and Overton (1977) ergab keine signifikanten Unterschiede.

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Einschätzungen zum Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage (Variable: EinflussNeuerArbeitsweltenAufVeränderteFlächennachfrage) sowie zur Bedeutung von Flexible Office Space-Betreibern. Konkret wurde nach der Bedeutung von Flexible Office Space-Betreibern als wichtige Kundengruppe (Variable: Kunden) bzw. als Wettbewerber (Variable: Wettbewerber) sowie nach der Bedeutung ganzheitlicher Betreibermodelle (Variable: Betreibermodelle) für die Investoren gefragt. Die Fragen sind mit den jeweils entsprechenden Variablen im Anhang dargestellt.

Die deskriptiven Auswertungen erfolgten ebenfalls durch die in Abschnitt 4.4.2.1 bereits beschriebenen Top-2-Box-Werte. Um zu untersuchen, ob sich die Einschätzungen zwischen institutionellen und nichtinstitutionellen Investoren unterscheiden, wurde eine einfaktorielle Varianzanalyse (ANOVA) durchgeführt. Die Voraussetzungen der Unabhängigkeit der Messungen und Intervallskalierung gelten bei Befragungen mit mehrstufigen Likert-Skalen als erfüllt, die der Normalverteilung und der Homoskedastizität wurden überprüft. Die Überprüfung der Varianzhomogenität erfolgte mit dem Levene-Test, gemäß dem die Gleichheit der einfließenden Varianten aller Variablen angenommen werden kann (Jan and Shieh, 2014). Da nur zwei Gruppen vorhanden sind, wurden keine Post-hoc-Tests durchgeführt.

Darüber hinaus wurden zunächst mit einer Korrelationsanalyse die Zusammenhänge zwischen dem Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage, Flexible Office Space-Betreiber als Kundengruppe oder Wettbewerber sowie ganzheitliche Betreibermodelle untersucht. Anschließend wurde in einer Regressionsanalyse die Bedeutung von Flexible Office Space-Betreibern als Kundengruppe bzw. Wettbewerber sowie die Bedeutung von ganzheitlichen Betreibermodellen (unabhängige Variablen) auf die Bedeutung des Einflusses neuer Arbeitswelten auf veränderte Flächennachfrage (abhängige Variable) analysiert. Hierfür ergibt sich folgendes Regressionsmodell:

$$\text{EinflussNeuerArbeitsweltenAufVeränderteFlächennachfrage}_i = \beta_0 + \beta_1 * \text{Kunden}_i + \beta_2 * \text{Wettbewerber}_i + \beta_3 * \text{Betreibermodelle}_i + \varepsilon_i \quad i=1,\dots,69$$

Weitere Tests sowie die Beurteilung der Güte erfolgten analog zu den Analysen der Nutzer. Zur Gewährleistung einer eindeutigen Interpretation der Ergebnisse erfolgte ein Test der Variablen auf Multikollinearität. Weder die Korrelationen der unabhängigen Variablen (< 0,5) noch die VIF-Werte (< 2) deuten auf ein Multikollinearitätsproblem hin. Alle Analysen wurden mit IBM SPSS Statistics durchgeführt. Aufgrund fehlender Werte wurden vier Beobachtungen aus den Analysen ausgeschlossen. Die Ergebnisse

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wurden in Fokusgruppengesprächen kritisch reflektiert, um sie in ihrer praktischen Bedeutung einordnen und interpretieren zu können.

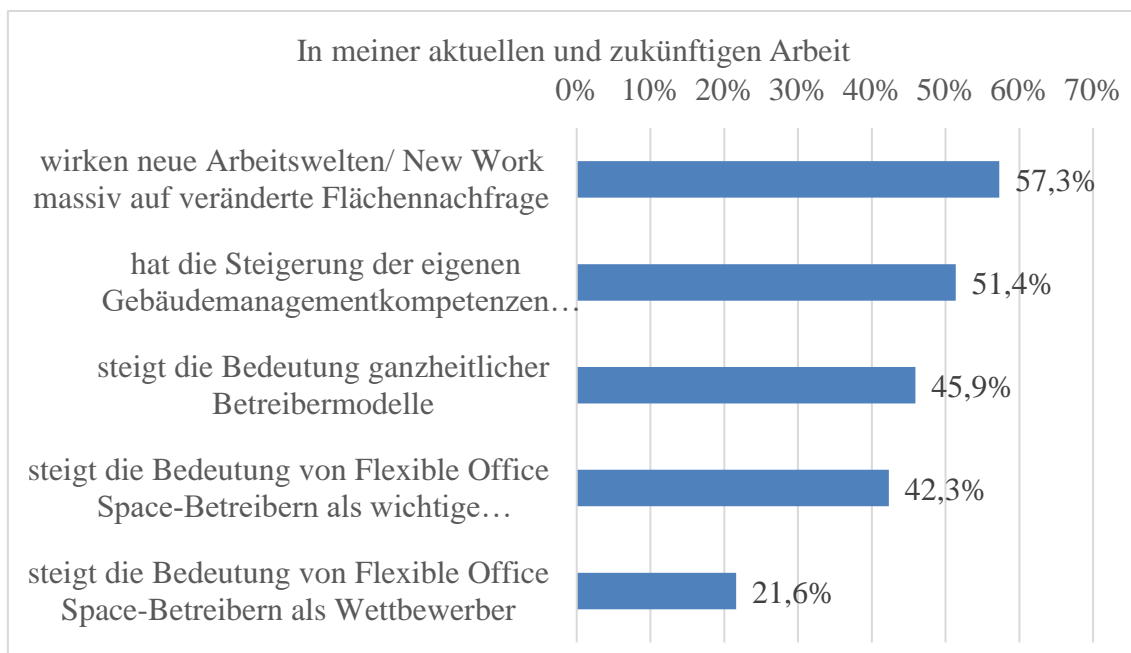
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#### 4.5.2.2 Ergebnisse und Interpretation

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Die deskriptive Auswertung zeigt, dass nach der Einschätzung der Investoren neue Arbeitswelten massiv auf eine Veränderung der Flächennachfrage wirken (57,3 %). Für 51,4 % hat zudem die Steigerung der eigenen Gebäudemanagementkompetenzen eine sehr hohe Bedeutung. 45,9 % schreiben ganzheitlichen Betreibermodellen eine sehr hohe Bedeutung zu (Abbildung 13: Einschätzungen der Investoren zu Veränderungen und Flexible Office Space (n=107)).

In Bezug auf die Möglichkeit, mit Flexible Office Space auf die veränderte Flächennachfrage zu reagieren, zeigt die deskriptive Auswertung, dass bei einer Zustimmung von 42,3 % Flexible Office Space-Betreiber als Kundengruppe von Bedeutung sind. Mit einer Zustimmung von 21,6 % werden die Betreiber von den Investoren weniger als Wettbewerber wahrgenommen (Abbildung 13).



Hinweise: Die Prozentzahlen zeigen den Top-2-Box-Wert, der die höchste und zweithöchste Zustimmung zusammenfasst.

Abbildung 13: Einschätzungen der Investoren zu Veränderungen und Flexible Office Space (n=107)

Ein Gruppenvergleich zwischen institutionellen und nichtinstitutionellen Investoren zeigt Unterschiede in diesen Einschätzungen. Somit bewerteten institutionelle Investoren sowohl den Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage (M=2,79 vs. 2,33) als

auch Flexible Office Space-Betreiber als Kundengruppe (M=3,79 vs. 2,84) sowie die Bedeutung ganzheitlicher Betreibermodelle (M=3,00 vs. 2,58) geringer. Diese Unterschiede im Antwortverhalten sind statistisch signifikant. Die geringere Einschätzung der Bedeutung von Flexible Office Space-Betreibern als Wettbewerber (M=4,08 vs. 3,91) unterscheidet sich hingegen nicht statistisch signifikant, wie die in Tabelle 15 dargestellten Ergebnisse zeigen.

Tabelle 15: Mittelwertvergleiche und Varianzanalyse der Investoreneinschätzungen zu Flexible Office Space

	M		Top-2-Box-Wert		ANOVA (F-Wert)
	(SD)				
	Institu- tionelle	Nichtinstitu- tionelle	Institu- tionelle	Nichtinsti- tionelle	
Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage	2,79 (1,255)	2,33 (1,221)	52,5 %	60,0 %	2,809*
Flexible Office Space- Betreiber als wichtige Kundengruppe	3,79 (1,562)	2,84 (1,568)	22,5 %	54,3 %	9,965** *
Flexible Office Space- Betreiber als Wettbewerber	4,08 (1,440)	3,91 (1,616)	13,2 %	27,5 %	0,279
Bedeutung ganzheitlicher Betreibermodelle	3,00 (1,294)	2,58 (1,181)	38,5 %	51,4 %	2,752*
N	38	69	38	69	

Hinweise: Die Tabelle stellt Mittelwerte (M) (Skala: 1 = stimme voll zu, 6 = stimme überhaupt nicht zu), Standardabweichung (SD), den Top-2-Box-Wert (höchste und zweithöchste Zustimmung) und den F-Wert einer einfachen Varianzanalyse (ANOVA) für institutionelle und nichtinstitutionelle Investoren dar. Standardabweichungen werden in Klammer unter dem Mittelwert angegeben. \*, \*\* und \*\*\* bezeichnen Signifikanzen auf dem 10 %-, 5 %- und 1 %-Niveau.

Zwar bewerten auch institutionelle Investoren den Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage als hoch (52,5 %), jedoch scheinen ganzheitliche Betreibermodelle als weniger bedeutende Lösung für diese Anforderung gesehen zu werden. Insbesondere Flexible Office Space-Betreiber werden weder als wichtige Kundengruppe (22,5 %), noch als Wettbewerber (13,2 %) wahrgenommen (vgl. Tabelle 15). Diese Einschätzungen deuten darauf hin, dass institutionelle Investoren aktuelle Betreibermodelle (noch) nicht für bedeutsam halten.

Tabelle 16 zeigt die Ergebnisse der Korrelations- und Regressionsanalyse hinsichtlich der Bedeutung von Flexible Office Space-Betreibern als Kundengruppe, Wettbewerber sowie



ganzheitlicher Betreibermodelle und des Einflusses neuer Arbeitswelten auf veränderte Flächennachfrage.

Tabelle 16: Korrelations- und Regressionsanalyse der Investoreneinschätzungen hinsichtlich der Bedeutung des Einflusses neuer Arbeitswelten auf veränderte Flächennachfrage

			Institutionelle Investoren		Nichtinstitutionelle Investoren	
			Korrelationskoeffizient r	Regressionskoeffizient b	Korrelationskoeffizient r	Regressionskoeffizient b
Flexible Betreiber Kundengruppe	Office als	Space-wichtige	0,297	0,212 (0,141)	0,499***	0,369*** (0,101)
Flexible Betreiber	Office als Wettbewerber	Space-	0,255	0,172 (0,159)	0,239*	0,023 (0,091)
Bedeutung ganzheitlicher Betreibermodelle			0,145	0,127 (0,170)	0,242*	0,151 (0,119)
Konstante				0,991 (0,695)		0,847** (0,378)
N				38		69
F-Wert				2,481*		10,295***
korrigiertes R <sup>2</sup>				0,113		0,285

Hinweise: Die Tabelle stellt Korrelationskoeffizienten sowie Regressionskoeffizienten der Bedeutung von Flexible Office Space für institutionelle und nichtinstitutionelle Investoren dar. Standardfehler werden in Klammern unter dem Regressionskoeffizienten angegeben. Der Kürze halber sowie aufgrund der bei einfachen Regressionen nicht sinnvollen Interpretation werden die Regressionskonstanten nicht dargestellt. \*, \*\* und \*\*\* bezeichnen Signifikanzen auf dem 10 %, 5 %- und 1 %-Niveau.

Für die institutionellen Investoren zeigt sich empirisch kein statistisch signifikanter Zusammenhang zwischen Flexible Office Space-Betreibern als Kundengruppe ( $r = 0,297$ ,  $b = 0,212$ , n. s.) oder als Wettbewerber ( $r = 0,255$ ,  $b = 0,172$ , n. s.) und Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage. Auch zwischen ganzheitlichen Betreibermodellen und dem Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage liegt kein statistisch signifikanter Zusammenhang vor ( $r = 0,145$ ,  $b = 0,127$ , n. s.).

Hingegen ergibt sich für die nichtinstitutionellen Investoren zwischen Betreibern als wichtige Kundengruppe und der veränderten Flächennachfrage ein signifikant positiver Zusammenhang ( $r = 0,499$ ,  $b = 0,369$ ,  $p < 0,01$ ). Die Zusammenhänge zwischen Flexible Office Space-Betreibern als Wettbewerber ( $r = 0,239$ ,  $b = 0,023$ , n. s.) sowie ganzheitlichen Betreibermodellen ( $r = 0,242$ ,  $b = 0,151$ , n. s.) und dem Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage sind schwächer und innerhalb der Regressionsanalyse statistisch nicht signifikant.

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Die Kombination aus Mittelwertvergleichen (vgl. Tabelle 15) und Korrelations- sowie Regressionsanalyse zeigt eine Bedeutung von Flexible Office Space-Betreibern als wichtige Kundengruppe für nichtinstitutionelle Investoren. Diese setzen möglicherweise im Gegensatz zu den institutionellen Investoren vermehrt auf Flexible Office Space-Betreiber in ihren Immobilien. Die Bedeutung als Wettbewerber wird als gering eingeschätzt. Die empirischen Ergebnisse deuten darauf hin, dass für nichtinstitutionelle Investoren der Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage und Vermietungen an Flexible Office Space-Betreiber in Zusammenhang stehen. Sie scheinen daher die Potenziale einer gesteigerten Rendite durch langfristige Mietvertragslaufzeiten und überdurchschnittliche Mietzinsen zu sehen. Auch die Potenziale des Outsourcings von Managementaufgaben sowie die Bereitstellung flexibler Flächen für Nutzeranforderungen können eine Rolle spielen.

Für institutionelle Investoren haben Flexible Office Space-Betreiber weder als Kundengruppe noch als Wettbewerber eine hohe Bedeutung. Ob die aktuellen Betreiber für sie keine Lösung darstellen oder ob sie aufgrund eines gesehenen Risikos Betreiber eher meiden, lässt sich aus der empirischen Analyse nicht schlussfolgern.

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#### **4.6 Zusammenfassung der Ergebnisse, Limitationen und Forschungsausblick**

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Die neuen Arbeitswelten sowie Flexibilitätsbedürfnisse der gewerblichen Nutzer führen zu veränderten Anforderungen an Flächenbereitstellung. Der Artikel führt Mechanismen hinsichtlich des Wertbeitrages der Immobilie zum Unternehmenserfolg auf und wendet diese auf Flexible Office Space als neue Flächenbereitstellungsform an. Eine gemeinsame Betrachtung der gewonnenen Erkenntnisse liefert Hinweise, welche Nutzeranforderungen mit der Nutzung von Flexible Office Space im Zusammenhang stehen und wie Investoren die Bedeutung von Flexible Office Space-Betreibern bewerten. Die theoretisch-konzeptionelle und empirische Analyse der Nutzeranforderungen ermöglicht die Schlussfolgerung, dass Flexible Office Space eine alternative Flächenbereitstellungsform darstellt. Für die Nutzer haben Arbeitsplatzqualität für den Mitarbeiter sowie Flexibilität in der Flächenbereitstellung die größte Bedeutung. Eine zeitlich und örtlich flexible Anmietung von Flächen ermöglicht eine strategische Flexibilität, um schnell auf sich verändernde Bedarfe zu reagieren. Diese Anforderung kann durch die Nutzung von Flexible Office Space erzielt werden. Darüber hinaus stehen Anforderungen an die Verbesserung der Innovationsfähigkeit, Kollaboration und Kreativität sowie die Steigerung des Wohlbefindens und der Zufriedenheit der Mitarbeiter

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mit der Nutzung von Flexible Office Space in Zusammenhang. Allerdings verbinden die Nutzer Flexible Office Space nicht mit einer Steigerung der Arbeitsproduktivität. Auch Zusammenhänge zwischen Corporate Identity, Corporate Social Responsibility oder einer Stärkung des Employer Branding können empirisch nicht gezeigt werden.

Die theoretisch-konzeptionelle und empirische Analyse der Investoren deutet darauf hin, dass Investoren die Bedeutung ganzheitlicher Betreiberimmobilien erkannt haben. Die Betreibermodelle bieten Investoren langfristige Mietverträge, die Möglichkeit, auf veränderte Nutzeranforderungen zu reagieren sowie eine Risikodiversifikation in der Vermarktung von Multi-Tenant-Gebäuden, da die Büroflächen von unterschiedlichsten Nutzergruppen genutzt werden. Darüber hinaus kann durch Vermietung an Flexible Office Space-Betreiber das Outsourcing von Managementaufgaben erfolgen. Die empirischen Analysen liefern Hinweise, dass Investoren Betreiber eher als wichtige Kundengruppe anstatt als Wettbewerber sehen. Diese Einschätzung ist für nichtinstitutionelle Investoren deutlich stärker ausgeprägt. Institutionelle Investoren scheinen möglicherweise in dem potenziellen Betreiberrisiko eine Unsicherheit zu sehen. Flexible Office Space-Betreiber erbringen durch die langfristige Anmietung von Flächen sowie durch eine entsprechende Umgestaltung und gewinnbringende zeitliche und räumliche Weitervermietung eine Fristen- und Risikotransformation. Darüber hinaus wird ein zusätzlicher Nutzen durch Managementleistungen und Services adressiert. Somit bieten sie als Intermediäre in der Immobilienwirtschaft den gewerblichen Immobiliennutzern räumliche und vor allem zeitliche Flexibilität sowie nutzerorientierte Dienstleistungen, während sie den Investoren langfristige Mietverträge garantieren sowie Outsourcing von Managementaufgaben ermöglichen.

Aus den folgenden Limitationen des Artikels ergibt sich ein weiterer Forschungsbedarf. Die Befragung richtete sich an das Immobilienmanagement großer Unternehmen, wengleich Flexible Office Space ebenso von Selbstständigen, Start-ups und KMU genutzt wird. Gleichzeitig ist die Stichprobe aufgrund der Herausforderungen, die mit der Befragung von führenden Entscheidungsträgern einhergehen, nicht ausreichend groß, um unterschiedliche Merkmalsausprägungen anhand von Subgruppen zu analysieren. Weiterführend könnte in detaillierten Untersuchungen erarbeitet werden, für welche konkreten Unternehmen die Flächenbereitstellungsform Flexible Office Space am geeignetsten ist. Auch ein Vergleich zwischen traditioneller und flexibler Flächenbereitstellung wäre von Interesse, insbesondere um zu untersuchen, inwieweit sich die Bewertung der Mechanismen hinsichtlich der Flächenbereitstellungsform

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unterscheidet. Darüber hinaus kann eine empirische Untersuchung des einzelnen Mitarbeiters im Hinblick auf Wohlbefinden und Zufriedenheit sowie hinsichtlich der Arbeitsproduktivität im Flexible Office Space einen wertvollen Beitrag liefern.

Die empirischen Ergebnisse der Investoren sind aufgrund der geringen Stichprobengröße der institutionellen Investoren limitiert, außerdem enthalten die Subgruppen unterschiedlich große Stichproben. Die theoretisch-konzeptionelle Analyse der Potenziale und Herausforderungen für Investoren liefert Ansatzpunkte für weitere empirische Analysen. Durch qualitative Interviews könnten die Ergebnisse weitere Interpretationen liefern.

Der vorliegende Artikel liefert eine ganzheitliche Betrachtung der unterschiedlichen Perspektiven auf Flexible Office Space. Weitere Forschung sollte die hier gewonnenen Erkenntnisse im Hinblick auf ihre kausalen Zusammenhänge und Einflüsse sowie theoretische Wirkungsmodelle vertiefen.

Ferner existiert weiterer Forschungsbedarf bezüglich der Auswirkungen der Veränderung der Arbeit auf ihre räumliche Umgebung. Dies könnte auch Flächenbereitstellungsformen in anderen Segmenten, wie beispielsweise in der Produktion oder Logistik, im Zusammenspiel mit Mobilitätsdienstleistungen betreffen.

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## 5 Article 3: Corporate Coworking Spaces - Determinants of Work Satisfaction in Future Workspaces

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**Title:** Corporate Coworking Spaces - Determinants of Work Satisfaction in Future

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### Abstract

Corporate coworking environments have gained traction in the latest debate. The aim of this study is to obtain a deeper understanding of the factors that determine work satisfaction in a corporate coworking environment and to illuminate determinants for collaborative and interactive work. Survey data were collected through five corporates using an internal corporate coworking space in Germany (n = 200). The study reveals new insights into the flexible working environment of corporate coworking spaces and identifies factors influencing work satisfaction, which is commonly linked with organizational outcomes. Determinants of work satisfaction are physical environmental factors, communication, concentration, collaboration and social interaction which indicates that informal meeting spaces for collaboration and communication as well as concentration spaces are highly valued. Corporate coworking spaces, therefore, unfold their potential through activity-based working (ABW) configurations and the various types of spaces associated with it. To the best of the authors' knowledge, this is the first study that applies workplace factors on corporate coworking environments. Corporate coworking spaces offer an important complement to home offices and traditional office workplaces, especially in a post-COVID-19-pandemic era, as they allow for real physical encounters and collaboration.

### Zusammenfassung

Corporate coworking environments have gained traction in the latest debate. The aim of this study is to obtain a deeper understanding of the factors that determine work satisfaction in a corporate coworking environment and to illuminate determinants for collaborative and interactive work. Survey data were collected through five corporates

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using an internal corporate coworking space in Germany (n = 200). The study reveals new insights into the flexible working environment of corporate coworking spaces and identifies factors influencing work satisfaction, which is commonly linked with organizational outcomes. Determinants of work satisfaction are physical environmental factors, communication, concentration, collaboration and social interaction which indicates that informal meeting spaces for collaboration and communication as well as concentration spaces are highly valued. Corporate coworking spaces, therefore, unfold their potential through activity-based working (ABW) configurations and the various types of spaces associated with it. To the best of the authors' knowledge, this is the first study that applies workplace factors on corporate coworking environments. Corporate coworking spaces offer an important complement to home offices and traditional office workplaces, especially in a post-COVID-19-pandemic era, as they allow for real physical encounters and collaboration.

**Keywords:** corporate coworking space, workplace, work satisfaction, flexible office space, activity-based working

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## 5.1 Introduction

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The workforce is becoming increasingly dynamic and tasks are becoming more complex, more distributed, and more often performed in collaborative teams with a high degree of social interaction (Paarlberg and Lavigna, 2010; Mitev *et al.*, 2019). Furthermore, COVID-19 has forced people to work remotely in an unprecedented, large-scale work-from-home experiment. This has resulted in a more conscious use of the physical workplace and perception how spatial factors influence work success (Pfnür *et al.*, 2021a). Corporates respond to these social and environmental changes with reconfigured work environments such as corporate coworking spaces.

Coworking spaces have emerged as permanent or temporary spaces for working. Their worldwide diffusion over the last fifteen years, spreading from urban to rural areas has shown that this form of work has been established as a solid working model. Whereas coworking spaces started to focus mostly on independent creative workers, mainly freelancers and self-employed workers, they tend to focus more and more on employees of larger corporates. WeWork, for example, nowadays has a share of roughly one-quarter corporate occupiers (Nagy and Lindsay, 2018; Gauger *et al.*, 2021). The spaces promote flexibility in work and workspaces. Their benefits are manifold, from strengthening communities of practice, meeting people with diverse skills and competencies, building

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ties, creating knowledge spillovers, to working less hierarchically (Spinuzzi, 2012; Bouncken and Reuschl, 2018).

Corporates have started to take advantage of those benefits and create their own internal corporate coworking spaces with these specific characteristics in mind, i.e., high social interaction, creative spaces, and organizational empowerment. They want to benefit from the creative atmosphere, generate social interactions with workers from outside the company, and increase business opportunities. Corporate real estate management (CREM) is thus keen to know, how they can foster collaboration, knowledge-sharing, social interaction, and work satisfaction in these environments. Literature shows that a specific design (Appel-Meulenbroek *et al.*, 2020), comfortable spaces (Mariotti, Di Vita, and Akhavan, 2021), and the configuration of these spaces (Orel and Del Alonso Almeida, 2019) are main factors to optimize knowledge interactions and work satisfaction between users. As Bouncken *et al.* (2020a: 102) state, “the alignment of workspace and social spaces can facilitate organizational empowerment supporting individual work satisfaction”.

Meanwhile, another reason has urged corporates to rethink their traditional office space. COVID-19 is forcing people to work from home and changes the way work is executed beyond the pandemic duration. In this regard, the workplace design perspective is gaining relevance (Armitage and Amar, 2021) and it is becoming apparent that the office has the role to create real physical or temporary interactions, mutual collaboration, and find new ways to create innovation (Nathan and Overman, 2020). If work becomes more distributed and flexible, corporates are forced to reorganize their workspaces, to react to a more flexible work model and a higher space efficiency use (Pfnür *et al.*, 2021a). A recent survey by Microsoft among 31,092 workers states that 67 % of employees want more in-person work or collaboration post-pandemic, and 66 % of managers say their company is considering redesigning office space (DelBene, 2021). New work environments that support high work satisfaction are even more relevant, as employees are reluctant to return from working at home to unsatisfactory offices. After the pandemic, the office needs to serve as a social place with a community that is not found at home.

A significant body of research on workplace factors for traditional working environments (Kim and Dear, 2013; Appel-Meulenbroek *et al.*, 2018) and on office types with shared workspaces (Danielsson and Bodin, 2009; Zamani and Gum, 2019) exists. Various studies prove the relevance of the office environment as an operational resource on work

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satisfaction, performance, and health (Moleski and Lang, 1982; Wells, 2000; Feige *et al.*, 2013; Hoendervanger *et al.*, 2018). Nevertheless, research on corporate coworking spaces impacting work satisfaction is scarce. Bouncken *et al.* (2020b) analyze the physical layout of coworking spaces under a sociomaterial perspective in two qualitative cases. ABW settings, that are found as the underlying office concept in coworking spaces, have been the subject of research. However, the organizational structure of several corporates making use of this office concept requires new scales of research.

This research gap is addressed by showing the underlying determinants that the physical layout causes and evaluating these findings with a quantitative research design. For this, existing research on ABW settings is used and this view is extended with coworking literature to analyze work satisfaction in these new work environments. The following research question is being addressed: Which factors determine work satisfaction in corporate coworking spaces? The setting of a local corporate coworking space in Frankfurt, Germany, is chosen in an empirical study using factor and regression analyses. The results add to the literature of workplace design and environmental research psychology by displaying how factors of the physical environment, communication, collaboration and social interaction, concentration, and individual work requirements are related to work satisfaction. Corporates can use the results to gain knowledge about corporate coworking spaces as a substitute and complement for the traditional office or the home office and to better design these work environments.

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## 5.2 Theoretical Background and Hypotheses Development

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### 5.2.1 Collaborative Coworking Spaces

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Coworking spaces are flexible, shared, physical, and community-oriented workplaces that accommodate a community-based sociocultural ecosystem of exchange, where individuals are “linked together by shared social networks and shared resources” (Lestari, 2020: 70). If corporates are starting to create coworking spaces for their own employees, this is called “corporate coworking spaces” or “corpworking” (Rese, Görmär, and Herbig, 2021). They can either be restricted to employees of the corporate and their clients only, or also be used by other individuals who do not work for the same corporate (Bouncken *et al.*, 2020b).

From a corporate perspective, coworking is interesting for three reasons. First, coworking offers companies spatial flexibility and greater space efficiency while at the same time

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representing an investment in the well-being of employees (Weibel and Sapegina, 2018). Second, coworking can help organizations reflect and transform their current culture of collaboration in a way that is relatively low of friction and resistance, where participants do not see coworking as an imposed measure of change but rather as an invitation to explore (Back, 2018). Nagy and Lindsay (2018) term this purpose as a “Trojan horse, sneaking new ways of working into an otherwise staid organization”. Third, coworking can have a positive effect on the ability to innovate by providing a platform for exchange, learning, and collaboration (Bilandzic and Foth, 2016; Butcher, 2018; Nagy and Lindsay, 2018).

In contrast to the use of coworking spaces of external providers, such as WeWork, a stronger corporate identity, better employer branding, and real estate economic advantages can be utilized in the corporate setting (Wagner *et al.*, 2021). These corporate coworking spaces represent the next evolutionary step of new working environments and are regarded as a future model for many corporates (Bauer, 2017). Gauger and Pfnür (2019) show different adaptation strategies for corporate coworking and differentiate between two development stages. First, corporates can apply the principles of coworking spaces to their own office environment. This includes, for example, the establishment of a community manager to cater to the community, the establishment of collaboration tools and platforms, and innovative room concepts with ABW configurations for creativity and social interaction. Various departments can use these spaces to create a vibrant and diverse atmosphere.

Second, corporates can open their spaces for other external users to integrate new talents, contacts, business opportunities, and external viewpoints and knowledge into the firm. In contrast to using external coworking spaces, this offers the advantage that corporates can specifically control who works in their work environment.

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### **5.2.2 Activity-Based Working and Desksharing Configurations as Basis of Collaborative Coworking Spaces**

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The physical design of the workplace has a specific role in creating interactions and innovation. Companies have evolved their office design from traditional cellular structures to new work environments (Bouncken *et al.*, 2020b). In the 1990s, a new office concept arose under the term “activity-based working”. This office design has a focus on collaboration and increased creativity, knowledge sharing, engagement, and productivity. Different physical spaces provide different functionalities, e.g., concentration spaces,

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formal meeting rooms, and activity areas to suit the different activities. In this context, the areas offered do not have to be attributed to a single type of use but can be visited to perform a plurality of tasks (Appendix A1). Thus, in optimally implemented ABW concepts, employees look for the appropriate space for each activity according to their work tasks and needs (Kim *et al.*, 2016).

Furthermore, a desksharing configuration is typically applied in these new work environments. Desks are not assigned to individuals but can be occupied on an as-needed basis. This desksharing, also called “hot-desking” or “non-territorial working” where employees share a fixed number of workstations, has a high degree of flexibility through the lack of a fixed allocation of desks, without the possibility to personalize the workplace. This specific design is typical of coworking spaces, as interactions are curated in an ambiance that promotes the possibility of collaboration between two or more users (Orel and Del Alonso Almeida, 2019). When desksharing is designed accurately, the layout typically provides more room for interaction and collaboration among employees and contributes to interdisciplinary collaboration because employees are no longer tied to a specific location and have ample opportunities to interact with colleagues (Elsbach, 2003; Kim *et al.*, 2016).

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### **5.2.3 Work Satisfaction in Collaborative Coworking Spaces**

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The term work satisfaction, in contrast to job satisfaction, refers to a larger context of satisfaction at the workplace (Locke, 1976). Thus, work satisfaction is a person-environment “fit” because the interaction between the employee’s values and various aspects of the workplace becomes the focus of consideration (Mottaz, 1985; Armitage and Amar, 2021).

Research notes on the relation between the spatial work environment and work satisfaction (Kim *et al.*, 2016). Jensen and van der Voordt (2016) analyze the influence of the work facility (e.g., the layout of the building, privacy, concentration, communication, indoor climate) on employee satisfaction and refer to higher-rated satisfaction of climate, equipment, and rooms for individual work and meetings in ABW settings compared to work facilities with dedicated desks. The possibility to choose a workplace that fits best with work processes is commonly considered an important element for work satisfaction (Brunia and Hartjes-Gosselink, 2009; Danielsson and Bodin, 2009). Some research addresses employee satisfaction in ABW settings compared to fixed workstations (Appel-Meulenbroek *et al.*, 2015). In shared activity-based workplaces

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Brunia, Been, and van der Voordt (2016) show that employee satisfaction is influenced by many physical characteristics of the work environment. A successful workplace layout can thus have a positive influence on employee productivity and on the added value of the company (Zelenski, Murphy, and Jenkins, 2008; Brunia *et al.*, 2016).

Recently, coworking spaces have been the subject of research and, in particular, the benefits originating from the community, the social aspects, the networks, and the collaboration that form these communities of practice (Waters-Lynch and Potts, 2017; Bouncken *et al.*, 2020a). Nagy and Lindsay (2018) study the social capital in corporate coworking spaces and point out the innovation potential and the importance of the physical design stimulating the former. Serendipity is engineered through flexible furniture, movable walls, and whiteboards that are commonly used.

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#### 5.2.4 Hypotheses Development

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Bouncken and Reuschl (2018) suggest future research regarding communication and collaboration in coworking spaces, to which this study adds by analyzing whether the spatial possibilities for communication are related to work satisfaction. Spatial possibilities for communication are operationalized on the one hand for face-to-face communication by the existence of meeting rooms, their accessibility, and availability, and on the other hand for telecommunications by the possibility of making undisturbed telephone calls. In coworking spaces, the social aspects of work such as “time for interaction, being creative, and having private thinking time if the completion of a given task requires it” are key features (Fuzi, Gryszkiewicz, and Sikora, 2018). Croon *et al.* (2005) state that employees must be offered space to exchange thoughts and ideas. Whereas Krupper (2015) and O'Neill (1994) identify a medium positive influence of communication on work satisfaction in traditional work environments, a focus on communication is regarded as essential in coworking spaces. According to Appel-Meulenbroek, Vries, and Weggeman (2013), communication is directly supported by parameters such as visibility, accessibility, responsiveness, and visual contact. Kim *et al.* (2016) state in their research that interaction between colleagues is better facilitated in non-territorial work. Yang *et al.* (2019) add that possibilities for communication in coworking spaces include zoned areas for different types of work, conference rooms, small individual rooms, and open spaces with physical proximity. Thus, the following hypothesis is formulated:

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**H1:** *The more spatial possibilities for communication are created, the higher the work satisfaction in corporate coworking spaces.*

The concept of open innovation calls for knowledge sharing and social interaction between the company and the external world and refers to the idea that companies do not have all the skills needed for internal innovation. Possible factors for collaboration and social interactions are supportive environments for collaboration, an environment that enables team performance, and spaces for informal interactions. These can be provided, for example, in the form of spaces for social interaction, movement spaces, or kitchenettes. As employees spend more time with informal communication than in formal meetings nowadays, it becomes essential to provide various types of workspaces where serendipitous interactions take place (Cai and Khan, 2010; Davis *et al.*, 2011; Dittes *et al.*, 2019; Zamani and Gum, 2019). Typically, coworking spaces have open social spaces that facilitate social interaction and collaboration through group dynamics and teamwork (Bouncken *et al.*, 2020a). According to the concept of open innovation, the opportunity to rely on external knowledge is one of the main advantages of coworking spaces for firms and their employees. Fuzi (2015) and Gauger and Pfnür (2019) add that the main value of coworking is the possibility of collaboration among each other. Research has analyzed the collaboration that emerges through social- (Merkel, 2015) and work-related (Fuzi, 2015) interactions. Impromptu interactions among workers, social networks, and knowledge-sharing opportunities are important factors in developing creative solutions and a sense of belonging (Kojo and Nenonen, 2015). These interactions can be actively enforced by providing shared amenities for chats, such as café-like open spaces, display areas, and serendipitous encounters through proximity. Thus, opportunities for collaboration and social interaction should be promoted by the work environment and contribute to work satisfaction (Hoendervanger *et al.*, 2018). The combination of workspace and social space in coworking spaces enables, for instance, joint work, knowledge exchanges, and individual work satisfaction (Spinuzzi, 2012; Reuschl and Bouncken, 2017). Thus, it is hypothesized that:

**H2:** *The more possibilities for collaboration and social interaction exist, the higher the work satisfaction in corporate coworking spaces.*

Physical environmental factors, also defined as indoor environmental quality (IEQ) factors, typically comprising temperature/thermal comfort (Danielsson and Bodin, 2009), air quality, and light quality (Frontczak and Wargocki, 2011) are affecting human life inside a building. Early coworking spaces generally had open layouts (Gertner and Mack,

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2017) that are likely to stimulate interaction between workers, but considerably underperform in terms of IEQ comfort, as employees have less possibility to adapt these factors according to their needs. Appel-Meulenbroek *et al.* (2020) have recently analyzed that coworkers prefer half-open layouts in favor of open layouts. This is related to the fact that employees rate IEQ factors higher in half-open layouts where they are more able to adjust those to their needs. IEQ factors are commonly measured. Temperature and the supply of fresh air influence work satisfaction, but they also influence the mental perception of workload and exhaustion (Varjo *et al.*, 2015). Park *et al.* (2019) conducted post-occupancy evaluation on 64 buildings and linked indoor air quality with occupants' health, comfort, and satisfaction. Thus, the following hypothesis is formulated:

***H3: The higher physical environmental factors are rated, the higher the work satisfaction in corporate coworking spaces.***

Coworking spaces serve different work styles. Although high expectations are put on collaboration and social interaction, corporate coworking spaces should support privacy and the spatial possibility to withdraw for concentrated work absent from distractions in quiet work zones. For open-plan offices, research has identified a high need for concentration (Seddigh *et al.*, 2014). It was found that noise and lack of privacy are two main reasons for concentration difficulties (Kaarlela-Tuomaala *et al.*, 2009). Increasing privacy improves the ability of employees to concentrate on tasks and allows tasks to be performed with care (Kaarlela-Tuomaala *et al.*, 2009). Pods and booths in coworking spaces allow for partial acoustic separation and fewer interruptions. Focused work suffers if it is interrupted by unexpected sounds (Yang *et al.*, 2019). Hoendervanger *et al.* (2018: 11) state that “activity settings that are intended to be used for concentration work deserve special attention”. Thus, the following hypothesis is formulated:

***H4: The more spatial possibilities for concentration exist, the higher the work satisfaction in corporate coworking spaces.***

Individual work requirements and equipment need to fit to ensure work satisfaction (Appel-Meulenbroek and Danivska, 2021a). The work equipment here includes not only the available premises, but also their equipment and furniture. In shared workspaces employees might struggle with equipment fit, as resources such as printers and work materials are used jointly. If efficiency cannot be maintained through searching for equipment, materials, and resources, work satisfaction might be lowered. Therefore, all necessary work equipment should always be available to employees. In a post-occupancy study, Gerdenitsch *et al.* (2016) show that the perceived fit between work requirements

and office facilities is increased and distractions decreased. Dittes *et al.* (2019) note that workers seem to be on a continuum in regard to comfort levels with technology, IT, and infrastructure. Therefore, the personal fit of the work requirements with the equipment seems to be of particular importance in corporate coworking spaces. Thus, it is hypothesized that:

**H5:** *The better individual work requirements and equipment fit are, the higher the work satisfaction in corporate coworking spaces.*

Literature shows that older employees report lower satisfaction in new working environments as they might be more sensitive to auditory and visual distractions Pullen (2014). It is thus controlled for, whether younger employees show higher work satisfaction in corporate coworking spaces. Haapakangas *et al.* (2018) find that managers have higher work satisfaction in activity-based offices, thus we control if work satisfaction is related to managerial position. ABW configuration and desksharing are typical office configurations for coworking spaces (Orel and Del Alonso Almeida, 2019). For frequent changes of the workplace higher well-being is reported (Haapakangas *et al.*, 2018). Therefore, the preference to frequently use the same desk (as a measure for desksharing) and the frequency of changing work locations (as a measure for ABW use) are also included as additional control variables in the model. Figure 14 summarizes the hypotheses and presents the research model.

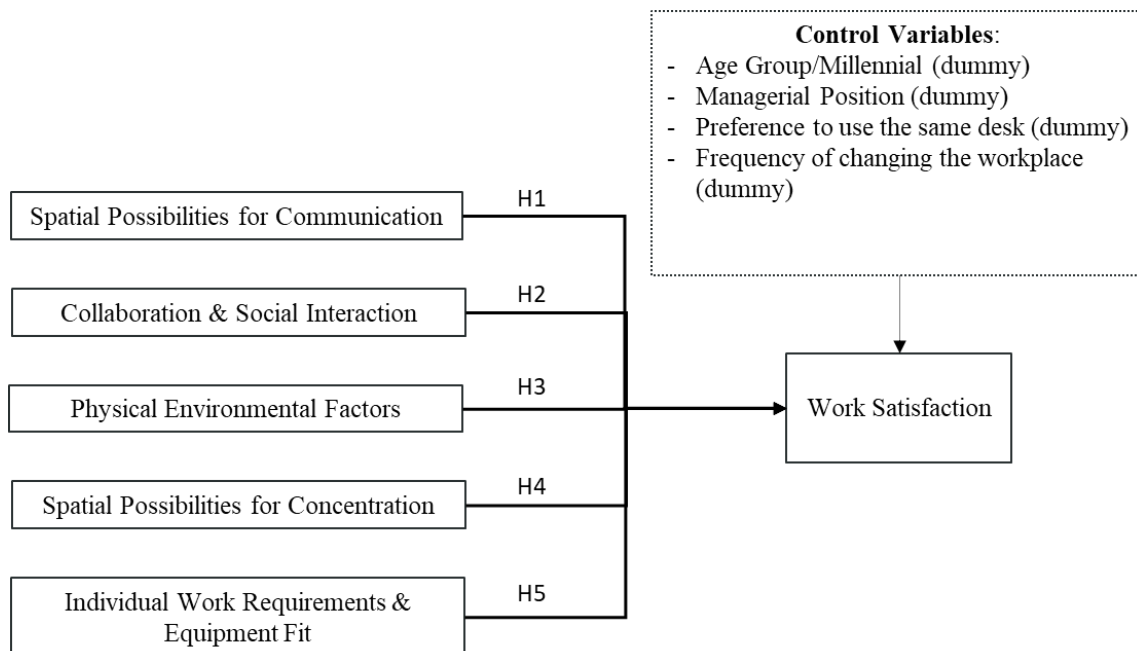


Figure 14: Research model

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## 5.3 Methodology

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### 5.3.1 Data Collection

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The empirical base is a case study of a corporate coworking space in Frankfurt, Germany, where five corporates of an international consulting holding work collaboratively on four floors. They share 4,240 sqm workspace. Users work in the construction industry, consultancy, construction management, environmental research, and engineering. The office contains 27 shared meeting rooms and around 220 individual workstations. The coworking spaces comprise rooms for groups of two to three people as well as rooms suitable for more than ten people. The work environment is an open design with various workstations and transparent materials (e.g., glass doors) are used. At the same time, privacy is ensured by enclosed spaces. Individual workstations are provided as single offices, shared offices, open benches with up to six workstations, and workstations without directly surrounding walls. An exemplary overview of the floor plans is shown in Appendix A. In addition, employees can work in the common break area, or one of the multitudes of meeting and relaxation zones. Apart from the assistance workstations, all employees share the workstations according to desk sharing principles. Employees have lockers and portable storage systems to carry their personal items during the day and lock them after work. At the time of this study, only the employees of the five corporates worked in the coworking space (this is regarded as the first implementation stage of a corporate coworking space, see also Section 5.2.1). In the future, collaboration with start-ups and other corporates in the workplace is being considered.

To evaluate work satisfaction with the new corporate coworking concept, a survey was launched in April 2019 for 14 days and aimed at 459 employees. The survey was designed to be completed in less than 15 minutes. 237 completed questionnaires were received, corresponding to a response rate of 51.63 %. Questionnaires with too short response times were excluded, resulting in 200 usable responses. Work satisfaction was answered by 172 people, resulting in a net response rate of 37.47 %. Harman's single-factor test for common method bias was checked and no indication for such a problem was found. All analyses were performed with IBM SPSS Statistics.

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### 5.3.2 Measures and Data Analysis

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The respondents answered predominantly closed questions, using a five-point Likert scale with 1 = strongly disagree and 5 = strongly agree. Items were derived from existing

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survey instruments as they are pretested and reach a high explanatory value. They were combined from Work Environment Diagnosis Instrument (WODI) and Office 21 questionnaire. WODI is a Dutch questionnaire with the main purpose “to measure employee satisfaction about their work environment” (Maarleveld, Volker, and van der Voordt, 2009: 184). It was established with the rise of new flexible office concepts and the concerns whether these open space offices lead to increased labor productivity. The questionnaire was used to explore and test hypotheses about the best possible fit between people, processes, and place in post-occupancy studies. The Office 21 survey by the Fraunhofer Institute, IAO (Bauer *et al.*, 2018) was designed to specifically investigate communication, concentration, well-being, and creativity at work to promote corporate success factors. The tool was used with 13,000 participants consisting of 45 items on a five-point Likert scale. Relevant items for this research were extracted and extended from these two questionnaires and can be found in Appendix A2.

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### 5.3.3 Variable Construction and Sample Description

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#### *Dependent Variable*

The dependent variable is work satisfaction. It refers to the perception of the office environment, but also to the perception of work and sense of unity (see Appendix A2 for items). Cronbach’s Alpha reaches a value of 0.872 ( $\geq 0.8$ ) (Cortina, 1993).

#### *Independent Variables*

The five factors of the work environment physical environmental factors, communication, concentration, collaboration & social interaction, and work requirements & equipment are identified from the literature and validated with a principal component analysis.

#### *Control Variable*

Dummy variables are used as control variables for the managerial position and age groups<sup>16</sup>. Age groups are divided by year of birth with non-millennials born between 1945–1980 and millennials between 1981–1999. Further on, it is controlled whether employees prefer to use the same desk or have no preference for desk-ownership. The frequency of changing the workplace controls if employees have internalized the activity-based working environment and use the various spatial possibilities to best support their

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<sup>16</sup> For reasons of anonymity, it was not possible to obtain the age more precisely. It was also not possible to collect a gender variable.

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work tasks. Table 17 reports employees' characteristics for the sample. The characteristics of the sample are representative for the five companies' structures.

	<i>N</i>	Percentage
<b>Occupational Position</b>		
1 = Management	28	14.00%
1 = Project Manager	115	57.5%
0 = Assistance	57	28.5%
<b>Generation</b>		
1 = Millennials	112	56.00%
0 = Non-Millennials	88	44.00%
<b>Work Concept (Desk Sharing)</b>		
1 = Prefer to use the same desk	123	64.50%
0 = No preference to use the same desk	71	35.50%
<b>Change of Workplace (ABW)</b>		
0 = Once a day	162	81.00%
1 = More than once a day	38	19.00%

Table 17: Sample Descriptive Statistics

### 5.3.4 Construct Validation

Principal component analysis (PCA) was performed for data reduction and construct validation by transforming several possibly correlated variables into a smaller number of uncorrelated variables (called “principal components”).

Table 18 presents the results of the PCA and shows the items that are included in the analysis. The Kaiser–Meyer–Olkin measure is 0.846 ( $> 0.6$ ),<sup>17</sup> the Bartlett’s test of sphericity ( $\chi^2(351) = 200.460, p \leq 0.001$ ), which indicates that the factor analysis should yield reliable factors. The five components explain 74.25 % of the variance. Furthermore, Cronbachs Alpha (CRA), Composite Reliability (CR), and Average Variance Extracted

<sup>17</sup> Some authors recommend a minimum of 0.5 (Hartas, 2015; Field, 2020), while some recommend a value of at least 0.6 (Tabachnick and Fidell, 2014).

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(AVE) are denoted. According to Fornell and Larcker (1981), the AVE should be higher than 0.5 to ensure a high convergence validity, which is not fully met in every component. Indications for discriminant validity are provided by the results of the factor analysis. The items load on the factor for which they are theoretically intended with only very low cross-loadings. Also, the factor loadings are sufficiently high. Since the square root of the AVE is always greater than the correlation factors between the constructs (see Table 19) discriminant validity is ensured. Thus, it can be guaranteed that the individual constructs do not only differ in content, but also differ statistically clearly from each other (Fornell and Larcker, 1981).

Items	Components				
	1	2	3	4	5
<b>Physical Environmental Factors (Cronbachs Alpha=0.823, CR=0.823, AVE=0.494)</b>					
Indoor climate	<b>0.7493</b>	0.1212	0.1478	0.1491	-0.0211
Lighting	<b>0.7318</b>	0.0372	0.2956	0.1407	-0.0227
Brightness	<b>0.6892</b>	0.0578	0.1982	0.1021	-0.1267
Feel-good atmosphere	<b>0.6741</b>	0.3284	-0.0992	0.1638	0.2521
Appealing space design	<b>0.6656</b>	0.3859	0.1135	0.0913	0.1815
<b>Communication (Cronbachs Alpha=0.852, CR=0.850, AVE=0.496)</b>					
Rooms for ad-hoc meetings	0.0618	<b>0.8530</b>	0.1451	0.0538	0.2249
Ad-hoc meeting room availability	0.2531	<b>0.8208</b>	0.1255	0.0544	-0.0248
Access to ad-hoc meeting rooms	0.1320	<b>0.7900</b>	0.1862	-0.0122	0.1822
Meeting room availability (for scheduled meetings)	0.1711	<b>0.5933</b>	0.1912	0.2686	-0.1477
Possibility for withdrawal for phone calls	0.1576	<b>0.5505</b>	0.2799	0.2309	-0.3323
Overall communication	0.0655	<b>0.5419</b>	0.2574	0.2898	0.1458
<b>Concentration (Cronbachs Alpha=0.795, CR=0.811, AVE=0.390)</b>					
Possibility for concentrated work	0.1113	0.2030	<b>0.7697</b>	0.0967	0.1840
Background noises	-0.0131	0.0517	<b>0.7349</b>	0.1020	0.1458
Quiet workzones	0.1306	0.2130	<b>0.7070</b>	0.1081	0.0813
Distraction of phoning colleagues	0.2858	0.2799	<b>0.6048</b>	0.1345	-0.2614

Visual distraction	0.2668	0.1560	<b>0.5455</b>	0.1290	0.0085
Privacy	0.4052	0.1752	<b>0.4950</b>	-0.0221	0.1906
Spatial conditions for phone calls	0.2644	0.3691	<b>0.4287</b>	0.1929	-0.1897
<b>Collaboration &amp; Social Interaction (Cronbachs Alpha=0.751, CR=0.810, AVE=0.589)</b>					
Team performance	0.1035	0.1410	0.0895	<b>0.8132</b>	0.1798
Collaboration desksharing	0.1316	0.0984	0.1316	<b>0.7850</b>	0.0251
Fast, informal meetings/chats with colleagues	0.1888	0.1289	0.1317	<b>0.6993</b>	0.0278
<b>Work Requirements &amp; Equipment (Spearman-Brown-Coefficient = 0.817, CR=0.460, AVE=0.301)</b>					
Work equipment	-0.0154	0.1342	0.1679	0.2837	<b>0.6359</b>
Room equipment with furniture	0.3645	0.0557	0.2710	0.0178	<b>0.4529</b>

Notes: Extraction method: Principal Component Analysis (PCA). Rotation with a Varimax rotation with Kaiser normalization.  
CR= Composite Reliability, AVE= Average Variance Extracted

Table 18: Principal Component Analysis

Five factors of the work environment are identified from the PCA. The item appealing space design loads on physical factors and noise loads on concentration, as it is closely related to privacy issues. This is in accordance with several studies (Hedge, 1982; Danielsson and Bodin, 2009; Kim and Dear, 2013).

## 5.4 Results

Regarding the descriptives, nearly 65 % of the respondents claim that they prefer to use the same desk every day (see Table 17), which reveals that they have not implemented the hot-desking attitudes into their working behavior and that desk ownership is favored. This can be due to territory and privacy needs, which have been frequently noted in studies (Oldham, Cunnings, and Zhou, 1995; Hoendervanger *et al.*, 2018). Furthermore, efficiency and utilization do not seem yet to be of high relevance as there is no need to search for a free desk every day. Nevertheless, 81 % of the employees change their workspace at least once a day and 19 % at least twice a day, which means that they make use of the activity-based working concept and change their workspace according to their needs and tasks, but prefer to return to the same desk when performing their ordinary tasks. This is in line with other studies (Wohlers and Hertel, 2017; Zamani and Gum, 2019).

Means (M), standard deviation (SD), Pearson correlations (off-diagonal), and square roots of average variance extracted (AVE) (diagonals) are shown in Table 19. All variables are significantly correlated on a 1 % level.

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)
(1) Work Satisfaction	3.933	0.77	<b>0.869</b>					
(2) Physical Environmental Factors	4.098	0.623	0.573*	<b>0.720</b>				
(3) Communication	4.137	0.587	0.571*	0.419*	<b>0.704</b>			
(4) Collaboration & Social Interaction	4.286	0.655	0.358*	0.309*	0.359*	<b>0.767</b>		
(5) Concentration	4.200	0.527	0.532*	0.516*	0.540*	0.350*	<b>0.624</b>	

(6) Individual Work Requirements & Equipment Fit	4.067	0.706	0.363*	0.419*	0.292*	0.359*	0.532*	<b>0.552</b>
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Notes: Likert scale of 1–5 with mean value, standard deviation, and correlation matrix. Variables are calculated from average values of items derived by performing a PCA. Square roots of AVE on the diagonal (highlighted in bold). \* denotes significance at the 1 % level, n=166

Table 19: Descriptives and Correlation Matrix

Regarding work satisfaction, descriptive results indicate a high satisfaction score (M = 3.93; n = 172; SD = 0.77). Most users are satisfied or highly satisfied with their work and workplace (58.6 %; n = 172) while 2.3 % are unsatisfied or highly unsatisfied. Table 20 presents the ordinary least squares regression analysis to test the relation between the derived factors with work satisfaction, starting with the control variables in model 1 and integrating all five factors in the full model, which explains 47.8% (adjusted r<sup>2</sup>=0.478) of variance in work satisfaction.

	Controls	Full model
<b>Independent Variables</b>		
Physical Environmental Factors		0.410*** (0.100)
Communication		0.288*** (0.087)
Concentration		0.229** (0.113)
Collaboration & Social Interaction		0.148* (0.077)
Individual Work Requirements & Equipment Fit		0.070 (0.101)
<b>Control Variables</b>		
Management Position (dummy)	0.155 (0.130)	0.220** (0.099)
Age Group Millennial (dummy)	0.117 (0.130)	0.097 (0.098)

Prefer to use the same desk (dummy)	-0.116 (0.128)	0.009 (0.097)
Change desk once a day (dummy)	-0.161 (0.154)	-0.052 (0.114)
Constant	10.004*** (0.175)	10.072*** (0.499)
Adjusted R <sup>2</sup>	0.012	0.478
N	166	156
F-value	1.518	16.763***

Table 20: Regression Models with Work Satisfaction as Dependent Variable

The control variables managerial position, generation group, preference to use the same desk, and frequency of changing the workplace, are not significant predictors of work satisfaction. It is argued that the ability to freely choose one's desk is associated with a sense of autonomy and control over the workplace (Kim *et al.*, 2016), though it cannot be found to determine work satisfaction in the results. The managerial position becomes statistically significant in the full model, which reveals that a management position is related to higher work satisfaction. The workplace factors, i.e., spatial possibilities for communication (*H1*), collaboration and social interaction (*H2*), physical environmental factors (*H3*), and spatial possibilities for concentration (*H4*) are all significant predictors of work satisfaction. The strongest influence comes from the physical environmental factors. Another important factor is the spatial possibilities for communication, with a significant estimate at the 1 % level. This is in line with Yang *et al.* (2019) who also attribute possibilities for communication to zoned areas for communication, conference rooms, small individual rooms, and open spaces with physical proximity.

Collaboration and social interaction that determines work satisfaction can be achieved through team performance, informal chats, and a collaborative work environment. Spatial possibilities for concentration, measured by background noise, possibilities to concentrate and withdraw, and privacy is related to work satisfaction. In particular, quiet zones and low background noises have to be met, to show high satisfactory values. Individual work requirements and equipment fit do not seem to affect work satisfaction in a coworking environment, since there is no support for *H5*.

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## 5.5 Discussion

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The results reveal that physical environmental factors are most important for work satisfaction.<sup>18</sup> This is in line with previous literature dealing with IEQ and shows that irrespective of whether a traditional workplace, new working environments, or a corporate coworking space is regarded, physical environmental factors explain a large variance in satisfaction (Haapakangas *et al.*, 2018). Kim *et al.* (2016) compare hot-desking with fixed-desk users and revealed that the use of hot-desking rated higher scores for physical environmental factors. The authors demonstrated that occupants used their choice of seat location as a means of adjusting these environmental factors which give them personal control over their IEQ. Hence, these factors can also be used to predict satisfaction in coworking spaces. However, it is precisely these factors that are most difficult to configure for the individual, though with a high effect of control over the workspace (Lee and Brand, 2005).

The factor spatial possibilities for communication emphasizes the presence of a variety of rooms for ad-hoc meetings, telecommunication, and face-to-face communication. Corporate coworking spaces thus unfold their potential through ABW and the various types of spaces associated with it. Literature shows that communication is attributed to social and support rooms in coworking spaces, where spontaneous and face-to-face communication happens (e.g., shared facilities such as coffee machines, printers, etc.) (Bouncken *et al.*, 2020b).

The factor concentration also has a significant effect, which indicates that not only informal meeting spaces but also concentration spaces are highly valued. Open spaces alternated with enclosed rooms dedicated to concentration work provide an appropriate mix for privacy and social interaction in corporate coworking spaces. This is in accordance with extant research (Oseland, 2009; Brunia *et al.*, 2016).

The coefficient of collaboration has the lowest impact on work satisfaction (around one-third of physical environmental factors), although it was thought to be high in a coworking setting. On the one hand, this could be due to the influence of team performance in coworking spaces being overestimated by research. On the other hand, however, this influence could be rated low, as the typical collaboration characteristics, like after-work events, collaboration apps, and a community manager in this corporate

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<sup>18</sup> To compare the height of influence, standardized regression coefficients are regarded: Physical factors  $\beta=0.315$ ; communication  $\beta=0.255$ ; concentration  $\beta=0.162$  and collaboration  $\beta=0.125$

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coworking space are not present (yet). Another argument is that communication was mainly measured with the spatial possibilities for communication and collaboration measured a more social, interactive perspective. Hence, the spatial architecture, the multifold rooms, and workstations to choose from, have a leading role in work satisfaction. It is also possible that the spatial components are good enough to support communication but may not be sufficient to support collaboration and might have to be accompanied by further activities, such as a community manager, more team events, and more active resources to build a community, where also business opportunities for collaboration emerge.

The exemplary floor plan in Appendix A shows the variety of spaces that are provided within the work environment. Especially in a post-COVID-19 pandemic era, demand for communication- and collaboration-enhancing spaces in corporate buildings will increase (Pataki-Bittó and Kapusy, 2021). As soon as corporates realize the importance of the design perspective in working environments a more conscious and effective use of shared office time is feasible. By implementing corporate coworking spaces, employees could compensate for the lack of physical interaction with colleagues that they experience in the home office if they are designed to promote the factors identified as important, such as communication, collaboration, and concentration.

Individual requirements and equipment fit does not show a significant influence on work satisfaction, which might be due to the changing nature of work habits. Employees are used to working mobile and flexibly with a notebook and need less equipment, such as monitors, telephones, or other supporting infrastructure. This is in accordance with Appel-Meulenbroek *et al.* (2015) who find that workers of traditional work settings find higher satisfactory value in storage, desk/chairs, and general facilities, whereas workers of new working environments are more satisfied with rooms, climate, and leisure possibilities. They also find no significance for information and communications technology, and equipment.

Although there are many different space configurations according to the ABW concept, it can be noticed that employees rather rarely change their workplace during the day. As Haapakangas *et al.* (2018) showed that a frequent change of workplace per day increases productivity and well-being and Lee and Brand (2005) note that hot-desking gives personal control to suit one's own preferences, employees should be encouraged to switch more often their workplace. This also implies that large open spaces should be avoided or subdivided into smaller areas, for a low level of acoustics and higher privacy

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requirements. Building on Haapakangas *et al.* (2018) it is found that employees with a managerial position are more satisfied in coworking environments. This could be due to their high needs with the availability and access of (ad-hoc) meeting rooms, and their high need for privacy, but also spontaneous interactions with colleagues, which they both find in these work environments. The results derive no differences between the age groups. This is in line with Costanza *et al.* (2012) who show in their studies about generational differences in work settings that organizational commitment and job satisfaction are only weakly related to the employees' age. However, some authors (Young *et al.*, 2013; Stewart *et al.*, 2017) find age group differences in the relationship between organizational commitment, workplace culture, and satisfaction.

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## 5.6 Practical Contribution

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In general, work satisfaction is found to be high in the corporate coworking space. The high mean results are most likely because of the flexibility, control, and high fit these configuration offers users. When establishing these work environments, the right share of layout for individual work, collaboration, and various amenities has to be met. As Yang *et al.* (2019) note that spatial analysis of zoning and floorplan in coworking spaces is missing, an exemplary floorplan is attached (see Appendix A1). These configurations meet the needs for different types of work, such as concentration tasks, but also stimulate communication. This is in line with the literature, e.g., Danielsson and Bodin (2008) who point out that the more control a person has over the physical workspace (i.e., variety of work environments available, access to meeting rooms, etc.) the higher the job satisfaction is. Through architectural and functional features practitioners should ensure that users can exercise personal control over their workspace. Having personal control and workspaces to choose from might also give control over physical environmental factors, which enhances work satisfaction. As it is not possible to close the door if privacy or concentration is required, as is the case for cell offices, users must be able to change workplaces and move to a booth or small meeting room according to one's personal needs or work tasks. To satisfy these needs, the availability and access of these spaces have to be ensured. Furniture manufacturers have reacted by offering acoustic office furniture like booths and pods to buffer noise and signal the desire for uninterrupted time. If availability and easy access to these spaces for communication and concentration are high, coworking spaces can unfold their potential.

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In the post-pandemic workplace, employees are embracing the flexibility to allocate their time between the corporate office and working from home. Organizations succeed in creating a satisfying complement by enabling collaboration and exchange within their work environment. This advantage of the corporate workplace will influence the overall performance of the organization and retain talent. As collaboration is an important factor for work satisfaction in corporate coworking spaces, possibilities to connect with other users have to be established to face serendipitous encounters. In this case, a schoolyard with profiles of the users was built as a social space to connect and network. Amenities have to be positioned to engineer serendipity and conversations across organizations. To further enhance collaboration, Bouncken *et al.* (2020b) propose to spatially collocate individuals with complementary skills. To make sure of the right use of ABW settings in coworking spaces and increase work satisfaction, managers should enforce strategies for motivating employees to find exactly the workplace that supports their work tasks efficiently. Danielsson and Bodin (2008) note that flexible offices offer many possibilities to raise workplace satisfaction, as the organization itself suits this office type. As such, not only the work environment has to support collaborative working, the corporate itself needs to support collaborative behavior through change management, human resource management, and a strong sense of unity and team spirit.

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## 5.7 Theoretical Contribution

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To the best of the authors' knowledge, there is no study that shows the impact of the physical workspace of corporate coworking spaces on work satisfaction. The elaboration on workplace literature shows that in corporate coworking spaces the right combination of working, social, and support spaces enhances communication and collaboration while allowing at the same time space for concentration and privacy determines high work satisfaction. These findings are relevant to the Person-Environment fit (PE fit) theory (Hoendervanger *et al.*, 2018; Armitage and Amar, 2021). The relevance of environmental psychology in workplace research is demonstrated, as having control over physical environmental factors significantly determines work satisfaction. Bouncken *et al.* (2020b) explain this relation of physical and social value of coworking spaces from a sociomateriality perspective. The high need for social aspects like communication, collaboration and social interaction extends to traditional workplace literature that is limited to environmental factors such as light and noise. Thus, coworking literature has

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to integrate workplace factors, but also social factors which are more common in the field of innovation theory and entrepreneurship research.

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## **5.8 Limitations and Further Research**

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The study has certain limitations which call for further research. Methodologically, more control variables could reveal confounding influences. Also, this research was conducted as a cross-sectional study and no data is available over time, making it more difficult to differentiate between cause and outcome. While focusing on work satisfaction, this can negatively affect cognitive processes, productivity, or task performance. These outcome variables can have mutual interactions and organizations are in the need of balancing all outcomes related to a company's success. Further research could capture the impact of innovation, productivity, social interaction, and knowledge transfer in more detail. Differences in a before-and-after comparison over time can be assessed when corporate coworking spaces are established. For practitioners, it is also of interest which activities will be supported better in the traditional corporate office, coworking space, or the home office leading to a hybrid workplace with a mixture of flexible and dispersed work.

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## **5.9 Conclusion**

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The high share of working from home during COVID-19 has made the role of the physical workplace and the spatial work environment even more conscious. Individuals value communication, creativity, and teamwork through collaboration and the satisfaction that comes with it in interaction with space, time, and other individuals. If in the future, there is a combination of working from home and working in the office (so-called hybrid working), it will be increasingly important for corporates to offer contemporary office environments that provide precisely what the home office cannot replace, work satisfaction through communication possibilities, social interaction, collaboration, and real physical encounters. Corporate coworking spaces represent an evolution of the workspaces, supporting the new collaborative way of work and fulfilling important determinants of work satisfaction.

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## 6 Article 4: Coworking Spaces for Public Administration

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Title: Coworking Spaces for Public Administration<sup>19</sup>  
Authors: Felix Gauger, Technische Universität Darmstadt, Germany  
Andreas Pfnür, Technische Universität Darmstadt, Germany  
Published in: The Flexible Workplace - Coworking and Other Modern Workplace Transformations, Springer

### Abstract

Coworking spaces are an emerging form of work within organizations; however, this work arrangement is rare in public administration. In this chapter, we analyze the potential of coworking spaces for public units (public coworking spaces, henceforth). We show how they can enhance the attractiveness of the public sector and foster collaboration among units and citizens. The chapter analyzes values for public coworking spaces, changes in the work environment, and derives changed user needs. Among the benefits are greater flexibility, reduced commuting time, and user-responsiveness. Public units can adapt their workplace strategy step by step. Starting the transformation within their own office, they can gradually open their workspace for other units. Finally, sharing their offices with other sectors, they can profit from reduced-boundary governance.

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<sup>19</sup> This is an Author Accepted Manuscript version of the following chapter: Gauger, Felix; Pfnür, Andreas, Coworking Spaces for Public Administration, published in The Flexible Workplace - Coworking and Other Modern Workplace Transformations, edited by Orel, Marko, Dvoulety, Ondrej, Ratten, Vanessa, 2021, Human Resource Management Series, Springer, Cham, reproduced with permission of the editors and the authors, under exclusive licence to Springer Nature Switzerland AG 2021. The final authenticated version is available online at: [http://dx.doi.org/10.1007/978-3-030-62167-4\\_3](http://dx.doi.org/10.1007/978-3-030-62167-4_3)

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## 6.1 Public Management and the Transformation of Work

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Coworking spaces are shared working environments that offer both tangible and intangible resources for individuals, freelancers, small and medium sized companies, and also large corporates (Fuzi, 2015; Gauger and Pfnür, 2019). One of their main success factors is collaboration among the workers for whom they provide an institutional setting with the possibility of a flexible work style.

While the private sector makes use of coworking spaces, the question arises as to why this work arrangement has not yet been considered by public administrations. For public management, this form of physical organization of work is still new territory.

A massive transformation process triggered by a social and technological change affects all sectors of the economy. These societal changes and technological advancements affect work and employees' expectations from their employer. Information and communication technologies (ICT) fundamentally change society, economy, politics, and administration (Randma-Liiv and Drechsler, 2017). For public administration, the greatest challenge is the ageing of the workforce and the retention of employees due to low attractiveness of the public sector. Public employers are struggling to find employees with key qualifications and are becoming increasingly creative in the competition for new talent (Perry, Mesch, and Paarlberg, 2006; Oberholz, 2018). A recent study by the International City/County Management Association (2014) states that attracting the next generation of workers is the top management challenge. For more than a quarter of survey respondents, this challenge is more pressing than building community trust, communicating with elected officials, or engaging with department heads (Lawson, 2017).

Furthermore, tasks in public management are also becoming more complex, more distributed, and more often performed in collaborative teams as societal problems become more wicked (Paarlberg and Lavigna, 2010). Social aspects of work are becoming increasingly important such as “time for interaction, being creative and having private thinking time if the completion of a given task requires it” (Fuzi, 2016: 3-2). Boudreau *et al.* (2017: 575) note that there “has been considerable interest in the policy arena in fostering collaborations” in recent years.

Only a few studies have investigated the implementation of coworking spaces in the public sector. Ganapati and Reddick (2018) analyze the sharing economy in the public sector and note that “co-working in large government agencies result in more efficient

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utilization of the government offices and reduces the real estate required for the agencies.” Stewart-Johnson and Cruz (2013) show the case of a federal agency that consolidated their office to achieve cost savings. Houghton, Foth, and Hearn (2018) describe the trial of Australian Government employees to work in coworking spaces and its impact on productivity, staff retention, and work–life balance, and find that the alternative work venue was highly praised and appreciated. Intaratat (2018) outlines the effort of government agencies in Asia to establish coworking spaces or SMART hubs that serve the growing demand in the new knowledge economy and focus on the impact of digitalization of work. The Canadian government recently launched a pilot project where federal employees were given access to coworking spaces as a touchdown point between meetings or as a temporary workspace when they are teleworking. “These sites offer an inclusive community environment that will drive collaboration, innovation and productivity among users” (Public Services and Procurement Canada, 2019).

However, while these studies discuss the advantages and disadvantages of a specific case, literature still lacks public management requirements for new working environments. It is also of interest how the knowledge and experience of coworking spaces can be transferred to public administration. As Negoita (2018) states “public sector organizations still have specific circumstances that differentiate them from private firms.” In fact, research that has addressed whether public administration has specific requirements that hinder it from adopting flexible work environments are scanty in extant literature. In particular, the question is how can coworking spaces encourage a challenging work environment in public administration? To address this research question, this chapter examines how public coworking spaces have to be organized to meet the specific needs of public employees to address the values of the public sector.

The findings reveal that coworking spaces in public administration can be used through a dense network of public agencies in a city. They foster collaboration, innovation, and social interaction. Services like child-care, high accessibility, and a high service level are the specific needs of public employees.

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## **6.2 New Needs and Performance Criteria in (New) Public Management**

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The growing influence of managerial ideas and practices, such as efficiency, effectiveness, and competition, has sparked interest in New Public Management (NPM), which has become the dominant approach in public administration in the 1980s (Bryson, Crosby, and Bloomberg, 2014).

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NPM focuses on output and results rather than sticking to the general rules of procedure. As a response to the challenges of a networked, multi-sector world, a new approach with values beyond efficiency and effectiveness has emerged (Bryson *et al.*, 2014). This emerging approach, commonly referred to as Public Value Management (O'Flynn, 2007) or New Public Governance (NPG), actively engages citizens and emphasizes collaborative problem solving (Bozeman, 2017). Hartley (2005) particularly emphasizes the collaborative innovation of multi-actors across organizations to create public value.

Collaborative arrangements are increasingly implemented at all levels of public organizations to counteract complex problems and overcome the limitations of single organizations (Ansell and Gash, 2007; Mandell and Keast, 2007). Many professional organizations and government agencies, such as the Canadian Privy Council Office, the Australian Public Service Commission (Houghton *et al.*, 2018), the New Zealand State Services Commission, and the South African Department of Public Service and Administration, promote the practice of collaboration (Silvia, 2018). Within the European Union (EU), the European commission and other EU research projects note the relevance of employee-led innovation (Kesselring, Blasy, and Scopetta, 2014).

An emerging body of literature shows the importance of values like innovation (OECD, 2010; Ansell and Torfing, 2014), cooperation (Lindsay *et al.*, 2018), collaboration (Hall and Battaglio, 2018; Steen and Schott, 2018), and co-production (Bovaird, 2007; Voorberg, Bekkers, and Tummers, 2015; Chen *et al.*, 2020). Furthermore, growing expectations to act in a responsive way, interact and co-produce with citizens, and engagement are among the shifts in public work, occasionally termed “adaptive” or “agile” governance (Ganapati and Reddick, 2018). Table 21 gives an overview of the emerging performance criteria in public management in the last decades.

Collaborative working offers opportunities to build and manage relationships based on trust, communication, and commitment. In this context, collaboration is a capability that allows agencies to adapt quickly to a changing environment (Castilho and Quandt, 2017).

User responsiveness enables a fast and agile exchange with citizens and increases the adaptability and visibility of the public sector. Non-territorial work and next-generation workplaces are performance criteria to specifically address the increasing labor shortage in the public sector.



Table 21: Performance criteria in public management (own representation)

1960s	1970s	1980s	1990s	2000s	2010s
Efficiency	efficiency	efficiency	efficiency	efficiency	efficiency
	effectiveness	effectiveness	effectiveness	effectiveness	effectiveness
	productivity	productivity	productivity	productivity	productivity
		competition	competition	competition	competition
		flexibility	flexibility	flexibility	flexibility
			innovation	innovation	innovation
				sustainability	sustainability
				collaborative	collaborative
				governance	governance
				cooperation	cooperation
					engagement
					user responsiveness
					non-territorial work
					next generation workplace

The next-generation workplace in a wider sense includes how the use of new technologies shape the workplace, how strategies are applied to deal with the change, and how the workplace design can be leveraged with regard to engagement, collaboration, and performance. Lawson (2017) identifies six strategic areas for the next-generation workplace.

Table 22: Next-generation workplace strategic areas (Lawson, 2017)

<b>1. Recruiting and hiring</b>	Leveraging social media; mobile recruiting; speed up hiring; enhancement of interviewing practices
<b>2. Benefits</b>	Flexible benefit packages; facilitating a better work–life integration with alternative work methods, including flexible schedules and telecommuting
<b>3. Marketing</b>	Promote the organization and the community



<b>4. Culture and philosophy</b>	Fostering better supervisor/employee relationships; integration of employee feedback; leveraging employee innovation
<b>5. Employee development</b>	Propose leadership development opportunities; help secure career growth opportunities outside of their regular duties
<b>6. Physical environment</b>	Support next-generation workforce with physical space that facilitates social connections and creative collisions; make space where all ideas are shared without fear

These six areas of the next-generation workplace can be seen as a potential road map for agencies to attract and retain employees, and to cope with the structural workplace changes. The physical work environment can be regarded as a necessary enabler for the other strategic areas.

This paradigm shift in public management emphasizes the need for collaboration and innovation across organizations to create public value (Chen *et al.*, 2020). On the other hand, the physical work environment affects work outcomes like satisfaction, productivity, and organizational performance (Ross *et al.*, 2017).

Building on this outline, we assume that these values can be enhanced by the use of coworking environments to handle the challenging work environment.

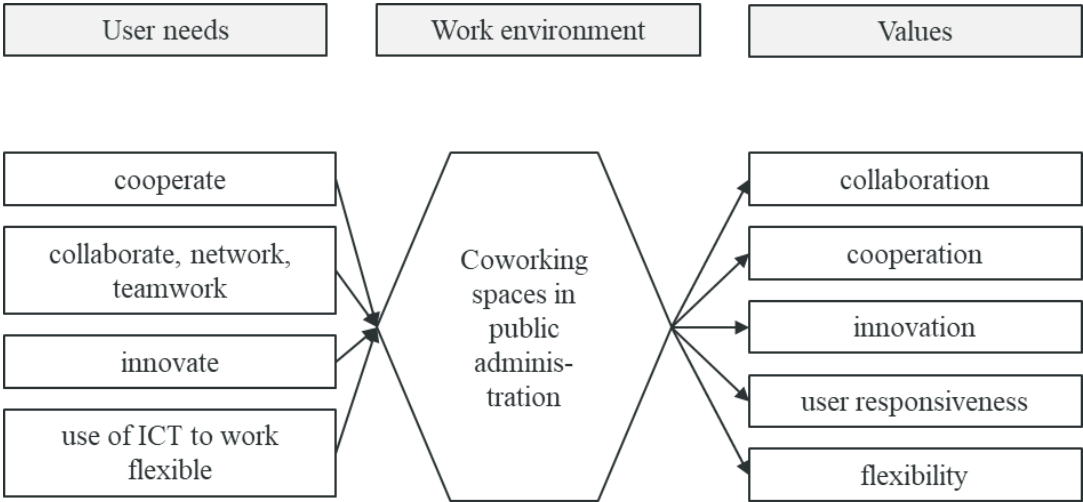


Figure 15: Research conceptual framework

This section has outlined the central findings from the subject literature and has described the crucial features coworking spaces provide to enable opportunities for innovative and collaborative activities to emerge.

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### 6.3 Empirical Case of Berlin

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In the following section, we describe the case of Berlin's public administration and their attitude toward coworking. In this case, data relating the general attitude toward work, working methods, and flexibility were collected by survey. The special needs for coworking spaces in public administration were discussed in focus group discussions with experts from the public sector<sup>20</sup>. A total of 179 survey responses was received and used for the analysis.

The context of this study, Berlin, offers a dense network of public agencies and hosts the most important institutions of the Government with their Ministries as well as numerous embassies and state representations. Furthermore, as the capital of Germany, with a population of approximately 3.72 million and an area of 892 square kilometers, Berlin hosts regional, federal, and state administration (Amt für Statistik, 2018). Berlin has a positive immigration rate and the forecast population for 2030 is 3.83 million (Frei *et al.*, 2018). Additionally, the demand for public employees will immensely increase in the coming years.

The work preferences of new work environments were retrieved in order to assess the attractiveness of coworking spaces. Thirty-two percent of respondents regarded their workspace as a place for productive working, 25% as a location for social interaction, 18% as a place to review work, and 12% as a place for creative work. For some, it was a location to deal with a necessary evil (7%) and 3% regarded their workplace as their second home. To estimate if public employees are open to a new working environment, collaborative behavior was analyzed. Nine percent of the respondents work "strongly autonomously," 51% "slightly more autonomously," 34% "slightly more collaboratively," and 6% "strongly collaboratively." Further, participants were asked when they preferred to work (Figure 16). While 35% preferred a classical working model, e.g., working from nine to five, 65% preferred to work more flexibly. The adoption of a flexible approach can lead to a higher commitment of high-quality workers. The results thus correspond with the values proposed in our research framework. The analysis shows that there is no significant correlation between the degree of work autonomy that employees prefer and their working time preference.

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<sup>20</sup> Twenty-eight decision-makers from different public agencies were invited for one day. All participants had at least five years' working experience in the public sector and came from different functional areas such as property management, environmental, regulatory, and educational departments.

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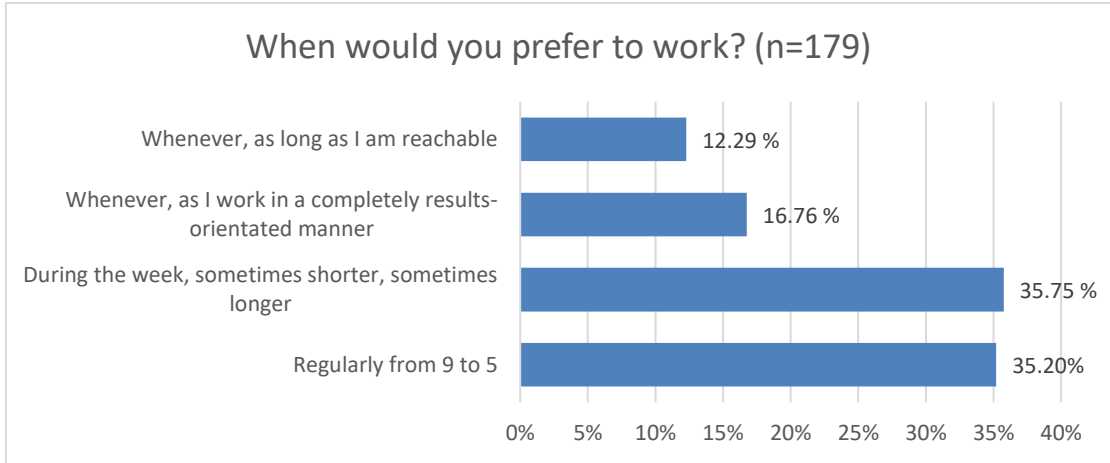


Figure 16: Preferred working time

Figure 17 shows the distribution of criteria that were regarded as relevant. Thirty-seven percent of respondents emphasized the importance of the work environment as a creative and modern space, whereas about one-fourth of respondents preferred a coworking space that reduces their commuting time. Finally, the authors asked participants for characteristics of a coworking space, if employees would hypothetically work in these work environments. Easy access and additional services, such as *free beverages*, *education concepts*, *sport courses*, *technical support*, *after-work events*, and *parcel services*, were cited by the participants.

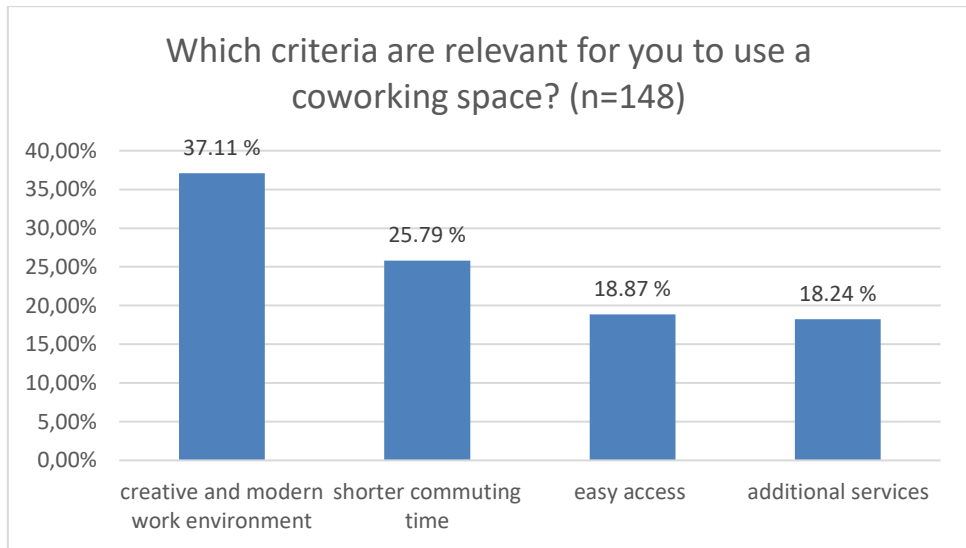


Figure 17: Necessary criteria of a coworking space

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## 6.4 Findings from the Workshop Focus Groups

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The workshop started by outlining challenges in the current administration work environment that could be met by coworking spaces. Table 23 lists the results of the focus group discussions after a coding and clustering process.

Table 23: Current challenges and solutions in public administration workspaces

Challenge	Solutions
Lack of trust, existing traditional work culture	Results-oriented work, trust instead of control, less hierarchy, more cooperation, establish a new management culture
Create an atmosphere that promotes well-being	Spatial combination of leisure, work, and meeting zones; Platform to book available workplaces; creative and innovative design
Need to stay close to citizens	Hubs as meeting points for citizens Openness: foyer with coffeehouse for public
Dysfunctions as a team	Coworking space with a strong focus on the community; Coworking as a solution for the combination of work and leisure, provision of meeting rooms, break-out-rooms and leisure space, social interaction enforced through spatial design
Own office acting as a status symbol	Reduced hierarchies, no “corner offices,” open space areas
Lack of interaction and exchange	Knowledge spillovers due to spatial arrangements and collaboration with other units

Source: research data

The next discussion point with the focus group was to ascertain how public coworking spaces should be designed and what values are of utmost importance for public administration. The discussion resulted in six clusters that incorporate the most commonly mentioned aspects important to decision-makers. Table 24 lists the success factors of flexible work environments in public administration. Our findings also show factors that were not derived from previous studies.

Table 24: Success factors for a public coworking space addressing the values in public administration

Cluster	Success Factor
1. Flexibility	Flexible use (24/7) and flexible furnishing
	Experimental and project workspaces as room-in-room concepts
2. Childcare	Childcare center
	Parent-child rooms
3. Access	Reduced commuting time
	Less employee fatigue
	Occasion-related choice of work location (short distances)
	Enforcing local communities
4. Collaboration and user responsiveness	Digital collaboration tools
	Collaborative work opportunities and retreat rooms
	Hub concept in outlying area to meet with citizens
	Shared spaces with external workers
5. Infra-structure/services	Sharing concept of employees, bundling of different administration units
	Application with check-in, room booking, team communication, and finding colleagues
	Integration of community
	Free basic supply (coffee and water)
6. Well-being	Bike- and car-sharing
	Concierge/space-manager
	Cloud-based digital document management system and IT support
	High focus on well-being
6. Well-being	Healthy and sustainable workplace
	High ratio of meeting and informal places
	Various retreat and leisure rooms (can be used also after work)
	Ergonomic equipment

Source: research data

## 6.5 Success Factors for a Public Coworking Space

First, flexibility is the highest ranked cluster (emphasized by every focus group). This is consistent with previous studies (Groen *et al.*, 2018).

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Second, our findings reveal a clear need for a family-friendly policy, which is related to the high proportion of female participants. There is an obvious demand for having the possibility to bring a child to work, especially among part-time workers. Another important factor that emerges in this study is the need to design a public coworking space to reduce commuting time and empower local communities (third cluster). With an increasing number of coworking spaces in the city, commuting time decreases and employees can freely choose to occasionally work in a nearby *hub*. We assume that the reduction of commuting time leads to a significant increase in well-being (Nie and Sousa-Poza, 2018), which was highlighted in the sixth cluster.

The way collaborative structures can be observed in this setup is twofold. First, there is a need for “innovative, digital collaboration tools” (transcript, 2019). Second, collaboration both within teams and with external workers from the private sector should be encouraged as the participants demanded more “proximity to citizens” (transcript, 2019), which is encouraged by a “facilitating and inspiring layout of the workspace” (transcript, 2019). This need aligns with extant literature; for example, as Merkel (2015) points out, the physical design of a coworking space (open spaces, arrangement of tables to enable eye contact between coworkers, or actual location of social areas) has an important role in transforming the space into one that is collaborative. The focus group also emphasized the importance of infrastructure and additional services when designing coworking spaces (fifth cluster).

Flexibility, collaboration, and innovative workplaces were the main factors from all data sources (literature review, survey, and focus groups). The results from our survey analysis show that easy access and short commuting time was important. Our findings from the workshop also emphasized accessibility and reduced commuting time as a benefit as well as a focus on well-being. High-quality services and infrastructure were demanded from the survey participants and corroborated in the qualitative findings. In particular, our focus group findings have shown that childcare is an important service, which is demanded by public workers. Through triangulation from literature study and our qualitative findings, we derive the following coworking space framework, which includes new insights from our empirical research. Incorporating user needs from our framework, coworking spaces enable “collaborative governance” through the physical design of the work environment. Addressing the proposed values will impact on an attractive work environment.

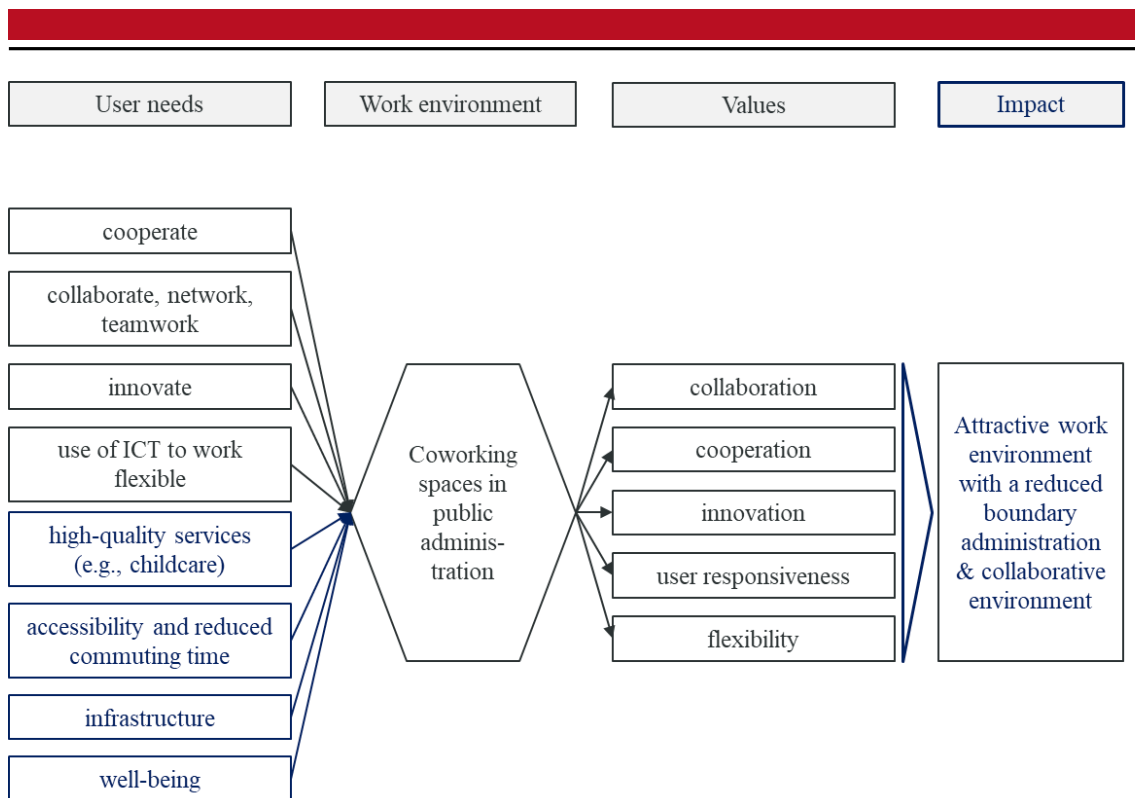


Figure 18: Public coworking space framework as a response to the changing needs in public administration

## 6.6 A Transition Path to Coworking

Based on the literature and the research findings, three strategies for public coworking spaces can be derived. First, coworking success factors can be applied to one's own work environment. A high fit between the user needs and the physical work environment leads to a higher commitment and well-being of public workers and retains talent within the public workforce. Second, opening the office for other public units within a city promotes collaboration and co-creation with other public agencies. Furthermore, commuting time can be reduced when workers can (occasionally) make use of offices of other public units within a dense network in the city. Third, in the next expansion stage, offices could be opened for externals, citizens, and entrepreneurs to interact with the public and enhance user-responsiveness. This is also achieved when external coworking spaces are used and act as a substitute for the office and work is fully conducted in these flexible work environments.



Table 25: Transition path to coworking environments

Transition path	1. Apply the coworking success factors to the own office.	2. Coworking as a means to promote collaboration and co-creation with other public units	3 b) Coworking as a means to promote user responsiveness and collaborative governance	3 b) Coworking as a substitute for the office
<b>Description</b>	Design the physical environment with open spaces, infrastructure, and services to promote interaction and collaboration within public units.	Open the workplace for other public units as a touchdown point or hub nearby. This fosters collaboration with other public units, reduces commuting time, and gives easy access to public workers.	Coworking spaces are offered to other unit and agencies and externals as a new way of interacting. Close engagement with citizens.	External coworking spaces are used as an alternative work environment.
<b>Example of use</b>	Zamani and Gum (2019) show the fit between the physical environment and user needs impacting satisfaction and collaboration.	Public Services and Procurement Canada (2019) show the case of Canadian federal employees given access to coworking spaces as a touchdown point between meetings or as a temporary workspace.	Pohl (2018) shows the case of a cooperative bank in Germany that owns a coworking space with an integrated branch bank. Employees work with other private workers and share their workspace.	Houghton <i>et al.</i> (2018) show the case of Australian Government employees working in coworking spaces to promote collaboration.

Source: Own source based on (Yang *et al.*, 2019)

## 6.7 Opportunities for Public Management

Public management can benefit from coworking in many ways. Over the past few decades, it became obvious that agencies benefit from working together and need to collaborate to look beyond traditional, organizational, and structural boundaries (Hall and Battaglio, 2018). Public service is increasingly accomplished together. This reduced-boundary

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governance can be specifically promoted by coworking spaces. The spaces offer an institutional setting where public and private sectors coincide and not only collaborate on an ad hoc or one-off basis, but are also able to form strategic partnerships and deliver high-quality services.

As the needs and performance criteria of New Public Governance approached those of the private economy, it is only a matter of time until the physical organisation of work will also adapt to the principles of the private economy. Hence, it will become necessary for public management to re-organize its physical work environment into shared workspaces and adopt the principles of the private economy in order to attract and retain young talent.

On the one hand, public administration offers an ideal prerequisite for coworking in its own premises due to its large number of distributed locations and administrations. During the first step, workplaces would be opened to other employees from the public administration; thus, employees would benefit from higher collaboration between units. In the second step, premises would be also opened to the public. Public companies, such as banks and post offices, are already taking advantage of this. Affected by societal change and transformation processes, they have redesigned their business models and use too large premises for coworking as a new form of business. For banks, coworking spaces can be an attractive addition to the portfolio of services offered.

On the other hand, public employees could also use regular coworking spaces and benefit from the advantages of coworking even if only used occasionally. Houghton *et al.* (2018) state that when public workers were in the main office after spending some time at coworking spaces, their productivity was higher because they were less fatigued and had improved moods. The use of different work locations and workstations stimulates new ideas. Solutions are born when workers change locations and workspaces frequently, collaborating with and being inspired by workers from other units. Performing self-reliant work in a coworking space leads to increased satisfaction and efficiency. Another benefit would most likely be the reduced travel time.

Though our findings show similarity with previous studies, new themes also emerged. Our findings indicate that Berlin public employees have a positive attitude toward work flexibility and appreciate working in new working environments. This positive attitude was found to be consistent across gender and age. While older respondents had a slight preference for working more autonomously, younger respondents were found to

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collaborate and often work in teams. Most of them perceived their office as a workplace of productivity and interaction, both of which can be facilitated by coworking spaces because these spaces cater to current needs with their spatial concepts. The focus groups showed a clear desire for more services, good accessibility to reduce commuting time, and high-quality workspaces. Furthermore, employees wanted flexibility, childcare, and proximity to citizens.

There are, of course, constraints. A flexible work environment cannot be used by all units and does not suit all types of workers. Nevertheless, we hope that the inspiration gleaned from this chapter will help shape future public and government discussions and influence workplace strategy decision-makers, human resources departments, and public real estate managers. In the next few years, the change toward new forms of work will continue to increase as will the demand for high-quality workers. More millennials will enter the workforce — a generation used to work flexibly and in multiple locations, and collaborating with others.

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## 7 Article 5: Coworking Spaces and Start-ups: Empirical evidence from a product market competition and life cycle perspective

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Title: Coworking Spaces and Start-ups: Empirical evidence from a product market competition and life cycle perspective<sup>21</sup>

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### Abstract

This paper is an empirical analysis – based on classic buyer-seller relationship theory – of the spatial relationship between coworking spaces and start-ups in an entrepreneurial ecosystem. We examine the relation between product market competition among coworking spaces and the life-cycle stages of their partnering start-ups, both of which influence the level of trust between the partners. In our hand-collected sample of coworking spaces in Germany’s seven largest cities, our findings indicate that mature start-ups are more likely to partner with coworking spaces in regions where product market competition among the latter is high. The relation between the number of nascent start-ups and product market competition among coworking spaces is found to be hump-shaped, indicating that nascent start-ups are more likely to partner with coworking spaces where market competition is neither too low nor too high. Our findings are corroborated by a European study based on WeWork data.

**Keywords:** coworking space, start-ups, trust, product market competition, buyer–seller relation theory, entrepreneurial ecosystem,

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## 7.1 Introduction

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The creation of new business ventures is deemed an important contributing factor in the overall economic development of a region (Bhawe and Zahra, 2019) and for long-term economic competitiveness (Böhm *et al.*, 2019). However, a large number of new businesses fail early on and only a few grow to medium size (Song *et al.*, 2008). One of the main reasons for this is that founders of new businesses have only limited access to resources (Bøllingtoft and Ulhøi, 2005). Fostering economic growth via entrepreneurial ecosystems has become a key priority around the globe (Bhawe and Zahra, 2019). Intermediaries, such as coworking spaces, accelerators, and incubators, are regarded as vital components of a successful entrepreneurial environment (Spigel, 2017; Silva, Howells, and Meyer, 2018). Coworking spaces are a new phenomenon (Bouncken *et al.*, 2020a).<sup>22</sup> They not only provide flexible office space and infrastructure, such as information technology and furniture, but also facilitate access to a wealth of know-how and networking opportunities (Jakonen *et al.*, 2017). In particular, they benefit firms seeking an environment that fosters social support, innovation, creativity, knowledge sharing, and collaboration (Fuzi, 2015; Bouncken *et al.*, 2020a).

In our study, we aim to analyze and discuss the importance of trust as an essential resource in an entrepreneurial ecosystem. We model this interaction as a buyer-seller relationship, where trust is vital for establishing partnerships between start-ups and coworking spaces. Earlier research explores the configuration of infrastructure for nascent entrepreneurship: Alvedalen and Boschma (2017) note that entrepreneurial activity is shaped by the local infrastructure and levels of trust between partners. In a grounded case study, Woolley (2014) analyzes the systemic coevolution of nascent entrepreneurship and infrastructure, highlighting the fact that early-stage firms struggle where physical infrastructure is lacking. Audretsch and Belitski (2017) state that “limited evidence on the relationship between physical infrastructure and entrepreneurship exist.” We expand on the findings of Woolley (2014) and Audretsch and Belitski (2017) by further exploring the relationship between entrepreneurship and infrastructure.

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<sup>22</sup> Having originated in San Francisco (Assenza(2015), the coworking space movement has become a global phenomenon over the last decade, with annual growth rates as high as 300 percent between 2014 and 2020. In 2014, approximately 290,000 employees were working in coworking spaces globally and it is expected that the number of coworking members will rise to 3.8 million by 2020 and 5.1 million by 2030 ((Foertsch, 2018) (pre-COVID-19 implications). Hence, these spaces have a significant impact on the economy and environment ((Yu, Burke, and Raad, 2019).

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To the best of our knowledge, we are the first researchers to apply buyer-seller relationship theory to examining the relation between start-ups and coworking spaces. Our main focus is on the concept of trust. While trust is generally analyzed from a one-directional perspective, where one partner has to overcome liability of newness (Stinchcombe, 2000), both partners are new to the market in this case and have to establish mutual trust. We therefore adopt a dualistic approach to the relationship between the partners.

Building trust as a prerequisite for partnering is of crucial importance given the shift towards increasingly networked environments and the need for new forms of entrepreneurial ecosystem with a “physical environment where creativity and innovation can flourish” (Fuzi, 2015: 462). Hence, this study is designed to provide empirical evidence of the spatial relationship between start-ups and coworking spaces. We have chosen product market competition among coworking spaces as a proxy for the level of trust in these flexible workspaces. In addition, we analyze the life-cycle stages of start-ups by distinguishing between nascent and mature start-ups; the latter are considered more trustworthy.

Our main sample consists of hand-collected, detailed panel data relating to coworking spaces in Germany’s seven largest cities over the nine-year period from 2010 to 2018. We measure product market competition in terms of the number of coworking spaces in a city. Recently founded start-ups are identified as “nascent”, and start-ups that have recently received external funding as “mature.” Data have been retrieved from the Crunchbase database to assess the founding and funding activities of start-ups. Our analysis focuses on start-ups rather than freelancers or mature corporates because variations in life-cycle stages and financial contracting are more readily observable in the case of start-ups. As a robustness test and to support the external validity of our study, we analyze a sample containing data about WeWork locations in large European cities.

This paper contributes to existing literature in a number of ways. Beginning with entrepreneurial literature, we examine the role played by coworking spaces in entrepreneurial ecosystems and their relevance for start-ups. We contribute to buyer-seller literature by identifying product market competition among sellers and the life-cycle stages of buyers as relevant determinants of matching between the two. We complement literature on the subject of trust by applying trust theory to a market in which both partners face liabilities of newness. In addition, we add to the existing body of theory about real estate and the sharing economy by providing an indication as to which firms

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typically partner with coworking spaces, contingent on their life-cycle stage, and by explaining the role played by product market competition in this context. Finally, our study uses financial contracting data to provide more readily verifiable and credible empirical evidence about the true life-cycle stages of coworking space tenants than would be possible via a questionnaire-based approach.

The rest of this paper is outlined as follows. The following section provides a brief overview of coworking spaces as intermediaries in an entrepreneurial ecosystem and a review of trust and the buyer–seller theory is presented (Section 2). In Section 3, hypotheses are developed and the sample data and empirical methodology described. Section 4 presents our empirical results and validity checks with the analysis of a European WeWork data sample are advanced in Section 5. Section 6 concludes and discusses policy implications and limitations of the study and suggests a future research agenda.

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## 7.2 Theory and hypotheses development

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### 7.2.1 Coworking spaces as a new valuable part of the entrepreneurial ecosystem

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Entrepreneurial ecosystems are often linked with entrepreneurial development in a geographic cluster (Alvedalen and Boschma, 2017). An entrepreneurial ecosystem is commonly defined as the set of tangible and intangible environmental factors that shape the performance of start-ups and jointly work toward economic growth, and emerge through successful interaction (Gnyawali and Fogel, 1994; Fogel, 2001; Goetz and Freshwater, 2001). Besides accelerators and incubators (Goswami *et al.*, 2018), coworking spaces are increasingly part of this entrepreneurial ecosystem (Autio *et al.*, 2018). Bouncken and Reuschl (2018) show that the agglomeration of entrepreneurship has a strong aspect of community in coworking spaces. Coworking spaces are multi-tenant, shared working environments that offer both tangible and intangible resources. They create an institutional framework for knowledge-intensive entrepreneurship (Bouncken *et al.*, 2020c; Jenson, Doyle, and Miles, 2020) and provide furnished office space and infrastructure. Office space is a very significant resource for businesses because it is the location for all service provision processes and serves as the working environment for knowledge-intensive entrepreneurship (Krupper, 2015). Office space not only drives a large fraction of overall fixed costs but it is also relatively inflexible, especially for

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nascent firms (Green, 2014). Typically, the type of use of office space depends on the life cycle stage of the firm. Specifically, entrepreneurs in the pre-founding and founding stages tend to start their ideas within their home office (Schürmann, 2013). Although this is the more economical option, research shows that isolation in a home office is insufficient to stimulate the necessary collaboration and synergies (Spinuzzi, 2012). When scaling up, start-ups need access to office premises, which are in short supply in prime regions (Roßdeutscher, 2018). Coworking spaces are a solution to the lack of office space as they have professionalized the provision of space and access to office services in the office market (Green, 2014). Whereas typically lease agreements for office premises are concluded with a medium to long-term lease of between 10 and 15 years on average (Crosby *et al.*, 2003), the use agreements for coworking spaces are flexible and scalable (Appel-Meulenbroek *et al.*, 2020). Start-ups thus do not have to buy or rent their own premises and can take advantage of the entrepreneurial environment and have access to resources; therefore, they can concentrate on their competitive advantage and core business.

Firms in a more mature stage also recognize the advantages of cooperating and retaining start-ups in a common working environment and, thus, might choose to work in a coworking space for these reasons as well (Bouncken and Reuschl, 2018).

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### 7.2.2 Buyer–seller relation theory

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There is a substantial body of literature about trust of start-ups in open innovation (Hasche, Linton, and Öberg, 2017), customers (Sanner, 1998), and social and entrepreneurial networks (Smith and Lohrke, 2008; Muldoon, Bauman, and Lucy, 2018). According to Sako (1992), trust is operationalized by three trust antecedents: contracts, competence, and goodwill. Confidence in contracts is reflected, for example, in the power of renegotiation, which is of great relevance in our case due to the flexible provision of space of coworking spaces and the associated frequent adjustment of contracts. Competence-based trust is linked to expectations that the other party can accomplish and fulfill the promised activities. Within the entrepreneurial ecosystem, this relates to the knowledge exchange and infrastructure provided from coworking spaces. Goodwill, for instance, includes benevolence, i.e., partners do not behave opportunistically toward each other, and, thus, relates to commitment (Ganesan, 1994).<sup>23</sup>

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<sup>23</sup> There is a multitude of views on trust in scholarship. Ganesan(1994) distinguishes two components of trust: credibility and benevolence. Credibility refers to the grade a buyer believes that the seller has the expertise to provide

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We model a buyer–seller relationship where the coworking space (i.e., seller) provides office space and infrastructure to a start-up as a tenant (i.e., buyer). As extensive literature on buyer–seller relations documents, those relations are prone to agency problems, especially where trust is low, which increases the transaction costs to establish such partnerships (Anderson and Weitz, 1989; Moorman, Zaltman, and Deshpande, 1992; Ganesan, 1994; Dyer and Chu, 2003). Those transaction costs include ex ante contracting costs, such as search and contracting costs, or ex post contracting costs such as monitoring and enforcement (Hennart, 1993; North, 2009).

One example in this context is renegotiation risk, i.e., sellers acting opportunistically toward buyers for their own benefit (Fudenberg and Tirole, 1990). In the context of the partnership between coworking spaces and start-ups, anecdotal evidence shows that coworking spaces attract their tenants with low prices and rent concessions to recruit firms as tenants (Lietz and Bracken, 2019). However, as soon as firms want to take advantage of the flexibility and want to increase office space, change services, or need other types of workplaces (firms can rent open space areas, but also individual offices or entire floors/sections or brand their offices individually), coworking spaces use their negotiating position for mark-ups and might behave opportunistically as the following WeWork quote might indicate: “We also expect the use of discounts to help drive initial occupancy and longer-term commitments, which we expect will have a significant impact on our financial performance” (Lietz and Bracken, 2019).

Anticipating this, potential buyers might underinvest into or never agree on starting a partnership (Hart and Moore, 1988). In general, buyer–seller literature often regards trust between partners as a remedy to mitigate transaction costs (Anderson and Weitz, 1989; Moorman *et al.*, 1992; Dyer and Chu, 2003).

In the case of goodwill trust, product market competition among sellers might lead to non-opportunistic behavior. Research about product market competition documents that it is an effective monitor and disciplines firms to mitigate moral hazard within the firm (Grossman and Hart, 1983; Nickell, 1996).

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the good effectively and reliably. Benevolence addresses the grade the buyer believes that the seller intends or is motivated to act not opportunistically to the seller if future situations should allow. For a literature review, see (Schoorman, Mayer, and Davis, 2007).

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### 7.2.3 Trust in coworking spaces

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Coworking space literature has elaborated on the resources that coworking spaces provide; however, it has not related this to soft values such as trust.

Stinchcombe (2000) terms the constraint of new ventures due to a lack of legitimacy as the “liability of newness,” which could be expected to lead to less trust for the start-up and the coworking space. Hasche *et al.* (2017) note that for start-ups, “the inexperience in conducting business could expect to yield either distrust or over-belief in others. The reputation of others may play a part in initiating collaborations with these specific others.” Partners may therefore be less willing to start partnering with the start-up or only do so without really committing to the collaboration (Eisenhardt and Schoonhoven, 1990). However, in our case, both partners—start-ups and coworking spaces—have to achieve trust to overcome liability of newness because coworking spaces are also a new phenomenon (Bouncken and Reuschl, 2018). This newness is dependent on the stage of the start-up on the one hand and on the product market competition of the coworking spaces on the other. We expect that product market competition among coworking spaces improves trust to motivate start-ups to partner with them as tenants. Apparently, product market competition leads to the survival of the fittest among sellers: only those sellers will survive competition that deliver value-enhancing goods through trust, their expertise and skills (i.e., credibility) to satisfy their customers<sup>24</sup> (Anderson, Fornell, and Lehmann, 1994; Ganesan, 1994; Rego, Morgan, and Fornell, 2013).

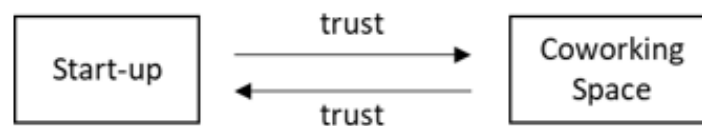


Figure 19: Dualistic perspective of trust

Start-ups are heterogeneous in their life cycle stages, which might also determine transaction costs and trust between the partners; hence, we extend our analysis by differentiating between start-ups in a nascent stage (i.e., recently founded) and start-ups

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<sup>24</sup> This is in line with empirical evidence from our study. Considering the first coworking spaces, they consisted of nothing more than sparsely furnished and equipped office space (Spinuzzi, 2012; Merkel, 2015). The more mature the coworking space market became and the more competition increased, the more comprehensive the services and product variety of the providers became (Roggero, 2019).

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that are more mature (i.e., non-nascent).<sup>25</sup> Figure 19 shows the dualistic perspective of trust between the two partners.

To summarize, we focus on trust that occurs in both directions of the relation between coworking spaces and start-ups. This means that trust has to be established as a prerequisite before partnering occurs.

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#### 7.2.4 Hypotheses development

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To begin with, we focus on nascent start-ups. If product market competition among coworking spaces increases, then we can expect start-ups to likely partner with coworking spaces. Not only does the supply increase, but trust also increases, thus lowering the transaction costs between start-ups and coworking spaces. Dependent on their life cycle after starting at home, start-ups are in need of office space when their business model begins to develop and expand. Because nascent start-ups might not have the credibility and have a high variability in employment growth, traditional office space with long-term lease agreements is no real option. Hence, they start to partner with coworking spaces. Simultaneously, mature firms might also be willing to partner with coworking spaces, thus adding to competition in demand for coworking spaces.<sup>26</sup>

Dyer and Chu (2003) emphasize that the seller's trust in the buyer is also important for a partnership (dualistic perspective in Section 2.3). Because mature start-ups suffer from less severe agency problems compared with nascent start-ups (Nofsinger and Wang, 2011), we assume that mature start-ups are more trustworthy; thus, coworking spaces as sellers prefer mature start-ups as tenants. Mature start-ups might choose between traditional office space and coworking spaces, and might only be willing to partner with coworking spaces if product market competition of coworking spaces increases, resulting in lower transaction costs. This might result in a crowding-out of nascent start-ups by mature start-ups. Nevertheless, we assume that coworking spaces by nature have some advantages to mitigate transaction costs with nascent start-ups to make them more willing to partner with them compared with substitute sources of supply such as traditional office

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<sup>25</sup> As stated above, we focus on start-ups in this paper due to our sample data. We expect that our theoretical conclusions will remain qualitatively unchanged if we extend our analysis to incumbent firms. Unreported analyses, where we differentiate the various types of funding such as seed, venture capital, and debt financing, support this prediction.

<sup>26</sup> As stated in Section 7.2.1, mature firms benefit from cooperation with nascent start-ups and favor knowledge sharing environments.

space providers. For example, it might be that the open environment with common knowledge sharing among all tenants helps coworking spaces monitor nascent start-up tenants and, as a result, prevent moral hazard problems with them.<sup>27</sup> Consequently, coworking spaces might provide space to nascent start-ups only if mature start-ups do not compete for those spaces.

To sum up, we infer that product market competition is positively related to the demand of all types of start-ups as trust increases, whereas nascent start-ups' demand starts at a lower level of product market competition compared with mature start-ups. When demand by mature start-ups begins, we expect an increasing crowding-out of nascent start-ups in favor of higher trust. Hence, we formulate the following two hypotheses:

**Hypothesis 1:** *The number of partnerships of nascent start-ups with coworking spaces is hump-shaped related to product market competition among coworking spaces.*

**Hypothesis 2:** *The number of partnerships of mature start-ups with coworking spaces is positively related to product market competition among coworking spaces.*

Figure 20 illustrates our hypotheses in a conceptual context.

		Coworking Space	
		low competition	High competition
Start-up	nascent	Trust has to be established in both directions. New initiatives form <b>first partnering</b>	Coworking space does not (need to) establish trust with nascent start-up. Limited collaboration <b>low partnering</b>
	mature	Start-up does not trust in coworking space, high transaction costs may occur. <b>low partnering</b>	High trust establishes (liability of newness overcome) <b>High partnering</b>

Figure 20: Conceptual framework (Lewicki, McAllister, and Bies, 1998)

<sup>27</sup> It is noteworthy that this theoretical reasoning reveals why coworking spaces offer short-term contracts and open networking environments as these might help mitigate agency problems with nascent start-ups and freelancers. In this way, we interpret the business of coworking spaces as partially endogenously determined.

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## 7.3 Data Sample and Empirical Methodology

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### 7.3.1 Data sample

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The German data sample that we use for our main analysis contains 63 city-years. We choose a German sample because in the period examined, the coworking space market had begun a transition from a nascent to a mature coworking space market, rendering it possible to explore all levels of product market competition for our analysis. This would be more difficult to undertake with coworking space markets in other countries that have very nascent markets (e.g., Lodz) to date because there would be no high grade of product market competition. It would be also difficult to explore very mature coworking space markets (e.g., London and Paris) because the survivorship bias would be more severe by using data on existing coworking spaces in 2018. The reason for this is that we rely on 2018 snapshot data of coworking spaces and calculate the historical number of coworking space locations according to each space's opening date. The more we extend our analysis into the past, the more likely we underestimate the level of the true number because more coworking spaces could have closed over time. Our German data, with a nine-year horizon, might be the best choice to mitigate the trade-off between no variation in maturity of coworking space markets and high survivorship bias-driven underestimation of the true number of coworking space locations in the past years.

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### 7.3.2 Data collection

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Coworking spaces are identified using a Google Maps crawler. We scrape all existing coworking spaces within a city as of December 31, 2018. Consequently, our measure of coworking space location number likely understates its true number because some coworking spaces, albeit due to their market's still young age very unlikely, might not have survived until the end of 2018. This might render our numbers conservative. Founding dates of the spaces are obtained from public information or direct research through calling the operators. Missing values are obtained using a second crawler, crawling for Google Maps Reviews. We replace the missing founding dates with the date of the first Google Maps Review. Due to the novelty of coworking spaces, we find that Google review entries have commonly been used as a rating mechanism for the last years and deliver high-quality results through a "crowd-based approach" (Lee and Yu, 2018). This is based on the assumption that at least one review is written in the same year as the

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founding date of the space. Cross-checking using this approach with given founding dates provides reliable results. To our knowledge, there is no other collection of such coworking space market data.

Second, we use the Crunchbase database as of December 31, 2018 to obtain data about the number of recently founded firms, and external financing rounds of firms.

The Crunchbase database contains mostly young firms, commonly called “start-ups,” and their financing with external funding, predominantly seed and venture capital funding. It includes firms that have needed or might need funding in the near future, or have already got funding.<sup>28</sup> Crunchbase is already used in other studies investigating funding of firms (Alexy *et al.*, 2012; Cumming, Walz, and Werth, 2016; Kaminski, Hopp, and Tykiová, 2019; Lange and Valliere, 2020).

We add from Crunchbase to our sample the city-wise aggregate data about the date of founding and the financing rounds.

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### 7.3.3 Empirical methodology

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In our study, we are interested in the relation of start-ups and coworking spaces on an aggregate spatial level. We conduct our analysis under the assumption that real estate markets are supply-constrained in our selected regions and start-up demand for office space is unconstrained. This is addressed by our sample selection to regions with high start-up activity and supply-constrained office markets (Malle, 2020).<sup>29</sup> Consequently, an increase in coworking space market supply would decrease other types of office space supply and, therefore, would crowd-out start-ups that are marginal (i.e., least preferred by their landlords) tenants of those other office premises. Due to this, those start-ups would either become tenants of coworking spaces or leave the city. In this way, we regard the number of start-ups measured in a city as a valid proxy for the unknown number of partnerships of start-ups with coworking spaces. Therefore, we can only assess a relation

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<sup>28</sup> Crunchbase uses a multifaceted crowdsourcing approach with a strong focus on start-ups as it maintains a large partnership program with more than 4,000 participants from the start-up community (e.g., accelerators, venture funds, and university programs) (CrunchBase, 2019). These firms submit monthly portfolio updates to Crunchbase in exchange for access to data. Up to now, Crunchbase counts 100,000 individual contributors per month that have produced more than 600,000 datasets. These datasets are accessed by more than 2 million unique visitors per month. To ensure high-quality information, Crunchbase provides several mechanisms to validate these data, e.g., algorithmic and personal reviews, artificial intelligence, and machine learning.

<sup>29</sup> Vacant office space is a scarce commodity, especially in the Big 7 cities in Germany. In Berlin, the vacancy rate currently stands at 1.4%, which is a historic all-time low. It is assumed that there will be no slump in demand even after COVID-19 and vacancy rates will remain low (Göckes, 2020).

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of start-ups and coworking spaces found in aggregate spatial data as likely evidence of the unknown true relation. This methodology is consistent with other studies with spatial aggregate data about small firms related to venture capital investments (Chen *et al.*, 2010; Colombo, D'Adda, and Quas, 2019), accelerators (Fehder and Hochberg, 2014), and local banking development (Deloof, La Rocca, and Vanacker, 2019)

Throughout the entire analysis, we apply a city fixed-effects linear panel regression model to the dependent variables that represent a proxy for the number of coworking spaces' partnerships with either nascent or mature start-ups.

#### *Dependent variables*

To proxy for the number of nascent start-ups' partnerships with coworking spaces in a city, we choose the yearly number of firms founded (*NumFirmsFounded*), following Audretsch & Belitski (2017).

As the number of mature start-ups' partnerships with coworking spaces in a city, we choose the number of rounds of external financing in a city (*NumFinancingRounds*). The reason for this is that external financing is provided more likely to start-ups that already left the nascent stage (Croce, Martí, and Murtinu, 2013). Then, external investors certify the quality of the business model (Megginson and Weiss, 1991) and monitor the start-up to align with shareholder value maximization (Admati and Pfleiderer, 1994; Kaplan and Stromberg, 2003) that includes satisfying customers by cooperative behavior (Anderson *et al.*, 1994). This approach has been justified in prior research (Wang and Zhou, 2004; Lange and Valliere, 2020).

We count every financing round of a start-up per year: If one start-up has multiple rounds that is, however, rather unusual with a fraction of 11 percent of all start-up-years, then we count one start-up entity multiple times in our aggregate measure. Consequently, we interpret a higher number of financing rounds as a proxy for the precision of the mature stage of start-ups partnering with coworking spaces to find that the more financing rounds a start-up obtains, the more likely it belongs to our modeled type of a mature firm.

It is noteworthy that we do not analyze the aggregate number of financing rounds per city to the observed year because we do not know if start-ups are still located in the city in that year and, thus, the aggregate number can be overstated. We opt for a conservative approach and observe the flow of financing in one year, and interpret this as the smallest number of start-ups in this city in a mature stage.

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We assess this proxy as credible and verifiable because it relies on financial contracting data rather than questionnaires. The responses to questionnaires might be biased or imprecise due to wishful thinking or imprecise information from a respondent that is not necessarily the top manager of the firm (Smolarski and Kut, 2011; Weijs-Perrée *et al.*, 2018). Financial contracts, however, are typically signed by entrepreneurs, top-level executives, and investors who are best informed about the real nature and expectations of the underlying firm. Consequently, we expect that the information signaled by a financial contract is superior in comparison with those former questionnaire-based surveys.

#### *Independent variables*

Following Nickell (1996), we choose as a proxy for product market competition among coworking spaces in a city the yearly number of existing coworking spaces (*NumCWS*) still in business on December 31, 2018.

#### *Control variables*

We also include several control variables to capture the economic and real estate characteristics of a city. Several studies claim that urban environments are conducive to entrepreneurial activities and venture growth as information flow is higher (Acs *et al.*, 2009; Audretsch and Belitski, 2017). Financial resources are more accessible and market proximity is obvious (Krugman, 1991); thus, we include the number of inhabitants of a city and control for regional economic activity by using the gross domestic product (GDP) per inhabitant (Acs *et al.* 2009). The economic data are provided by the census bureau of Germany.

Second, the general characteristics of the office market may influence venture growth. We therefore control for office space turnover, prime rent of the office market, and vacancy rate of the office market. For instance, a high vacancy rate leads to cheaper office space and easier and faster access to own office infrastructure.

We control for year- and city-specific invariant characteristics by using year and city fixed-effects. To rule out multicollinearity, we check correlations among variables and variance inflation factors for our variables of interest and do not find any indication for such problems.



In the subsequent regression estimations, we report results with two selections of control variables because for some control variables we do not have the regional data, which then would reduce our sample size if they were included.

## 7.4 Empirical results

### 7.4.1 Descriptive statistics

All subsequent analyses are based on data for the so-called Big 7 cities in Germany for the period 2010–2018. Summary statistics and descriptions of our applied variables are exhibited in Table 26.

Table 26: Statistics of applied variables

		Obs.	Mean	Std. Dev.	Min.	Max.
<b>Dependent Variables</b>						
	<b>Denotation</b>					
Number of Firms Founded	NumFirmsFounded	62.00	47.63	79.06	1.00	335.00
Number Financing Rounds (all types)	NumFinancingRounds	63.00	56.19	87.52	2.00	374.00
<b>Independent Variables</b>						
Number Coworking Spaces	NumCWS	63.00	32.19	32.63	0.00	175.00
Number Coworking Spaces squared	NumCWS x NumCWS	63.00	2,083.81	4,866.07	0.00	30,625.00
<b>Control Variables</b>						
High Prime Rent Office Market [in EUR]	PrimeRentOfficeMarket	63.00	26.93	6.14	17.50	41.00
High Prime Rent Office Market [in EUR]	Ln(PrimeRentOfficeMarket)	63.00	3.269	0.218	2.862	3.714
Turnover Office Market Space [in thousand sqm]	OfficeSpaceTurnover	63.00	472.38	197.54	191.50	930.00
Turnover Office Market Space [in thousand sqm]	Ln(OfficeSpaceTurnover)	63.00	6.072	0.420	5.255	6.835
Vacancy Rate	VacancyRate	60.00	0.07	0.03	0.02	0.15
Vacancy Rate	Ln(VacancyRate)	60.00	1.814	0.491	0.742	2.688
Inhabitants [in mil]	Inhabitants	58.00	1.40	0.99	0.59	3.65
Ln of Inhabitants	Ln(Inhabitants)	58.00	13.95	0.62	13.29	15.11
Unemployment Rate	UnemploymentRate	62.00	7.46	2.27	3.50	13.60
Ln of Unemployment Rate	Ln(UnemploymentRate)	62.00	1.97	0.31	1.25	2.61
Per Capita GDP	PerCapitaGDP	56.00	66,630.00	18,890.00	31,550.00	91,970.00
Ln of Per Capita GDP [in EUR]	Ln(PerCapitaGDP)	56.00	11.06	0.32	10.36	11.43

Regarding the number and size of coworking spaces, our panel lists all coworking spaces since 2010 until the end of 2018. By 2018, the numbers (sizes) of coworking spaces were distributed as follows: 175 in Berlin (2,249,117 sqft), 87 in Hamburg (1,219,550 sqft), 86 in Munich (1,482,189 sqft), 42 in Cologne (596,320 sqft), 62 in Frankfurt (724,626 sqft), 32 in Stuttgart (395,035 sqft), and 47 in Düsseldorf (717,952 sqft), which represents 531 coworking spaces in 2018. The average space size of a coworking space is around 13,993 sqft, with a rising tendency over the years. We obtain comparable data with that of other research<sup>30</sup>. We therefore conclude that our sample is representative for the coworking market and comparable with other data collections.

## 7.4.2 Main results

### Hypothesis 1

Estimation results about the relation of the number of nascent start-ups (*NumFirmsFounded*) and the coworking space market competition (*NumCWS*) are presented in Table 27.

Table 27: Regression with founding activity (number of firms founded)

	(1)	(2)	(3)	(4)
Variables	NumFirms Founded	NumFirms Founded	NumFirms Founded	NumFirms Founded
NumCWS	-0.492 (0.371)	3.258*** (0.493)	-0.441 (0.399)	3.555*** (0.600)
NumCWS x NumCWS		-0.022*** (0.002)		-0.027*** (0.002)
Ln(PrimeRentOffice Market)	-240.753 (197.509)	43.102 (64.032)	-260.374 (162.868)	91.338 (56.437)
Ln(OfficeSpace Turnover)	9.752 (27.536)	-6.598 (15.687)	17.832 (31.373)	10.846 (22.280)
VacancyRate			9.738 (64.121)	38.979 (48.506)
Ln(Inhabitants)			-1,029.798 (931.123)	-594.937 (636.945)

<sup>30</sup> (Zahrnt, 2017) obtains slightly more in terms of size and sqft, whereas the (Immobilienzeitung, 2018) obtains slightly less.

Ln(Unemployment Rate)			-477.406 (332.983)	-278.809 (270.815)
Ln(PerCapitaGDP)			-313.617 (202.536)	-174.731 (212.109)
Constant	734.120 (499.558)	34.974 (57.263)	5,347.259 (3,079.193)	2,179.646 (2,644.634)
Region fixed-effects	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes
N	62	62	53	53
Adjusted R <sup>2</sup>	0.351	0.646	0.571	0.710

Notes: The Table shows fixed-effects regressions of the number of firms founded per region for our baseline sample. Regressions (2) and (4) include a squared term of the number of coworking spaces. Regressions (3) and (4) include all available control variables. Ln(PrimeRentOfficeMarket), Ln(OfficeSpaceTurnover), Ln(Inhabitants), Ln(UnemploymentRate), and Ln(PerCapitaGDP) are the natural logarithms of the respective variables. All regressions contain year and region fixed-effects. Fixed-effects are unreported. All standard errors (in parentheses) are adjusted for heteroscedasticity and within-cluster correlation at the region level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% level, respectively.

In regressions (1) and (3)—with more control variables—the coefficients on *NumCWS* lack statistical significance so we include a squared term of that variable to test for a quadratic relation in regressions (2) and (4). Then, we find a negative and, at the one percent level statistically significant coefficient on *NumCWS x NumCWS* and a positive and, at the one percent level statistically significant coefficient on *NumCWS* (depicted in Figure 21). This hump-shaped relation is also economically significant because a one-standard deviation change in *NumCWS* is associated with an increase of *NumFirmsFounded* by 106.31 compared to its mean of 47.63 whereas a one-standard deviation change in *NumCWS x NumCWS* is related to a decrease of *NumFirmsFounded* by 107.05.

These findings support our first hypothesis that the relation of nascent start-ups' partnerships with coworking spaces and product market competition of coworking spaces is hump-shaped. We regard this as empirical evidence that recently founded start-ups are tenants of coworking spaces if the product market competition among coworking spaces is neither too small nor too large. Thus, tenants of more competitive coworking space markets are less likely nascent start-ups.

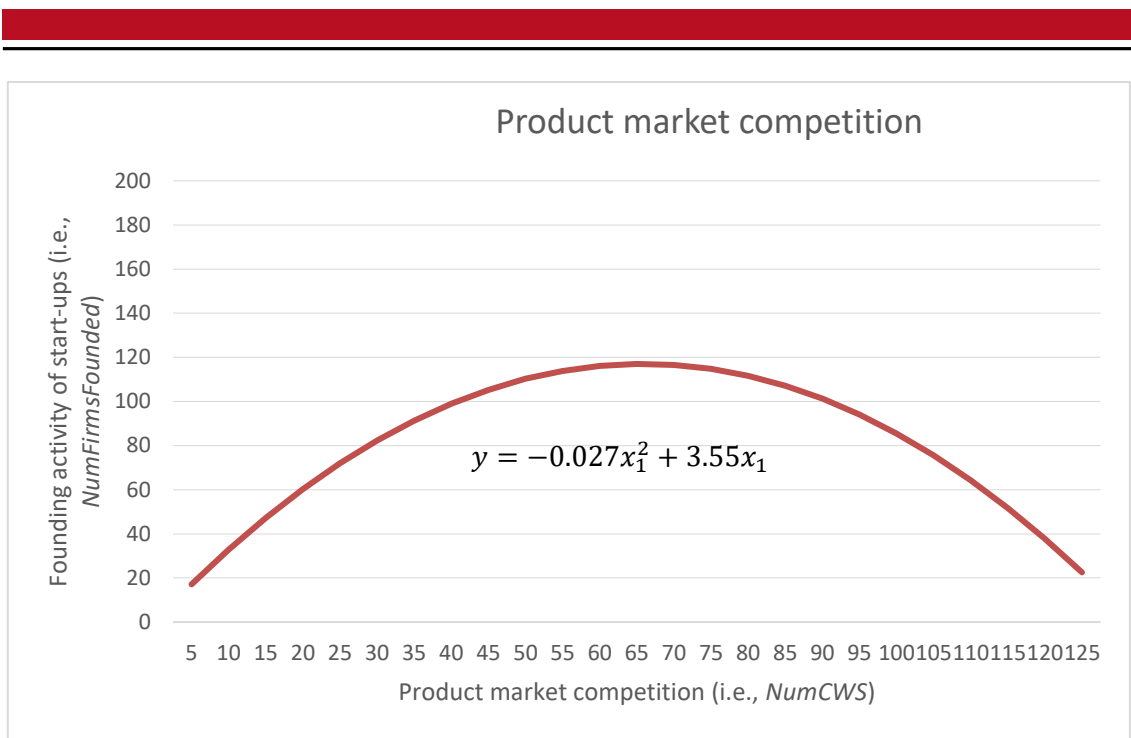


Figure 21: Hump-shaped relation between number of recently founded start-ups and product market competition

## Hypothesis 2

In Table 28 for regressions (1) and (2), the coefficient of mature start-ups, i.e., *NumFinancingRounds* on *NumCWS*, is positive and statistically significant at the one percent level. This relation is also economically significant because a one-standard deviation change in *NumCWS* is associated with an increase of *NumFinancingRounds* by 66.60 compared to its mean of 56.19. This finding supports our second hypothesis that states mature start-ups' partnerships with coworking spaces is positively related to product market competition.

Table 28: Regressions with number of financing rounds

	(1)	(2)
<b>Variables</b>	<b>NumFinancingRounds</b>	<b>NumFinancingRounds</b>
NumCWS	2.041*** (0.173)	2.182*** (0.232)
NumFirmsFounded	0.744*** (0.052)	0.660*** (0.026)
Ln(PrimeRentOfficeMarket)	89.718* (45.231)	-31.952 (62.474)

Ln(OfficeSpaceTurnover)	14.728 (19.416)	17.791* (8.333)
Ln(VacancyRate)		-19.200 (35.699)
Ln(Inhabitants)		6.489 (212.713)
Ln(UnemploymentRate)		-73.518 (53.329)
Ln(PerCapitaGDP)		250.622 (147.187)
Constant	179.497** (31.676)	-2,558.677 (1,583.207)
Region fixed-effects	Yes	Yes
Year fixed-effects	Yes	Yes
N	62	53
Adjusted R <sup>2</sup>	0.896	0.940

Notes: The Table shows fixed-effects regressions of the number of yearly financing rounds of start-ups on coworking spaces per region. Regression 1 is our baseline model and regression 2 includes all available control variables. All regressions contain year and region fixed-effects. Ln(PrimeRentOfficeMarket), Ln(OfficeSpaceTurnover), Ln(Inhabitants), Ln(UnemploymentRate), and Ln(PerCapitaGDP) are the natural logarithms of the respective variables. Fixed-effects are unreported. All standard errors (in parentheses) are adjusted for heteroscedasticity and within-cluster correlation at the region level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% level, respectively.

The coefficient on *NumFirmsFounded* is positively related to *NumFinancingRounds* (statistically significant at the one percent level), suggesting that Crunchbase reports firms that are close to seeking and receiving funding. In addition, we find that a one-standard deviation change in *NumFirmsFounded* is associated with an increase of *NumFinancingRounds* by 58.82 compared to its mean of 56.19. Hence, we regard this relation as economically significant.

It is noteworthy that we are not able to observe all recently founded firms because we are limited by Crunchbase reported founding data that covers more likely firms with an desire to disclose data or an intention to attract funding soon. This limitation should not be disadvantageous because in this paper we focus on start-ups that are supposed to differ from freelancers and partnership firms that typically would not reach out to investors or

have a desire to disclose firm data. Entrepreneurs in the pre-founding stage, for instance, tend to start their business within their home office and are less related with coworking spaces (Schürmann, 2013).

### 7.4.3 Robustness tests with European sample of coworking space markets

To support the external validity of our findings, we further analyze a panel data set composed of 47 large European cities from the 13 European countries with the highest gross domestic product that might have WeWork locations. WeWork is currently the world’s largest provider of coworking spaces (Lietz and Bracken, 2019). WeWork pioneered a “space-as-a-service” membership model that offers coworking spaces on a short-term basis with a collaborative culture, flexibility to scale, and a worldwide community (United States Securities and Exchange Commission, 2019). At the end of the first quarter 2019, WeWork had 485 locations, up from 127 locations from just two years ago. We manually collect the number of WeWork locations and their sizes through web research and press releases.

Figure 22 shows the total size of Europe’s WeWork space sizes per year compared with our German panel from 2010 to 2018. The secondary axis shows the number of coworking spaces in our German cities in comparison with the number of WeWork spaces.

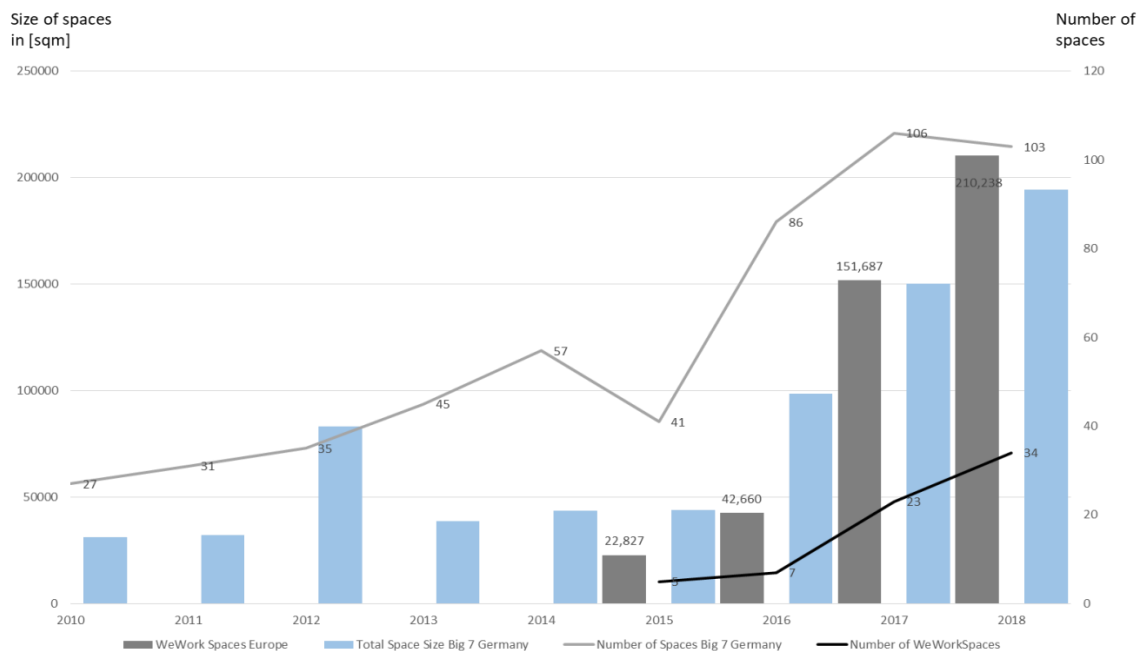


Figure 22: Total space size in Germany’s big seven cities and WeWork locations in Europe since 2010

In the case where a city has WeWork locations (*NumWeWorkLocation*), we regard that city to have a coworking space market with high competition. We apply a cox proportional hazard model to test if cities with WeWork spaces can, in fact, be seen as a highly competitive coworking market. As a hazard event, we regard the first opening of a WeWork space in the corresponding city. To justify this, we assume that the occurrence of this event is a discrete signal for a coworking space market transitioning to high product market competition. This assumption is tested by adding *NumCWS* as explanatory variables besides year and region fixed-effects to the model. Because the coefficient on *NumCWS* is positive and statistically significant at the one percent level as presented in Table 29, we infer that the more competitive the coworking space market the more likely a WeWork location is opened for the first time in the corresponding region. Thus, we regard the number of WeWork spaces within a city as reliable proxy for the number of coworking spaces in that city.

Table 29: Cox proportional hazard model

<b>WeWork Cox Proportional Hazards</b>	
<b>Variables</b>	<b>Hazard Ratio</b>
NumCWS	0.402*** (0.023)
Region fixed-effects	Yes
Year fixed-effects	Yes
N	60
Wald Chi <sup>2</sup>	13986.60***

Notes: The Table shows a Cox proportional hazard model of the opening of a new WeWork location interpreted as the hazard event. The number of coworking spaces in a region is regarded as a predictor for that opening. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% level, respectively.

Table 30 shows the regressions of *NumFirmsFounded* to test our first hypothesis. We find a negative and at the one percent level statistically significant coefficient on *NumWeWorkLocation*. This relation is economically significant because we find that a one-standard deviation change of 2.11 in *NumWeWorkLocation* is associated with a decrease of *NumFirmsFounded* by 50.67 compared to its mean of 52.91. This might surprise at first sight, but is consistent with our German sample results because we assume that coworking space markets with WeWork locations are more competitive. This is supported when we also include its squared term in regression (2) because then both variables exhibit

negative and statistically significant coefficients. Hence, our first hypothesis is supported again.

Regarding our second hypothesis, we regress *NumFinancingRounds* on *NumWeWorkLocation* and find a corresponding positive, at the one percent level statistically significant coefficient. This relation is also economically significant because we find that a one-standard deviation change in *NumWeWorkLocation* is related to an increase of *NumFinancingRounds* by 2.40 compared to its mean of 67.53. This finding also supports our second hypothesis.

Table 30: Regression with WeWork spaces and founding activity (number of firms founded)

	(1)	(2)	(3)
<b>Variables</b>	<b>NumFirmsFounded</b>	<b>NumFirmsFounded</b>	<b>NumFinancingRounds</b>
NumWeWorkLocations	-24.012*** (0.524)	-14.127*** (4.484)	49.717*** (7.084)
NumWeWorkLocations x NumWeWorkLocations		-0.357** (0.136)	
NumFirmsFounded			1.137*** (0.183)
Constant	30.181** (14.045)	30.334** (13.701)	-25.043*** (7.536)
Region fixed-effects	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes
Observations	373	373	334
Adjusted R <sup>2</sup>	0.542	0.553	0.627

Notes: The Table shows fixed-effects regressions on the number of WeWork coworking spaces per region. Regressions (1), (2), and (3) are standard regressions with robust standard errors. Regression 1 is the baseline model, regression (2) includes the squared term of WeWork spaces, and regression (3) reflects mature firms. All regressions contain year and region fixed-effects.  $\ln(\text{PrimeRentOfficeMarket})$ ,  $\ln(\text{OfficeSpaceTurnover})$ ,  $\ln(\text{Inhabitants})$ ,  $\ln(\text{UnemploymentRate})$ , and  $\ln(\text{PerCapitaGDP})$  are the natural logarithms of the respective variables. Fixed-effects are unreported. All standard errors (in parentheses) are adjusted for heteroscedasticity and within-cluster correlation at the region level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% level, respectively.



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To summarize, our results from the WeWork European sample support that our German results are applicable to other countries (at least in Europe) and to different sizes of regions. Our results are consistent with literature stating that WeWork has a 30–40% share of mature firms within their spaces (Lietz and Bracken, 2019).

One advantage of choosing WeWork-related data as proxy for product market competition is that WeWork is not financed by investors of the cities that we analyze in our sample, which renders reverse causality concerns less severe.

Since our approach is based on coworking space numbers that abstract from different product characteristics, a concern might be that higher competition among coworking spaces induces them to differentiate their products. This might lead to heterogeneity among coworking spaces causing potentially an omitted variable bias in our regressions. Since a WeWork location represents usually a larger coworking space with a preference for mature firms, we expect that heterogeneity might be a problem if we do not observe the same qualitative results by replicating our regressions with WeWork data.

Since WeWork locations do not differ that much among themselves according to their product characteristics, we expect that an analysis solely based on WeWork locations would mitigate a heterogeneity induced omitted variable bias. Since we do not observe qualitatively different results with the WeWork sample, we doubt that heterogeneity might be a problem for our approach.

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## 7.5 Discussion and conclusion

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### 7.5.1 Theoretical relevance

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To the best of our knowledge, this is the first study to examine the relation of start-ups and coworking space markets based on buyer-seller relationship theory and the level of trust between the partners. We complement the existing literature on coworking spaces by exploring the role they play in entrepreneurial ecosystems and in creating added value. Our study expands on the emerging body of evidence that the spatial environment has a significant impact on entrepreneurial development and growth (Prahalad, 2009; Wagner *et al.*, 2021). On the whole, the results suggest that the propensity for coworking spaces and start-ups to enter into partnerships with each other is dependent on the level of product market competition among coworking spaces and the life-cycle stages of the start-ups. This is because mature start-ups and high product market competition lead to greater

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trust and lower transaction costs. The relation between the number of nascent start-ups and product market competition among coworking spaces is hump-shaped, whereas the relation between mature start-ups and product market competition is monotonously positive. We interpret these findings as empirical evidence that nascent start-ups partner with coworking spaces where there is medium competition on the coworking market, while mature start-ups are more likely to partner with coworking spaces in highly competitive coworking markets. The number of new nascent start-ups declines as coworking markets become highly competitive and the number of mature start-ups partnering with coworking spaces increases. As the coworking market transitions to the point of being highly competitive, the proportion of traditional office space dwindles while the proportion of coworking space rises.<sup>31</sup> Moreover, mutual trust between tenants and coworking operators increases, making mature firms more likely to take advantage of these flexible working environments. Consequently, they may crowd out nascent start-ups. These findings indicate that from a transaction costs perspective, trust, as the enabler of success for classic buyer-seller partnerships, is enhanced when the partners involved are monitored and disciplined to avoid moral hazard. Our findings are supported by robustness tests using the European WeWork sample data.

Although the empirical part of this paper relates to a specific market, the findings may be generalizable to other markets with liability of newness characteristics, where partnerships or collaboration cannot be established without building trust beforehand. It is worth considering in future research whether the same characteristics may apply to tenants of technology parks, incubators or makerspaces.

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### **7.5.2 Practical relevance**

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This study demonstrates that new venture activity is supported by entrepreneurial infrastructure in the form of coworking spaces. The positive relation between coworking spaces and external funding indicates that entrepreneurial clusters can form where coworking spaces are established. These findings may prove helpful when discussing economic development policy at local, regional or national level. Cities are likely to thrive where physical infrastructure is conducive to entrepreneurial behavior (Audretsch and Belitski, 2017).

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<sup>31</sup> Moreover, higher market competition of coworking spaces affects the product portfolio and leads to more services of the coworking spaces, such as offering networking and community events. Coworking spaces evolve with their tenants and respond with product adaptations.

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For policymakers seeking local employment growth and consequent spillover effects, our findings indicate that coworking spaces can serve as an instrument for fostering start-up activity and growth. Relative to the amount of capital invested, start-ups contribute disproportionately to the creation of jobs, market value, and revenues (Gompers and Lerner, 2002) and appear to be more region-centric, which means our findings may have interesting political implications at regional level. The results suggest that policymakers should seek to boost the number of coworking spaces, as this can result in a greater number of growing start-ups in the region in question. However, they need to be aware of the fact that, as the coworking space market matures, founding activity may be deterred due to crowding-out effects in favor of more mature firms. Policymakers may need to intervene if nascent firms are unable to partner with coworking spaces on account of being crowded out by mature start-ups once the coworking space market starts to become highly competitive. One option would be for local authorities to operate or fund their own coworking spaces exclusively for nascent start-ups. Where there is no competition on the coworking space market, policymakers should consider enforcing the creation of coworking spaces in the region. This applies, in particular, to rural areas. Although coworking spaces were originally an urban phenomenon, they are gradually spreading to rural locations (Bouncken *et al.*, 2020c). Initial research shows the benefits of coworking spaces in rural environments (Fuzi, 2015). We expand on this debate and provide further empirical evidence that the inception of coworking in rural areas provides valuable infrastructure for business creation. Since resources, including access to funding and government support programs, are particularly scarce in rural areas, (Miles and Morrison, 2020), coworking spaces can provide assistance in this field. They are more expedient than specialized government programs such as incubators or accelerators, as they are generally less industry-specific and hence reach a broader target group (Fehder and Hochberg, 2014). Building trust is even more crucial in rural areas, and a critical mass of entrepreneurial activity is needed. Gauger and Pfnür (2021) point to the possibility of public administrations boosting trust by initiating coworking spaces themselves. In a rural suburb of Berlin in Germany, for example, a cooperative bank opened its own coworking space. Once the bank employees started working there, start-ups moved in to take advantage of the entrepreneurial ecosystem (Pohl, 2018). According to Miles and Morrison (2020) universities can also assist in the creation of entrepreneurial ecosystems. Bilandzic and Foth (2013) cite the case of a university library dedicated to coworking.

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Coworking space operators should be aware that competition may change their customer structure as nascent start-ups transition to mature start-ups. This is reflected in the recent trend observed at WeWork, where the proportion of mature firms in the customer base is on the increase (United States Securities and Exchange Commission, 2019).

Start-ups need to overcome their liability of newness by building trust via certification by external investors and collaborations with established firms or universities.

Venture capitalists are likely to locate in areas with a high concentration of start-ups in order to effectively monitor and interact with their ventures (Chen *et al.*, 2010). We expect these kinds of agglomerations to be found in regions where coworking space markets are highly competitive. In the US, for example, venture capitalists take up membership in coworking spaces in order to gain access to potential investment opportunities.

As far as real estate management is concerned, we consider it possible that landlords could use coworking spaces as an incubator to establish trust with start-ups that may later go on to become tenants of their traditional office space.

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## 7.6 Limitations and future research

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We acknowledge that our study has certain limitations. Firstly, we use spatial aggregate data and lack information about whether a recently founded or funded firm is, in fact, a tenant of a coworking space or at least economically impacted by a coworking space in some way. As in the case of other studies based on spatial aggregate data (Chen *et al.*, 2010; Fehder and Hochberg, 2014; Colombo *et al.*, 2019; Deloof *et al.*, 2019), we can only assume that the relation between coworking spaces and start-ups in aggregate data is evidence of the true relation between the two.

One possible concern is that our analysis suffers from some kind of reverse causality due to the number of recently founded and funded firms being regressed on the number of coworking spaces. In view of the fact that we use annual flow data for the founding and funding activity and accumulated (i.e., stock) data for coworking spaces, we consider reverse causality to be somewhat unlikely. This is because we expect the number of coworking spaces to be less volatile over time, on account of its real estate nature, than

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the founding and funding activity, which undergoes stronger fluctuations<sup>32</sup>. However, reverse causality is still possible, so an instrumental variable approach might be helpful.

Another possibility would be to use a matching approach to compare similar cities with differing levels of competition on the coworking space markets. Since our approach accounts for fixed effects in a panel of cities of similar size and with similar economic activity, it represents an initial step towards this type of analysis. For future research purposes, the sample should be extended to include a larger number of cities, so that propensity score matching can be applied in the interests of conducting a more thorough matching-based analysis

Future research could also address the various value propositions communicated by coworking space operators. By way of example, some coworking spaces host on-site accelerators as well as providing financial support, while others target firms at a specific stage or in a particular industry.

A frequent subject of debate in literature is whether the relation between start-up infrastructure and entrepreneurial activity is endogenous or exogenous (Bliemel *et al.*, 2019). Governments such as the Australian Federal Government have started to support coworking spaces by providing them with grants. Future research could focus on this recursive relationship between infrastructure and start-ups and address the question of whether (supported) infrastructure enables entrepreneurial behavior or vice versa. Other economic outcomes, such as patenting activities or scalability potential, could be used to better capture the characteristics of start-up tenants.

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<sup>32</sup> As exhibited in Table 26, the standard deviation of the number of firms founded and financing rounds is more than twice as high as the standard deviation of the number of coworking spaces.

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## 8 Thesis Conclusion and Contributions

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### 8.1 General conclusion

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This thesis has comprehensively analyzed coworking spaces as new work environments. The impact of coworking spaces on individuals, on firm success, and on societal benefit is still at the very beginning of the scientific discourse, and has been further developed with the research of this thesis. As such, this thesis is one of the few to provide a comprehensive perspective on the economic impact caused by these new work environments. The analyses have apparently shown that a coworking space is more than just a physical space. They are social places within a context where socio-economic value is created and new practices of collaboration occur. The cumulative studies answered the formulated research questions on every level of analysis consecutively.

The first article studied coworking spaces from an individual user perspective. The results revealed that the main appeal of coworking spaces is the vibrant atmosphere and separation of work and private life. Efficiency-focused real estate arguments, such as affordability and flexibility, were also relevant for coworking space users. User preferences were derived by analyzing the preferences of individual users from Germany, the Netherlands, and Czech Republic. These were compared among each other to show that the uniformity of coworking spaces that have emerged in recent years might not attract local users with specific needs. The identified differences in preferences can help position more specific, user-centric coworking spaces within local markets.

The second study analyzes coworking spaces from a meso perspective and sheds light on how coworking spaces contribute to firm success. The focus of interest is on Corporate Real Estate Management with its core task of providing real estate space. One of CREM's main contributions is to increase work satisfaction and employee productivity within the workplace as these translate to overall firm success. The results indicate that the mechanisms of strategic flexibility, optimization of liquidity, and support for the company's core business are related with firm success when using flexible office space. Furthermore, their use is related with innovation capability, collaboration and creativity, and employee satisfaction. The data also reveal CREM plans to utilize more flexible office space in the future.

Within the study, real estate investors as stakeholders and their role in flexible office space are also investigated. For real estate investors, flexible office space is a new field of

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business that offers long-term leases. The lease to coworking operators enables the opportunity to respond to changing user requirements and risk diversification in the marketing of multi-tenant buildings. Non-institutional investors in particular have recognized the importance of flexible office space, even though this comes with some risks, such as operator risk. In sum, the article presents a holistic picture of flexible office space and analyzes its role from a real estate perspective on CREM (commercial user), on investors and operators.

The third study sheds light on the perspective from the micro and meso level. First, factor analysis reveals which factors determine work satisfaction in corporate coworking spaces. Second, the levels of influence of these factors show that employees need workspaces for communication, collaboration, and concentration. Whereas the factors are helpful for the individual, the results of the regression analysis can be used by corporate real estate management to inform the design of collaborative workspaces that enhance employees' work satisfaction in order to enhance firm performance.

The fourth study draws attention to public administration as a unit to show a use case of coworking from a meso level. The study analyzes success factors for public workers when implementing public coworking spaces and derives their specific needs such as childcare services and accessibility. It can be concluded from this study that coworking might be a promising future work model even for specific user groups such as public units.

Finally, in the fifth study, a macro perspective on coworking is taken by analyzing its impact on a regional level. Coworking spaces are regarded as intermediaries in an entrepreneurial ecosystem with tangible and intangible resources. Nascent and mature firms benefit from this ecosystem, which is analyzed in a spatial aggregate analysis of coworking spaces and funding data of firms. The relation of start-ups and coworking spaces is theoretically explained with a buyer-seller relationship theory to show how ventures match with new work environments. The results show that venture activity is related with coworking spaces and that their use is dependent on their life cycle stage. These results have implications for policymakers and regional development. Coworking spaces are related with venture activity and can contribute to economic growth.

Thus, coworking spaces are analyzed from a holistic view with different perspectives and a set of different methods to capture their economic impact beyond just providing workspace.

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## 8.2 Theoretical contributions

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Overall, the findings across the five articles contribute to office environment, workplace, entrepreneurial and corporate real estate literature by enhancing the understanding of coworking spaces as new work environments. In general, there is a common understanding that every operational activity requires a physical organization of the workplace (Krüger, 1994). The work environment is an essential resource for individuals and firms in supporting their core business and achieving competitive advantage (Appel-Meulenbroek and Danivska, 2021b). The thesis extends this view on coworking spaces theoretically and investigates empirically how these work environments impact the user, organizations, and the economy. These implications are discussed below.

Flexible office space provision is based on the idea of the sharing economy, where resources are used collaboratively without owning them. Whereas in the real estate industry the common form of space provision has been ownership, renting, or leasing, the understanding of an innovative form of space provision, where work environments are collaboratively shared instead of owned, is enhanced. By using a holistic CREM model that shows firm success when using coworking spaces, the study is among the first that demonstrates comprehensive mechanism when using flexible office space.

This holistic understanding of firm success through the use of coworking spaces is complemented by the individual factors that determine work satisfaction in these new work environments. By using workplace and environmental psychology theory, new knowledge is provided on how coworking spaces need to be designed, how they determine work satisfaction and which characteristics provide a productive work environment. It became apparent that coworking spaces unfold their potential through activity-based work environments (ABW) that include spaces for communication, collaboration, and concentration.

Further, through the findings of this thesis it became evident that coworking spaces support entrepreneurial activity as intermediaries in an entrepreneurial ecosystem. As such, the research extends ecosystems on the nexus between real estate and entrepreneurship. The importance of trust is introduced as an essential resource between ventures and coworking spaces. Whereas trust-based relationships have already been analyzed on the micro level between users of coworking spaces (Capdevila, 2013), this study further abstracted the concept of trust and applied it to the macro level. The thesis advances the understanding of the relation of founding and funding of ventures with

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coworking spaces by applying buyer–seller relationship theory. As such, the thesis has extended a classical theory from marketing to a real estate field and models coworking spaces as sellers and ventures as buyers. Whereas typically real estate literature argues with risk, entrepreneurial activity in coworking spaces can be explained by the level of trust in a market where both partners show liabilities of newness. As such, providing an indication as to which firms are typical coworking space tenants contingent on their life cycle stage adds to theory in real estate and sharing economy literature. Using financial contracting data provides more verifiable and credible empirical evidence than a questionnaire-based approach. The crowding-out effect of nascent start-ups in favor of mature start-ups indicates that from a transaction costs perspective, trust, as the enabler of success for classical buyer–seller partnerships, is more established if the partners involved are monitored and disciplined to avoid moral hazard. In sum, the thesis expands on the emerging body of knowledge that the spatial environment has a significant impact on entrepreneurial activities and economic growth.

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### **8.3 Implications for practice**

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In addition to its theoretical implications, this thesis may also inform workplace managers, policymakers and real estate professionals. There is a paradigm shift by business leaders toward new ways of organizing work and new work concepts (Heidt, Gauger, and Pfnür, 2021), which is an opportune time to engage decision-makers about a new ecosystem of work, such as coworking spaces and their impact on users, organizations and society. The results of the present research indicate on a micro level that user needs and user-centricity is highly relevant in future considerations. Operators, CREM, and investors need to consider the user as the most important resource when building, operating, and using workspaces. Workplace design must not only focus on bringing people together but also on providing a mixture of spaces that allow for social and business encounters. A configuration of concentration rooms, collaboration rooms and leisure space leads to high work satisfaction and, ultimately, high organizational outcomes.

For corporate real estate managers, the thesis shows the relevance of increasing flexibility, high quality workspaces, an increasing need for service orientation, and collaborative work on firm success. An increasing number of large corporates are incorporating these flexible work environments into their real estate strategies (Orel and Del Alonso Almeida, 2019).

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Yet, organizations are advised to be cautious as coworking spaces are not beneficial in every case. Mechanisms such as a corporate identity, data protection, employee belonging, and a higher employer branding might be better ensured in the company's own office premises.

Corporate real estate managers can use different adaptation strategies to maximize their use of these new work environments. They can either offer their employees the possibility to use external coworking spaces or create their own internal corporate coworking spaces, with a vibrant atmosphere for motivated talent and satisfied employees. It is assumed that corporate coworking spaces will play an even more significant role in the future. Companies can combine the advantages of both worlds and engage external users on their own premises to generate ideas, foster innovativeness, and still create their own specific and branded work environments.

The findings also illustrate that coworking is most promising depending on the life cycle stage of the firm. If the competition between tenants becomes too high, then a crowding-out effect could occur where nascent firms are crowded-out in favor of mature firms. This is in line with the findings of Bouncken *et al.* (2018) who show that users compete on the appropriation of values and derive different tensions that inhibit value creation such as opportunistic behavior.

On the macro perspective, the establishment of coworking spaces in regions, especially where there is a low number of coworking spaces, can lead to spillover effects, entrepreneurial activity and venture founding. Coworking spaces, that “build the core of such innovation-ecosystems” (Bouncken *et al.*, 2018: 405) can contribute to the formation of clusters in which start-ups and entrepreneurial activities accumulate. Backers, such as venture capitalists, can use these insights to specifically locate nearby coworking spaces. Essential is building trust between the ventures and coworking spaces, which is even more crucial in rural areas, where a critical mass of entrepreneurial activity is needed. Governments can continue to leverage these clusters and promote regional economic development. This building of trust and initial infrastructure can also be accomplished by establishing public coworking spaces as a first step. Globalization and technological advancements force policymakers to convert more and more public infrastructure (e.g., empty bank branches, post offices, or train stations) into new business models and to revitalize vacant space. These first practical implications are already evident by coworking spaces in train stations (Mitev *et al.*, 2019) or the transformation of a bank branch (Pohl, 2018) into public coworking spaces.

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## 8.4 Limitations

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The thesis offers valuable contributions for research and practitioners alike. Even though the limitations have already been described in detail in the corresponding studies, some overarching limitations should be mentioned here. At the same time, however, these provide avenues for further research.

Methodologically, four of the five studies are based on questionnaire-derived data and, therefore, bear risks of potential biases such as common method or response biases. Most scales were not psychometrically tested or rigorously pretested. Although this is common practice in social science, it should not be unmentioned. None of the studies use randomized, natural experiments so the estimates could be inconsistent and endogeneity cannot be completely rejected (Antonakis *et al.*, 2010).

The second study uses quantitative data that was used for more than one research purpose and combined data from two datasets. As Kirkman and Chen (2011) note, the combination and reuse of data for more than one research purpose could lead to statistical disadvantages. Furthermore, the data are cross-sectional, which limits the conclusions that can be drawn. However, in the conceptual analysis, qualitative data from interviews and the quantitative data showed congruent findings, which seem promising.

The study on corporate coworking spaces also uses cross-sectional data with self-report variables. While self-report measures are often the subject of critique (Chan, 2009; Paulhus and Vazire, 2009; Weber, 2019a), most studies of work satisfaction rely exclusively on self-report measures. Chan (2009) argues that these threats are among the most mentioned comments by reviewers, though it is difficult to use alternatives to self-report measures and there is no gold-standard against which these measures can be compared (Lucas, 2018).

The fifth study uses a small sample, which is likely to have characteristics that differ considerably from individuals in the general population of public administration workers. However, the consistency of findings across quantitative and qualitative findings were encouraging.

The sixth study makes use of longitudinal data. Nevertheless, the results cannot be generalized without restriction. First and foremost, the study applies spatial aggregate data and, thus, only regards the relation of coworking spaces and start-ups as likely evidence of their true relation. In addition, it cannot be claimed with complete certainty

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that the data from the Crunchbase database is complete and current. This could lead to distortions or incomplete matchings.

Based on the findings to date, more in-depth or reproduced analyses could validate and extend the results.

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## **8.5 Future avenues and evolving trends of coworking spaces**

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Coworking spaces are rapidly and exponentially growing, and their business models are constantly evolving. The flexible work concept has spread worldwide with up to an estimated five million users by 2022 (Orel and Del Alonso Almeida, 2019).

However, in the case of WeWork, one of the fastest growing flexible office space providers, a failed IPO has also highlighted the downsides of this incredible growth. At the same time, COVID-19 initially inhibited the growth of the spaces and had severe impact on many flexible office space operators. It is expected that the coworking industry will thrive after the COVID-19 pandemic for the following reasons:

According to Pfnür *et al.* (2021a), nearly half of the workforce worked from home during the COVID-19 pandemic. This unique “experiment” yielded a series of positive effects (high work satisfaction, higher work productivity, high degree of work autonomy and flexibility, less commuting), though negative effects were also apparent (less social interaction, disturbance, loneliness, less work–life segregation). An important finding was that the workplace at home performed better than the office premise. Yet, individual variance and differences were observed if characteristics for workers at home were not suitable, such as not having an own desk or dedicated room. These adverse working conditions were found to be more pronounced for younger workers. Pfnür *et al.* (2021a) also derived that personality traits and the relationship status could determine work satisfaction at home.

It is widely assumed that flexible work practices, virtual teamwork, and working from home, at least for some days a week, could remain part of the future way of working (Bloom, 2020). In this context, workers are constantly evaluating their workplace and adjusting their work patterns regarding time, workspace, and location of work. There has never been a greater focus on organizing the physical workplace and employees are aware of the significance of their spatial work settings that determine work success. As a consequence, coworking spaces are likely to play a greater role in the allocation of the workspace in the future (Ross *et al.*, 2017). If coworking operators particularly focus on

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these future users with adverse working conditions at home, then they can access a new group of users who would otherwise have worked from home.

First empirical evidence shows that this new model of coworking is currently emerging in the form of residential, neighborhood-based coworking spaces that are close to the workplace at home. When remote work continues, suburban areas, which are more affordable, could thrive while rural coworking spaces could benefit from this trend. While employees continue to save commuting time, they have the benefits of work-life segregation, more social interaction, and less loneliness in these shared work environments. As such, it is assumed that coworking spaces will emerge in the long-term as beneficiaries from the COVID-19 crisis.

Recent findings have shown that the office workplace has significantly underperformed the workplace at home (Pfnür *et al.*, 2021a), hence, companies are faced with the challenge of how they can adapt their office to the new requirements. Real estate as-a-service will play an important role in this context. Coworking providers can offer “white-label solutions” and design, operate, and manage the corporate office premise. CBInsights (2018), for example, argues that, WeWork claims to collect a plethora of data “on ideal office locations and layouts, and using software to determine everything from ideal desk layout to optimal conference room size.” By leveraging this data coworking operator can become an “outsourced facilities manager, at a time when big enterprises are trying to shed real estate management from their portfolios.” Coworking operators may thus have a competitive advantage over internal CREM departments with their core business of not only providing space, but constantly optimizing it in a data-driven manner and provide specifically tailored user-centric environments (Saiz, 2020).

This shift is accompanied by a hybridization of coworking with the virtual world, where the physical workspace is combined with a digital, virtual component. Communities and networks emerge in the digital space and reach beyond the coworking space in time and space (Sechi *et al.*, 2012). Their track record, which they have built up so far via digital collaboration tools, booking platforms, services and networking events can be used to offer the best of both worlds. Physical collaboration is needed to stimulate creativity and serendipitous social interactions and the efficient communication in the digital world for productive work.

The popularization of coworking spaces has resulted in increasingly specialized business models to address potential users with specific needs (Orel and Dvouletý, 2020). The mix

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of (co-)living, working, leisure and recreating habitats are referred to as a “fourth place” (Morisson, 2019). In this fourth place, the frontiers between the different functions blur and restaurants, bars, and co-production spaces, such as fablabs and makerspaces, innovation centers, work desks, and shared apartments are combined to create a world with high gentrification and a new level of intermingling. Coworking operators could take advantage of their great know-how in designing contemporary workspaces with a vibrant, collaborative atmosphere.

To conclude, this cumulative dissertation has addressed the paradigm shift in new work environments and provided answers of how coworking spaces impact the future of work. The nature of work is rapidly changing, driven by technological, social, and organizational changes. In response to dealing with this challenging and disruptive world that is emerging, the work environment as the physical organization of work has a significant role in coping with future requirements. The thesis has contributed to work environments by providing an in-depth exploration of coworking spaces in the irreversible process of new ways of working. The thesis hopes to shape a broader discussion of this new ecosystem of work and encourage the direction of future research in this field.

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## Appendix

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### List of Appendices

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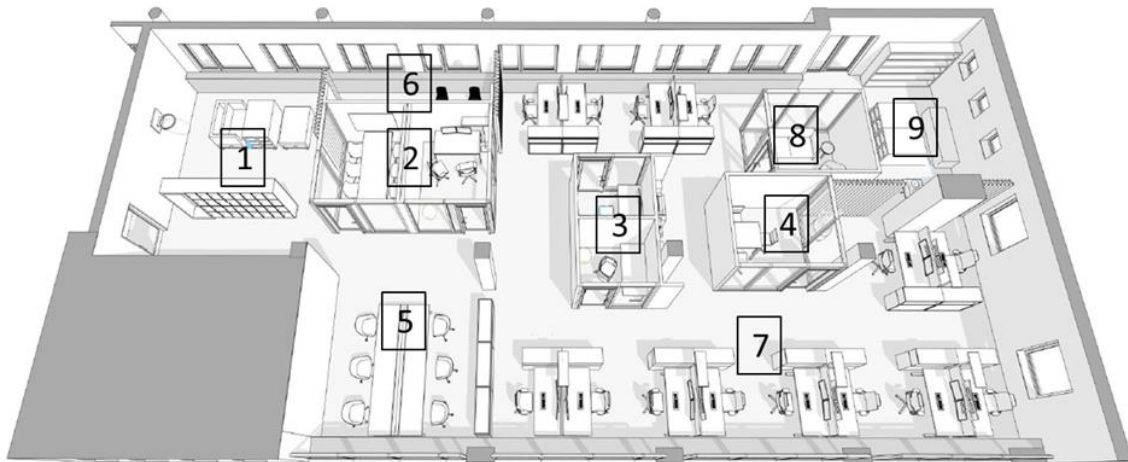
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## Appendix A – Appendix of the article Corporate Coworking Spaces - Determinants of Work Satisfaction in Future Workspaces

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A1: Exemplary Floor Plan



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No.	Space Configuration Type
1	“Schoolyard”/Social interaction space
2, 3	Meeting rooms/Think tanks
4	Concentration room/Phone booths
5	Workbench
6	Bench/Short-term desks
7	Open space flex desks
8	Lounge room
9	Creative corner and material storage

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## A2: Items of the Questionnaire

Please rate on a scale of 1 to 5 the extent to which you agree with the following statements:

Original Item (German)	Item (English)	Variable	Source
Das Raumklima ist angenehm (z.B. Temperatur, Feuchtigkeit)	The indoor climate is pleasant (e.g. temperature, air humidity)	Satisfaction with indoor climate	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Die Beleuchtung am Arbeitsplatz ist angenehm	The lighting in the workplace is pleasant	Satisfaction with lighting	(Bauer <i>et al.</i> , 2018)
Die Arbeitsräume sind hell	The working spaces are bright	Satisfaction with brightness	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Die Arbeitsumgebung ist ansprechend gestaltet	The work environment is well designed	Function as a feel-good atmosphere	(Maarleveld <i>et al.</i> , 2009)
Die Räumlichkeiten strahlen eine Wohlfühlatmosphäre aus	The rooms radiate a feel-good atmosphere	Appealing space design	(Maarleveld <i>et al.</i> , 2009)
Es gibt ausreichend Möglichkeiten für spontane Besprechungen (z.B. Räume, Stehmöbel, Rückzugsecken)	There are plenty of opportunities for spontaneous meetings (e.g., rooms, standing furniture, retreat corners)	Rooms for ad hoc meetings	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Räume für spontane Besprechungen sind ausreichend verfügbar	Sufficient rooms are available for spontaneous meetings	Ad hoc meeting room availability	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Räume für spontane Besprechungen sind schnell erreichbar	Rooms for spontaneous meetings are quickly accessible	Access to ad hoc meeting rooms	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Es gibt ausreichend Räume für geplante Besprechungen	There are enough rooms for scheduled meetings	Meeting room availability (for scheduled meetings)	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Es gibt ausreichend Rückzugsorte für spontane Telefonate	There are enough privacy options for spontaneous telephone calls	Privacy options for phone calls	(Maarleveld <i>et al.</i> , 2009)
Die Arbeitsumgebung fördert die interne Kommunikation	The working environment promotes internal communication	Satisfaction with overall communication	(Maarleveld <i>et al.</i> , 2009)

Konzentriertes Arbeiten wird häufig unterbrochen	Concentrated work is often interrupted	Possibility for concentrated work	(Bauer <i>et al.</i> , 2018)
Die Geräuschkulisse in der unmittelbaren Arbeitsumgebung ermöglicht ein fokussiertes Arbeiten	The background noise in the immediate working environment enables focused work	Background noises	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Es gibt ruhige Arbeitszonen für konzentriertes Arbeiten	There is a quiet work zone for concentrated work	Quiet work zones	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Konzentriertes Arbeiten wird vor allem durch telefonierende Kollegen unterbrochen	Concentrated work is mainly interrupted by coworkers talking on the phone	Distraction by coworkers talking on the phone	(Maarleveld <i>et al.</i> , 2009)
Es gibt viele visuelle Ablenkungen in der unmittelbaren Arbeitsumgebung (z.B. Durchgangsverkehr)	There are many visual distractions in the immediate working environment (e.g., through traffic)	Visual distraction	(Bauer <i>et al.</i> , 2018)
Das flexible Bürokonzept gewährleistet ausreichend Privatsphäre	The flexible work environment ensures enough privacy	Privacy	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Die räumlichen Bedingungen für Telefonate sind optimal	The spatial conditions for phone calls are optimal	Spatial conditions for phone calls	(Maarleveld <i>et al.</i> , 2009)
Die Arbeitsumgebung unterstützt die Leistungsfähigkeit unseres Teams	The working environment supports the performance of the team	Team performance	
Die Arbeitsumgebung unterstützt einen schnellen, fachlichen Austausch unter Kollegen	The working environment supports a fast, professional exchange between colleagues	Supportive environment for collaboration	(Maarleveld <i>et al.</i> , 2009)
Die Arbeitsumgebung unterstützt die Zusammenarbeit auch bei	The working environment supports cooperation also in case of changing tasks	Fast, informal meetings/chats with colleagues	(Maarleveld <i>et al.</i> , 2009)



wechselnden Tätigkeiten			
Die erforderlichen Arbeitsmittel stehen zur Verfügung (z.B. Telefon, Laptop, Tablet, Bildschirm, Drucker, Anschlüsse, Beamer)	All necessary equipment is available (e.g., telephone, laptop, tablet, screen, printer, connections, beamer)	Work equipment	(Maarleveld <i>et al.</i> , 2009; Bauer <i>et al.</i> , 2018)
Die zur Verfügung stehenden Räume (inkl. Ausstattung wie z.B. Mobiliar) unterstützen die Arbeit optimal	The available rooms including equipment and furniture support work optimally	Room equipment including furniture (including equipment, e.g., furniture)	(Bauer <i>et al.</i> , 2018)
Das flexible Bürokonzzept stärkt den Teamspirit	The flexible work environment supports the teamspirit	Work satisfaction	(Bauer <i>et al.</i> , 2018)
Das flexible Bürokonzzept stärkt das Wir-Gefühl im Sinne des One-Company-Gedankens	Satisfaction with the sense of unity/belonging		(Bauer <i>et al.</i> , 2018)
Wie zufrieden sind sie mit Ihrem derzeitigen Arbeitsumfeld?	Satisfaction with your present work environment		(Bauer <i>et al.</i> , 2018)

## Appendix B – Appendix of the article Flexible Office Space als immobilienwirtschaftliche Innovation – Eine konzeptionelle und empirische Analyse

### B1: Fragen und Variablen der 2. Nutzerbefragung.

Bitte bewerten Sie auf einer Skala von 1 bis 6, inwieweit Sie den folgenden Aussagen zustimmen:

Item des Fragebogens	Variable
Wir können Wettbewerbsvorteile für unser Kerngeschäft aus dem spezifischen Immobilienbestand und Immobilienmanagement erzielen.	Unterstützung des Kerngeschäftes (Cronbachs Alpha: 0,609)
Wir können durch unsere Immobilienstrategie und unser Immobilienmanagement die Effizienz betrieblicher Prozesse steigern.	
Wir können durch unsere Immobilien die Identität unseres Unternehmens stärken.	Corporate Identity
Wir können durch unser Immobilienstrategie und durch unser Immobilienmanagement zu dem steigenden Gesundheits- und Umweltbewusstsein beitragen.	Corporate Social Responsibility (CSR)
Wir können durch unsere Immobilien die Attraktivität unseres Unternehmens für bestehende und zukünftige Mitarbeiter erhöhen.	Employer Branding
Wir können durch unsere Immobilienstrategie die Flexibilität in der Entwicklung unseres Unternehmens erhöhen.	Strategische Flexibilität
Wir können durch unsere Immobilienstrategie und unser Immobilienmanagement die Wertentwicklung der Immobilienbestände optimieren.	Wertsteigerungen der Immobilien
Wir können durch unser Immobilienmanagement die immobilienbezogenen Kosten minimieren.	Optimierung der Immobiliennutzungskosten
Wir können durch unsere Arbeitsplatzgestaltung die Führung der Mitarbeiter unseres Unternehmens verbessern - Immobilien als Management Tools.	Einflussnahme Eigentümermanagement
Wir können durch unsere Immobilienstrategie die Flexibilität der Kapitalstruktur des Gesamtunternehmens erhöhen.	Optimierung der Kapitalstruktur (Cronbachs Alpha: 0,680)
Unsere Immobilien tragen dazu bei die Kapitalkosten des Konzerns insgesamt zu minimieren.	
Unsere Immobilienstrategie trägt dazu bei, die Liquidität des Konzerns jederzeit sicherzustellen.	
Wir können durch unsere Immobilienstrategie Innovationsprozesse, Kollaboration und Kreativität messbar effektiver gestalten.	Innovationsfähigkeit, Kollaboration und Kreativität
Wir können die Arbeitsproduktivität der Mitarbeiter durch bestmögliche Bereitstellung von Arbeitsplätzen steigern.	Verbesserung Arbeitsproduktivität

Wir können Wohlbefinden und Mitarbeiterzufriedenheit durch attraktive Arbeitsplätze nachhaltig erhöhen.	Wohlbefinden und Zufriedenheit
Ein steigender Anteil unserer Flächen sollte in flexiblen Sharing Immobilien (Flexible Office Space, Co-Production, Co-Logistik etc.) bereitgestellt werden.	Nutzung Flexible Office Space

## B2: Korrelationstabelle der 2. Nutzerbefragung.

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Unterstützung des Kerngeschäftes	,286**	,307**	,279**	,339**	,356***	,350**	-0,045	,361***	0,237*	0,040	0,100
(2) Corporate Identity	1	0,209	,463**	0,018	0,078*	0,220	-0,008	-0,013	0,229	,375***	-0,120
(3) Corporate Social Responsibility		1	,409**	-0,062	0,118	0,267*	-0,038	-0,055	0,197	,297**	0,158
(4) Employer Branding			1	0,156	0,164	,478***	0,068	0,124	0,053	,338**	0,111
(5) Strategische Flexibilität				1	0,192	0,270	-0,133	,701***	,322**	0,081	0,149
(6) Wertsteigerungen der Immobilien					1	0,138	0,089	,350**	-0,029	-0,022	0,164
(7) Optimierung der Immobiliennutzungskosten						1	0,225	,487***	0,117	,417***	0,201
(8) Einflussnahme Eigentümermanagement							1	0,072	-0,151	,290**	0,049
(9) Optimierung der Kapitalstruktur								1	0,106	0,141	0,038
(10) Innovationsfähigkeit, Kollaboration und Kreativität									1	0,210	0,085
(11) Arbeitsproduktivität										1	-0,140
(12) Wohlbefinden und Zufriedenheit der Mitarbeiter											1

Hinweise: Die Tabelle stellt Pearson Korrelationskoeffizienten dar. \*, \*\* und \*\*\* bezeichnen Signifikanzen auf dem 10 %, 5 %- und 1 %-Niveau.

### B3: Fragen und Variablen der Investorenbefragung.

Bitte bewerten Sie auf einer Skala von 1 bis 6, inwieweit Sie den folgenden Aussagen zustimmen:

Item des Fragebogens	Variablen in den Analysen
Nach meiner persönlichen Einschätzung wirken neue Arbeitswelten/New Work als Veränderung der Flächennachfrage massiv auf meine Arbeit.	Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage
In meiner aktuellen und zukünftigen Arbeit hat die Steigerung der eigenen Gebäudemanagementkompetenzen eine sehr hohe Bedeutung.	Steigerung der eigenen Gebäudemanagementkompetenzen
In meiner aktuellen und zukünftigen Arbeit steigt die Bedeutung ganzheitlicher Betreibermodelle, um dem Bedarf kurzfristiger Mietvertragslaufzeiten der Nutzer und langfristiger Sicherheiten der Investoren gerecht zu werden.	Bedeutung ganzheitlicher Betreibermodelle
In meiner aktuellen und zukünftigen Arbeit steigt die Bedeutung von Flexible Office Space-Betreibern als wichtige Kundengruppe.	Flexible Office Space-Betreiber als wichtige Kundengruppe
In meiner aktuellen und zukünftigen Arbeit steigt die Bedeutung von Flexible Office Space-Betreibern als Wettbewerber.	Flexible Office Space-Betreiber als Wettbewerber

### B4: Korrelationstabelle der Investorenbefragung.

	Institutionelle Investoren			Nichtinstitutionelle Investoren		
	(1)	(2)	(3)	(1)	(2)	(3)
(1) Flexible Office Space-Betreiber als wichtige Kundengruppe						
(2) Flexible Office Space-Betreiber als Wettbewerber	0,448***			0,475***		
(3) Bedeutung ganzheitlicher Betreibermodelle	0,311***	0,294**		0,263	0,293*	
(4) Einfluss neuer Arbeitswelten auf veränderte Flächennachfrage	0,498***	0,239**	0,236**	0,297*	0,255	0,145

Hinweise: Die Tabelle stellt Korrelationskoeffizienten dar. \*, \*\* und \*\*\* bezeichnen Signifikanzen auf dem 10 %-, 5 %- und 1 %-Niveau.