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The Virtue of Psychological Empowerment: How Organizational Culture Drives Behavioral Determinants of Workforce Agility in Uncertain Environments.

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AUTHORIZATION OF THE DIRECTOR OF THE THESIS FOR SUBMISSION

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Sign, to comply with the Royal Decrees 99/2011, 1393/2007, 56/2005 y 778/98, in Murcia, January 2021.

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Lisa-Marie Ahl
Murcia, January 2021

"A new type of thinking is essential
if mankind is to survive and move to higher levels."

– Albert Einstein (1946, p. 7) –

Resumen

En la actualidad, en un entorno empresarial altamente competitivo y complejo, las dinámicas del desequilibrio afectan las organizaciones que solamente puede ser caracterizado como exponencial. En el contexto de un entorno empresarial volátil, incierto, complejo y ambiguo, el proceso de transformar una organización en ágil y sostenible debe ser visto desde la perspectiva de la evolución de los recursos humanos. Sin embargo, pocos trabajos de investigación se han centrado en el elemento humano que dibuja un escenario cultural que verdaderamente puede transformar el personal ágil en valor para la empresa. En este sentido, la cultura organizativa describe los valores, creencias, asunciones y comportamientos de los empleados que conecta la discusión conceptual sobre cómo se define una organización y como puede cambiar a largo plazo. Como todos estos elementos deben ser considerados conjuntamente, el constructo de cultura organizativa y su relación con la agilidad del personal ha presentado siempre dificultades a la hora de ser definido o medido, lo que ha motivado los objetivos específicos de investigación de esta tesis.

En base a la Teoría de la contingencia de la empresa, el objetivo principal de esta tesis doctoral es aportar un modelo organizativo para el desarrollo cultural. Este marco teórico sirve de apoyo para competencias como la habilidad de gestionar la incertidumbre de manera rápida, con fuerza y prevalencia de la progresión incorporando un conjunto de atributos para empoderar el personal ágil. Para la medición de cada constructo, los indicadores se seleccionaron a partir de la revisión de la literatura previa. El instrumento de medición de la cultura organizativa ya consolidado que contempla cuatro tipologías de cultura (i.e., mercado, clan, jerarquía, adhocracia) representa la base de ambos estudios y combina elementos psicológicos de la agilidad del personal en términos de adaptabilidad, proactividad y resiliencia. Adicionalmente, se ha desarrollado un análisis multigrupo con el fin de comprobar los efectos moderadores de la incertidumbre expresada, de los resultados, así como la incertidumbre del entorno de trabajo perceptivo como factores contingentes.

Estas cuestiones se abordaron a través de dos estudios empíricos integrados en el marco conceptual desarrollado a partir de la revisión de la literatura. Una de las encuestas practicó pruebas psicométricas y validó el Marco de Valores en

Competencia de Cameron y Quinn (Competing Values Framework - CVF) a través de un estudio previo (n = 103), mientras que el otro se basó en datos cuantitativos analizados mediante análisis de datos multivariados como estudio principal. Asimismo, todas las hipótesis propuestas se resumieron en un modelo de ecuaciones estructurales basado en la varianza de mínimos cuadrados parciales (PLS-SEM), utilizando datos de n = 821 encuestados de empresas de diferentes industrias y ubicaciones.

En primer lugar, el estudio previo sirvió para validar la estructura de valores universales de los sistemas de valores individuales del personal de acuerdo con la Teoría de los Valores Humanos Básicos de Schwartz, que sustentaba el triple grupo de 'Ser, hacer y devenir' a través del Análisis de Clases Latentes. Estos factores contingentes constituyen una implicación crucial para las brechas existentes entre las culturas organizacionales actuales y preferidas, con cuatro grupos específicos de culturas mixtas encontradas en los diferentes tipos de industrias. Los perfiles culturales se crearon mediante el desarrollo de valores categóricos a través de la Teoría de los Rasgos de Personalidad de Jung.

En segundo lugar, se evaluó el modelo de medición y estructural. El conjunto de datos del estudio empírico principal mostró fiabilidad, convergencia y validez discriminante adecuadas a través de coeficientes de trayectoria significativos. Se encontraron nuevas correlaciones entre las cuatro tipologías de cultura organizacional y el concepto psicológico de agilidad del personal. Además, se observó una relación estadísticamente significativa y fuerte entre el cuadrante de cultura organizacional del clan y la agilidad del personal. El análisis de equilibrio de impacto cruzado y su escenario consistente número 4 para redes empoderadas, titulado "Límites e identidad del grupo", reforzó aún más la influencia impulsora de las características del clan relacionadas con las subculturas existentes dentro de las organizaciones. Contrariamente a los hallazgos de estudios previos, las culturas de jerarquía y de mercado también mostraron impactos positivos significativos, lo que ilustra la combinación de y condiciones de trabajo nuevas y tradicionales para mejorar la agilidad del personal. Aunque no se demostró un efecto directo de la cultura de la adhocracia sobre la agilidad del personal, esta tesis revela otro hallazgo elemental sobre la moderación bidireccional ordinal con respecto a la incertidumbre del entorno laboral entre la cultura de la adhocracia y la agilidad del personal. En el caso de una fuerte incertidumbre en el lugar de

trabajo, las evidencias obtenidas sugieren que las características adhocráticas conducen a niveles más altos de empoderamiento psicológico para el comportamiento adaptativo y proactivo. Sin embargo, se detectaron leves efectos perjudiciales sobre la formación de resiliencia en la agilidad del personal.

Finalmente, la existencia de diferencias multigrupo se evaluó mediante la prueba U no paramétrica de Mann-Whitney. La divergencia en cuanto a permanencia en el trabajo, puesto, edad de la empresa, tamaño y tipo de industria contribuyó a la creación del modelo de proceso a través de la evaluación cultural. El marco propuesto para el desarrollo cultural sirve para responder de manera más eficaz a las señales culturales y tiene relevancia práctica, especialmente en corporaciones con cierta antigüedad. En este sentido, esta investigación ofrece tanto conocimientos empíricos como modelos conceptuales para avanzar en la toma de decisiones estratégicas en la gestión eficaz de recursos y capacidades para el desarrollo de la cultura, al tiempo que proporciona un fuerte apoyo para nuevas áreas de investigación.

Palabras clave: Cultura organizativa, empoderamiento psicológico, agilidad del personal, incertidumbre del entorno, sistemas de valores corporativos

Abstract

Nowadays, in the highly competitive and complex corporate environment, the dynamics of disequilibrium are impacting organizations at a pace that can only be described as exponential. Against the backdrop of volatile, uncertain, complex, and ambiguous (VUCA) business environments, the process of transforming an organization into an agile and sustainable one must also be viewed through the evolution of human resources. However, few previous research studies have focused on the human element by creating a cultural landscape that can truthfully transform workforce agility into business value. In this vein, organizational culture is used to understand the underlying values, beliefs, assumptions, and behaviors of employees, which bridges the conceptual discussion of how an organization is defined and can be changed over the long-term. As all these items must be thought of collectively, the construct of organizational culture and its relational mindset to workforce agility has always faced problems of definition

and measurement, leading to the specific research goal of this thesis.

Grounded in the contingency theory of the firm, the main purpose of this doctoral thesis is to provide an organizational model for cultural development. The framework supports competencies such as the ability to manage uncertainty along with the speed, power, and prevalence of progression by embodying a set of attributes for empowering the agile workforce. For the measurement of each construct, indicators were selected from previous research work. The well-established Organizational Culture Assessment Instrument (OCAI) with its four culture typologies (i.e., market, clan, hierarchy, and adhocracy culture) represents the basis for both studies and combines psychological elements of workforce agility in terms of adaptivity, proactivity, and resilience. In addition, to examine the contingent factor of expressed, outcome, and perceptual work environment uncertainty, a multi-group analysis has been carried out for testing moderator effects.

These issues were approached through two multi-embedded empirical studies using the conceptual framework developed from the literature review. One of the surveys practiced psychometric testing and validation of Cameron and Quinn's Competing Values Framework (CVF) as a pre-study (n = 103), while the other relied on quantitative data analyzed through multivariate data analysis as the main study. As such, all hypotheses proposed were summarized in a Partial Least Square of variance-based Structural Equation Modeling (PLS-SEM) approach, using data from n = 821 respondents from different industries and firm locations.

Firstly, the pre-study served to validate the universal value structure of individual value systems in the workforce according to Schwartz's Theory of Basic Human Values, which underpinned the threefold cluster of 'Being, Doing, and Becoming' throughout the Latent-Class-Analysis. These contingent factors constitute a crucial implication for the existing gaps between current and preferred organizational cultures, with four specific clusters of mixed cultures also discovered among different types of industries. Culture profiles were created through categorical value development via Jung's Personality Traits Theory.

Secondly, the measurement and structural model was evaluated. It showed adequate reliability, convergence, and discriminant validity through significant path coefficients in the data set of the main empirical study. New correlations were found between the four organizational culture typologies and the

encontradas en los diferentes tipos de industrias. Los perfiles culturales se crearon mediante el desarrollo de valores categóricos a través de la Teoría de los Rasgos de Personalidad de Jung.

En segundo lugar, se evaluó el modelo de medición y estructural. El conjunto de datos del estudio empírico principal mostró fiabilidad, convergencia y validez discriminante adecuadas a través de coeficientes de trayectoria significativos. Se encontraron nuevas correlaciones entre las cuatro tipologías de cultura organizacional y el concepto psicológico de agilidad del personal. Además, se observó una relación estadísticamente significativa y fuerte entre el cuadrante de cultura organizacional del clan y la agilidad del personal. El análisis de equilibrio de impacto cruzado y su escenario consistente número 4 para redes empoderadas, titulado "Límites e identidad del grupo", reforzó aún más la influencia impulsora de las características del clan relacionadas con las subculturas existentes dentro de las organizaciones. Contrariamente a los hallazgos de estudios previos, las culturas de jerarquía y de mercado también mostraron impactos positivos significativos, lo que ilustra la combinación de y condiciones de trabajo nuevas y tradicionales para mejorar la agilidad del personal. Aunque no se demostró un efecto directo de la cultura de la adhocracia sobre la agilidad del personal, esta tesis revela otro hallazgo elemental sobre la moderación bidireccional ordinal con respecto a la incertidumbre del entorno laboral entre la cultura de la adhocracia y la agilidad del personal. En el caso de una fuerte incertidumbre en el lugar de trabajo, las evidencias obtenidas sugieren que las características adhocráticas conducen a niveles más altos de empoderamiento psicológico para el comportamiento adaptativo y proactivo. Sin embargo, se detectaron leves efectos perjudiciales sobre la formación de resiliencia en la agilidad del personal.

Finalmente, la existencia de diferencias multigrupo se evaluó mediante la prueba U no paramétrica de Mann-Whitney. La divergencia en cuanto a permanencia en el trabajo, puesto, edad de la empresa, tamaño y tipo de industria contribuyó a la creación del modelo de proceso a través de la evaluación cultural. El marco propuesto para el desarrollo cultural sirve para responder de manera más eficaz a las señales culturales y tiene relevancia práctica, especialmente en corporaciones con cierta antigüedad. En este sentido, esta investigación ofrece tanto conocimientos empíricos como modelos conceptuales para avanzar en la toma de decisiones estratégicas en la gestión eficaz de recursos y capacidades para el desarrollo de la cultura, al tiempo que proporciona un fuerte apoyo para nuevas áreas de investigación.

Palabras clave: Cultura organizativa, empoderamiento psicológico, agilidad del personal, incertidumbre del entorno, sistemas de valores corporativos

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ACRONYMS AND ABBREVIATIONS

AC	Adhocracy Culture
ADA	Adaptivity
AIC	Akaike Information Criterion
α	Cronbach's Alpha
AMT	Amazon Mechanical Turk
AVE	Average Variance Extracted
BIC	Bayesian Information Criterion
CC	Clan Culture
CIB	Cross-Impact Balance Analysis
CMB	Common Method Bias
COPE	Committee on Publication Ethics
CR	Composite Reliability
CVF	Competing Values Framework
EXP	Expressed Uncertainty
f^2	Effect Size
HC	Hierarchy Culture
HIT	Human Intelligence Task
HTMT	Heterotrait-Monotrait Ratio
IRB	Institutional Review Board
ISO	International Organization for Standardization
κ	Cohen's kappa Coefficient
LCA	Latent-Class-Analysis

LVS	Latent Variable Score
MC	Market Culture
MGA	Multi-Group Analysis
MICOM	Measurement Invariance of Composites
MTurk	Amazon Mechanical Turk worker
OCAI	Organizational Culture Assessment Instrument
OUT	Outcome Uncertainty
PCP	Parallel Coordinates Plot
PER	Perceptual Uncertainty
PLS	Partial Least Squares
PRO	Proactivity
Q^2	Cross-validated Redundancy Index
R^2	Coefficient of Determination
r	Pearson Correlation Coefficient
RBV	Resource-Based View
RES	Resilience
SEM	Structural Equation Modeling
SMEs	Small- and Medium-sized Enterprises
SRMR	Standardized Root Mean Square Residual
U	Mann-Whitney U-test
VIF	Variance Inflation Factor
VUCA	Volatility, Uncertainty, Complexity, and Ambiguity
WA	Workforce Agility
WEU	Work Environment Uncertainty

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CHAPTER 1. INTRODUCTION

"In the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed."

Charles Darwin (1809 – 1882)
in Darwin Center for Biogeology (2009)

1 INTRODUCTION

The first chapter provides a general overview of the thesis structure and outlines the research problem. First, research aims and objectives, as well as the theoretical framework, are presented in their basic format. The chapter also introduces the concept of the thesis, which helps the reader to understand the various aspects of the research and its originality, as detailed throughout the subsequent chapters. Finally, a discussion relating to the study's limitations is presented, which exposes the contribution to knowledge and the significance of the research results.

1.1 STATEMENT OF THE PROBLEM

Organizations are facing greater and more rapid change than ever before. Diminishing geographical boundaries, new market entrants, disruptive business models, shortened product lifecycles, and evolving customer preferences provide daily challenges, regardless of company size. These dynamic environments pressurize industrial and service organizations into becoming more efficient and agile, in order to survive in the long term. Change emerges as a key aspect of agility. In this vein, empirical studies by Yale lecturer Foster (2012), as well as the Corporate Longevity Forecast 2018 (Anthony, Viguerie, Schwartz, & Van Landeghem, 2018) revealed that the average lifespan of companies from the Fortune 500 Index has never been shorter and has decreased by more than 50 years in the last century.

Represented in figures and numbers, only 12% of the Fortune 500 companies listed since 1955 are still in business, and 26% fell from the list in 2016 alone (Deloitte University Press, 2017). This situation has led to an increasingly growing significance of speed, adoption, and resiliency as the main drivers for organizational agility. In accordance with Schumpeter's theory of competitive behavior and contestability (Schumpeter, 1942), various academic studies discuss the variety of main operational perspectives and methods that are crucial in responding to ever-changing circumstances. Little attention has, however, been paid to key organizational characteristics of corporate culture that are fostering

people, processes, and structures to survive in Volatile, Uncertain, Complex, and Ambiguous (VUCA) environments (Munteanu, Bibu, Nastase, Cristache, & Matis, 2020). Recent research suggests that possessing an agile mindset is developing from the behavior of people. It could, thus, be argued that an agile mindset may be significantly more important than any specific agile management methodology or process (Harjanti & Gustomo, 2017; Rahman, 2014).

However, adopting an agile mind-set has proven to be a challenging task in corporate practice. In traditional hierarchies, especially, academic studies have shown that established processes are risk-averse, and employees tend to be resistant to change, focusing on stability rather than agility (Baškarada & Koronios, 2018b). Many traditional manufacturing industries have not been able to outpace the increasing rate of change since the 1990s, leading to high internal uncertainty and stress. Simultaneously, managing uncertainty in the direct work environment is, therefore, considered to have both negative and positive implications in corporate decision-making. Consequently, the psychological empowerment of an agile workforce has been central to transcending the journey toward an agile organization. Following this insight, it seems that workforce agility is part of, and a key enabler for, overall organizational agility.

Although the multidimensional aspects of organizational agility have consistently been addressed in the management literature, the need appears for a better conceptualization of the underpinned organizational capabilities and engendered initiatives. Only a few studies have investigated the dynamic cultural capabilities based on theoretical debates, using abstract constructs. Psychological and environmental empowerment factors have almost always been disregarded.

1.2 MOTIVATION AND RESEARCH OBJECTIVES

According to Denning (2018), agility is the antidote to shareholder value; the fundamental shift in view from the maximization of shareholder value toward the priority to satisfy customer needs by becoming a social enterprise. A 2018 Deloitte survey on 'Global Human Capital Trends' of 11,000 human resource and business leaders from over 140 countries revealed that 54% of respondents rate their companies as not ready or only somewhat ready to run the organization as an agile network. Despite this response, most corporations have a lack of clear planning

regarding future human working skills and behavior, such as complex problem-solving or cognitive abilities, as outlined by 49% of respondents (Deloitte Insights, 2018). This figure is indeed surprising but reflects the observation contained within the latest 2020 Deloitte report relating to 'Global Human Capital Trends,' which includes over 9,000 business leaders. Only 8% of organizations stated that they are ready to address and to handle the 21st Century workforce strategies (Deloitte Insights, 2020).

Human interaction plays an essential role within the agile transformation journey and, therefore, is indispensable in every organizational culture. In this sense, the legitimate question can be raised as to why cultural development has long been ignored in management circles. The reason can be observed through the fact that the value chain concept by Porter (1985) has been used to understand and analyze industries for the last decades. But within fast-changing business environments, the explanatory behavior of value chain creation hidden in corporate silos has a limited nature. There is a need for a generic value network, which composes a suitable way in which to reveal inter-organizational exchanges and intra-company relationships (Peppard & Rylander, 2006). The goal of this thesis is, therefore, to fulfill this gap in the current state of research.

An agile organization requires an agile workforce with specific corporate values, principles, and daily routines (Breu, Hemingway, Strathern, & Bridger, 2002; Munteanu et al., 2020). This statement reveals that the term 'agility' is nowadays often inflated by many researchers and in corporate practice without reasonable seriousness. Such paradoxes largely result in an urgent human capital challenge and comprise high demand for underlying corporate practices to 'act as one company' regarding structure, culture, and performance management. These practices have rapidly evolved within the fields of software design and information systems during recent years, particularly after the publication of the 'Agile Manifesto' (Beck et al., 2001). However, most research studies focus strongly on the methods and processes used by single product development teams. Successful transition, in turn, depends crucially upon the employees and entails a radical change in the existing management framework. Especially in long-established companies, a lack of consensus of organizational determinants and cultural,

behavioral dimensions for the applicability of research results in practice is often apparent.

The overall goal of this thesis is, therefore, to combine different approaches and angles to the enhancement of workforce agility. By developing a more cohesive and wide-spreading conceptual model for cultural development, it applies to a variety of businesses and industries. A substantial set of organizational culture definitions and models relating to workforce agility will be utilized for an in-depth analysis. This scientific foundation ensures the development of understanding relating to which internal organizational factors affect the level of workforce agility. It also allows the identification of other research directions for further improvements. To fulfill these goals, this thesis scrutinizes three main research questions:

RQ. 1. What are typical behavioral determinants for creating workforce agility?

RQ. 2. What type of organizational culture helps to reinforce the value of an agile workforce?

RQ. 3. How does work environment uncertainty affect the capability-building processes between corporate culture and workforce agility in different organizational contexts?

1.3 THEORETICAL FRAMEWORK AND AREA OF RESEARCH

Many researchers have approached the concept of organizational agility as a multidimensional and complex topic from different perspectives. It is, therefore, decisive to distinguish domains and discuss them as separate research areas, as results from the analyses are not enough for direct use, and models differ widely in terms of structure. One key enabler of organizational agility is an agile workforce, which evolved from an operations management perspective (Qin & Nembhard, 2015). Human behaviors and factors form a nascent stage for transcending the barriers to becoming an agile organization (Sherehiy & Karwowski, 2014). In this regard, a suitable culture of change has often been identified as a global characteristic trait for enhancing workforce agility (Sherehiy, Karwowski, & Layer, 2007). The type of corporate culture that allows agile thinking

and acting provides space for self-organization and empowerment. However, until now, these two approaches have usually been addressed separately in a more general breadth. The challenge is to balance these two approaches, in order to take advantage of their strengths and weaknesses in the context of the entire organization. This avenue is of great importance to uncover what aspects must be changed to benefit from workforce agility and respond to new market challenges.

According to Kerlinger (1986), a framework of theory provides the rationale structure of research to reveal the relationships between variables of a phenomenon. Research findings, in turn, become more meaningful and generalizable in a practical and academic fashion (Adom, Hussein, & Adu-Agyem, 2018). This study proposes a conceptual, methodological framework that analyzes culture typologies through its application for a clear and strategic orientation toward workforce agility. Moreover, environmental turbulence and pressure can presumably disrupt the fit between these two concepts. This investigation includes mainly three sets of literature, namely culture values components and key attributes with behavioral determinants of workforce agility, while also taking forces of uncertainty in the work environment into consideration. As such, the theoretical framework ranges from definitions of workforce agility as a term to an overview of disparate theoretical foundations about the research objectives of corporate culture values. The main objective here is to prepare an empirical research survey, observing cause and effect relationships with a well-founded basis.

Consequently, theoretical lenses of dynamic capabilities' view and behavioral complementarities of knowledge creation based on contingency theory are guiding this thesis. The theory of contingency regard changes as an integral part of life, dependent upon the situational causes, while often referred to as the influence of Darwin (Shusterman, 2010). For this reason, this thesis can be subordinated to the research area of organizational behavior and change management. The field of research combines a social psychological, and sociological perspective at both individual and organization levels, which are crucial in the specific context. The inherent focus lies upon individual behavior on a 'micro' level, diagnosing interrelationships on a 'macro' level, with the external environmental factor of uncertainty. Two underlying key questions about "how

well can results of actions be predicted?" and "how much is known about the situation?" are frequently asked for managing a VUCA context (Green, Page, De'ath, Pei, & Lam, 2019, p. 2) and are also considered in this academic study.

1.4 RESEARCH APPROACH AND METHODS

Moving from the Resource-Based View (RBV) of intra-company culture traits, theory and findings reveal important antecedents and drivers of workforce agility. To fulfill this fact-finding task, the presented doctoral dissertation focuses upon post-positivism-philosophy, which "holds a deterministic philosophy in which causes (probably) determine effects" (Creswell & Creswell, 2018, p. 6). Thus, the study occupies an epistemological and an ontological position, recognizing critical realism as an imperfectly knowable reality. Hence, an empirical quantitative study relating to the impact of corporate culture types on behaviors of workforce agility is undertaken, as suggested in previous research studies (Abbott, White, & Charles, 2005; Muduli, 2017; Sherehiy, 2008; Zitkiene & Deksnys, 2018). This conclusive research procedure of quantitative data collection and analysis uses a standardized survey design, following the highly structured deduction approach, by moving from theory to data in descriptive nature. For this purpose, the empirical and conceptual elements indicate an analysis through Structural Equation Modeling (SEM). In combination with the above-mentioned contingency theory, the explanatory purpose of this investigation design can be categorized according to the following research concepts (see Figure 1).

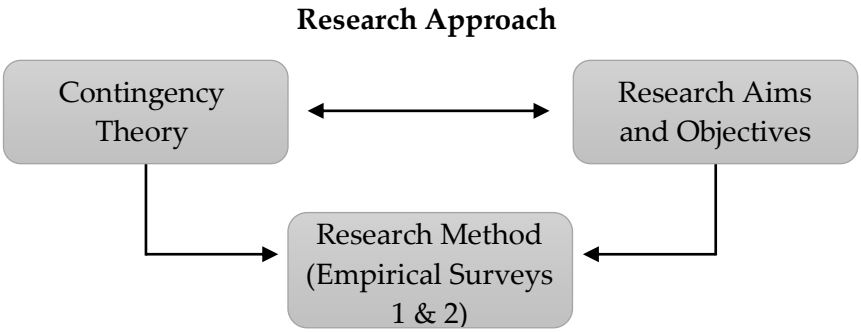

Figure 1: Elements of the thesis' research design.
[Source: own version]

The final stage of work tests the hypotheses developed from the theoretical part of this study. In this vein, the conceptual framework model is cross-checked, deriving new practical propositions for organizational culture development. This approach is appropriate within this context, since prior academic studies did not examine complex cause-effect relationship models with identical dimensions and indicators. As motivational traits stated in Section 1.2, multiple aspects are relevant to this work, which contribute to both underlying concepts. On the one hand, the Competing Values Framework (CVF) introduced by Cameron and Quinn (2011) is used to analyze the four characteristic traits of organizational culture by conducting a pre-study titled 'Quantitative Study 1.' Whilst, on the other hand, the workforce agility scale prescribed by Breu et al. (2002) covers the three behavioral dimensions by Sherehiy and Karwowski (2014). The result is a conceptual model that posits the four cultural types as different drivers of a workforce agility transformation used in 'Quantitative Study 2.' Additionally, the moderating effect of Work Environment Uncertainty (WEU) with scales proposed by Clampitt and Williams (2005) is included in the model to reflect an element from the VUCA world.

1.5 SIGNIFICANCE OF THE RESEARCH STUDY

The diverse dimensions of organizational agility have become the most popular research fields within strategic management approaches in the last few years. Nonetheless, all concepts need to be well-grounded in theory for successful practical exploitation. This thesis is advantageous regarding previous research because empirical data strengthens the importance of certain corporate culture types in increasing workforce agility. The empirical results lead to a final list of propositions, which will be of great help to the business industries, employees, and future research. Especially in long-established corporations, the conceptual framework and the proposed process model for culture development will not only serve for explanatory purposes but also have predictive power in decision-making processes. As such, this research aims to bridge the existing gap in the literature concerning the significance of typical behavioral environment scenarios and their contextual factors of uncertainty management.

This procedure opens a novel path and structure for both theoretical and empirical analysis by analyzing which dynamic capabilities support the cultural change toward the agile way of working. The considered outcomes are sub-divided into the following four groups:

(1) Based on the extensive literature review relating to theoretical approaches on organizational culture typologies, workforce agility, and environmental forces of uncertainty, a conceptual framework for the main empirical study is built in Chapter 2.6, which addresses most current research work.

(2) The pre-study serves to validate the CVF for this research study. The individual values of the workforce are derived from the empirical results, which are deemed to underpin the threefold cluster of 'Being, Doing, and Becoming.' As such, the results provide evidence for the existing gaps between current and preferred organizational cultures via Schwartz's (2012) Theory of Basic Human Values. Mixed culture profiles for different industries are detected and created for subsequent cross-impact analyses through Jung's (1971) Personality Traits Theory.

(3) The cause-and-effect relationships proposed in the literature review are tested through subsequent statistical analyses using SEM approaches. Correlations are expressed by eight hypotheses and located in a self-constructed conceptual framework. Here, the hypothesis regarding the moderating effect of WEU is also explored in more detail. Statistical analyses for group differences include Mann-Whitney U-tests as well as multi-group comparisons by SEM.

(4) The result of arranging the findings in specific order leads to a new process model for culture development, which helps evaluate the awareness, practicability, and necessity of the concept, especially in long-established organizations.

1.6 STRUCTURE OF THE THESIS

Figure 2 (p. 11) illustrates the structure, including the research steps and methods. It shows that the research is subdivided into four main parts, depicting the main objectives of the single sections in rectangles.

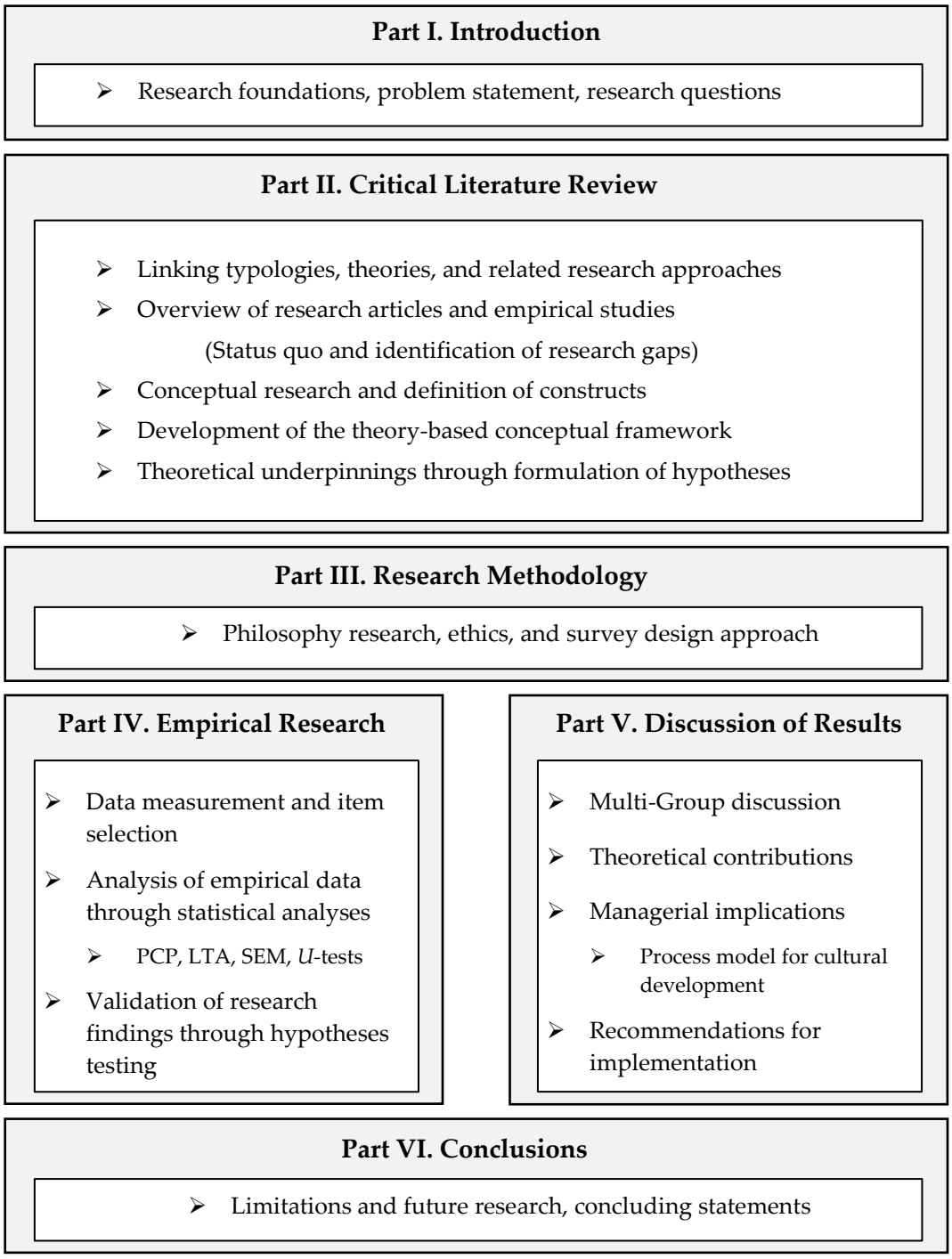

Figure 2: Structure of the doctoral dissertation.
[Source: own version]

The remainder of this synopsis is structured as follows. The literature review introduces the theoretical background in Chapter 2, which provides both evidence and propositions for continuous empirical research. Thereupon, the methodology approach, with its underlying philosophy and ethical considerations, is outlined in Chapter 3. Based on the developed conceptual framework, Chapter 4 moves on to the empirical study using the quantitative survey method and analyzes the data. The synopsis concludes with leading statements, its main contributions, and a discussion of the practical implications in Chapter 5. In essence, this part of the study illustrates how empirical insights shed light upon the delineated research problem and gives room for management-oriented improvements. Finally, the limitations of this research regarding its validity caused by the chosen quantitative approach and directions for future studies are presented in the last part of Chapter 6.

1.7 CHAPTER SUMMARY

The outlined structure of this thesis initially deciphered the definition of the problem. Moreover, the chapter stated prevailing research aims and objectives for the overall motivation to which this research study relates. Within the next step, the theoretical framework and its contents derived from the literature review were prepared for conceptualization. The research approach and methods subsequently were introduced, highlighting their originality through the inclusion of different research areas. Additionally, a broad overview of the findings was given, which also included the significance of this research work. The last section of the introduction depicted the structure of this thesis in diagrammatic form.

CHAPTER 2. REVIEW OF LITERATURE

"The greatest danger in times of turbulence is not the turbulence –
it is to act with yesterday's logic."

Peter F. Drucker (1909 – 2005)
in Managing in Turbulent Times (1980)

2 REVIEW OF LITERATURE

Chapter 2 mainly focuses on the theoretical approaches relating to the research objectives. An essential part of this section considers the bodies of knowledge relevant to the areas of organizational agility and corporate culture, as well as contingent environmental forces. The most important findings from previous research work are compiled while evaluating their relevance to the scientific investigation. Therefore, the first part of the chapter develops a universal context for the 'change' vs. 'transformation' terms. The overall aim is to ensure a common understanding of the main terms and ideas with which this thesis operates. The second part of the chapter introduces different constructs of organizational agility, assembling antecedents, and consequences of the concept of workforce agility. As such, the third section of the chapter sheds light on the most crucial servant for transformation processes; the corporate culture and its relationship between values and behaviors. Thereby, the theories of competing values and ambidexterity provide the theoretical background for the practical aspects of usage and highlight interrelations of the environmental forces discussed. Based on this literature review and the consequent research gaps, hypotheses are derived that refer to the proposed conceptual framework and are stated in the last part of this chapter.

2.1 DETERMINANTS OF SUCCESSFUL CHANGE VS. TRANSFORMATION PROCESSES

A google scholar search for 'agile transformation' scores about 179,000 hits while a search for 'agile change' scores three and a half times more; 618,000 hits (conducted on September 18th, 2020). Notably, since the 1990s, empirical and theoretical research have emerged at an even higher speed due to historically uncertain business environments, further closing the difference between these different typologies. In practice, both terms are often interchanged without any clear pattern of distinction, which causes imprecision and confusion. It is, therefore, essential to articulate terminology here.

Organizational changes frequently occur to promote well-being and growth while also generating 'gales of creative destruction.' The term is explicitly derived from Marxist thought and was first coined by Schumpeter (1942), who considers change as a disruptive force and the one constant in capitalism. For Marx (1973), every system impedes forces of change and destruction that support evolutionary processes. The role of chance and chaos prevails as a necessary self-organizing capacity that enables a system to survive (Farazmand, 2003). In general, revolutionary change and evolutionary change have been the two dominant and often underlying forces of organizational dynamics (Tushman & Romanelli, 1985). According to Sammut-Bonnici and Wensley (2002), the body of knowledge on organizational change and transformation is often linked to the three mainstream theories of evolution, namely the Darwinian concept of survival of the fittest, the probability model, and the complexity approach. All three conceptions have overlapping areas, adding a set of potential and complementary dynamics for the analysis of change and transformation processes.

From an organizational perspective, the theories of probability and complexity provide better explanations through insights in system design than the theory of neo-Darwinism (Sammut-Bonnici & Wensley, 2002). In this vein, the population-ecology theory was promoted to conventional adoption theory and mainly focuses upon choice and selection concerning the population of organizations (Hannan & Freeman, 1977; 1989). The central point of change from population ecologists occurs at the population level through organizational founding and mortality over long periods, explaining the diversity of organizational forms. The combination of external factors and inertial pressures in the organization increases its survivability, which is caused by the strength of environmental selection (Hannan & Freeman, 1989).

Longitudinal studies have revealed that the 'survival of the fittest' evolution theory is insufficient to analyze transformation processes. The theory excludes the dynamics of radical change and appeals to blind mutation and variation by chance. Thereby, many criticisms of population ecology have emphasized a lack of clearly defined key constructs, issues with application and methodology regarding the populations classified, the deterministic nature of environmental selection, as well as debates on the density-dependence model (Salimath & Jones, 2011).

The two other mainstream theories shed light upon the concept of punctuated equilibrium, where short bursts of change overcome basic patterns of organizational activity (Romanelli & Tushman, 1994). Organizational analogies to punctuated equilibrium originate in probability theory, which relates to changes emerging from events or by chance (Sammut-Bonnici & Wensley, 2002). As much more attention exudes on distinctions of organizational transformation on the group level, complexity theory builds on the structure, co-operation, and self-organizing processes of organization systems (Bergmann Lichtenstein, 2000; Lichtenstein, 1995). Nonetheless, both concepts scarcely describe the reasons for conflict system behavior and, therefore, merely contribute to insights for system design (Sammut-Bonnici & Wensley, 2002). However, despite the mentioned shortcomings, the approaches have important implications for social science and organizational development theories, providing a more generic framework for change than Darwin's concept of natural selection.

The issue of change and transformation is extensive. Not only due to the evolutionary theories mentioned above but also in terms of scale and pace with which a process occurs. Early change management theorists mainly concentrated on first-order planned stages of 'three-phase' approaches (K. Lewin, 1947). Previous change management studies have subsequently regarded K. Lewin as "the intellectual father of contemporary theories" (Schein, 1988, p. 239), especially about his fundamental model of unfreeze–change–refreeze. In the literature relating to organizational development, the first-order approach most likely includes incremental and constantly maintained continuous improvements of existing structures or processes through social construction (Goes, Friedman, Seifert, & Buffa, 2000).

Dunphy and Stace (1988; 1993) were the first to introduce the contingency model of organizational change strategies as an extension of K. Lewin's three-step-model. The model focuses upon environmental variables and forces of leadership styles that lead to a situational adaption of change management strategies. More specifically, Donaldson (1996; 2001) articulated that organizations must adapt to strategical, environmental, as well as technological dynamics, briefly referred to as structural contingency theory. According to this classic teleological approach, any misfit between the contingency variables and the organizational structure results

in lower performance. Organizations are, thus, supposed to adaptive change (Donaldson, 1996). At present, the structural contingency theory is better supported than the population-ecology theory outlined above (Donaldson, 2001).

In contrast to the academic world, organizations tend to reinforce their status quo than actively seeking change opportunities (Appelbaum & Wohl, 2000). Consequently, change management is about the transition of an organization from a present state to an envisioned future state, as a result of internal and external causes (Sacheva, 2009). This unstable situation is sometimes called "management on the edge of chaos" (R. Lewin, 2000). The main goal is to stay competitive, regardless of technological (Christensen, 1997), procedural and structural (D. Miller & Friesen, 1982; 1984), or strategic changes (Romanelli & Tushman, 1994). Nonetheless, more and more researchers have criticized K. Lewin (1947) for developing an overly static conceptual model that is inappropriate within a fast-changing, baffling world of chaos, where small events (the 'butterfly effects') can enable large-scale system changes. As such, the central role of employees has been neglected up to that time and has become a decisive impact on the failure of change initiatives.

Kotter's (1995) eight-stage model for transforming organizations, hence, is viewed as a visionary change process framework that includes the nature of business structure and the involvement of individuals. Following from Schein (2004), the inherent power of employees unleashed the difficulty of change model implementation with its depth and impact on culture. Previous studies have denoted several key aspects in the transition and implementation phase concerning the level of resistance and tensions among employees, who experience higher uncertainty (K. Miller, 2011; Wheelan, 2014). The move from resistance to change requires organizational learning and leadership quality with the support of the coevolution theory. Consequently, most recent research draws upon major change drivers in the internal corporate environment, such as vision, communication, learning, and culture. Leadership communication and commitment serve as distinct aspects for reaching organizational success in the process of change (K. Miller, 2011).

The kind of qualitative change required today must fit hypercompetitive environments regarding relationships and functions (Edwards, 2005). The anxious

management phrase "if the rate of change inside an institution becomes slower than the rate of change outside, the end is in sight" resulted in frame-breaking transformation processes becoming the state of art (Welch, 2001, p. 4). In academic studies, transformation, first and foremost, is seen as an extension of organizational development and change conceptualization. The term is often specified as the second-order process of change beyond the basics of teleology (Akingbola, Rogers, & Baluch, 2019; Goes et al., 2000). More often, attributes like revolutionary, disruptive, and radical discontinuous change are found with a strong visionary focus on re-orientation and re-creation (Dunphy & Stace, 1988; D. Miller & Friesen, 1982; Tushman & Romanelli, 1985). In summary, Figure 3 illustrates the different theories of organizational change based on research work from Goes et al. (2000).

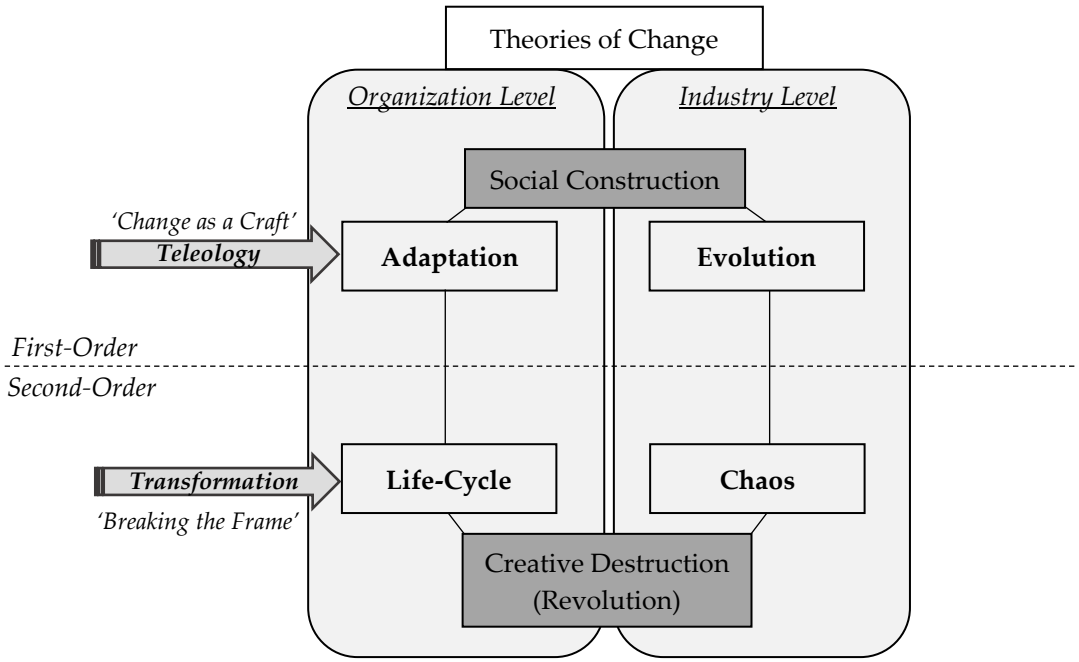

Figure 3: Theory and research on organizational change.
[Source: own version]

Against this backdrop, a robust and significant classification matrix of types of change was introduced by Nadler and Tushman (1995). The matrix shows four outcomes regarding incremental improvement and discontinuous transformation processes of tuning, adapting, reorienting, and re-creating. Utilizing this underlying theory, also known as punctuated equilibrium, organizations are

progressing through long periods of incremental change in convergent stages. Thereupon, they are punctuated by reorientations in short periods, which provide the basis for the new phase of equilibrium and set limits for convergent times (Romanelli & Tushman, 1994).

The concept of organizational discontinuity proposed a new model called 'constructive destruction' to link evolutionary and revolutionary theories (Deeg, 2009). Yet, various organizations must cope with a variety of change discourses that move away from the equilibrium model of change. This pervasive 'changing nature of change' impedes an ambiguous process of continuity and change expressed through competing values (Ford & Ford, 1994; Malhotra & Hinings, 2015). The current research relating to change sheds light on sense-making activities in group dynamics. Transformational change consists of activities that are of predictive, proactive, and reactive nature (Bigley, 2019). Consequently, change deals with a fundamental shift in organizational logic, its values and beliefs, and thus, requires a new set of skills through the challenge of organizational knowledge. Through strong expressions of competing values, individuals can be mobilized for change through the energy that fuels the transformation process (Malhotra & Hinings, 2015). This combination leads to a shift in the corporate culture throughout the setting in the underlying strategy and means. As a result, transformation represents an achievement, the highest form, and extreme profundity of organizational change, which is about modifying behavior and beliefs as a source of adaptation at an individual, group, or corporate level (Malhotra & Hinings, 2015).

At the present state of research, two areas identified within the corporate value chain are currently affected by transformation processes, namely the human and network dimension. These two dimensions require major reassessments of a companies' norms, values, and work environment. W. C. Miller and Miller (2018) particularly highlight the importance of strong individual character traits and exemplifying human values like 'faith, hope, and trust,' which facilitate transformation and innovation processes. In this context, many researchers identify agility and an agile workforce as the key to surviving in the age of disruption (Lindner & Leyh, 2018). Figure 4 shows the most common developmental phases of achieving change vs. transformation stages.

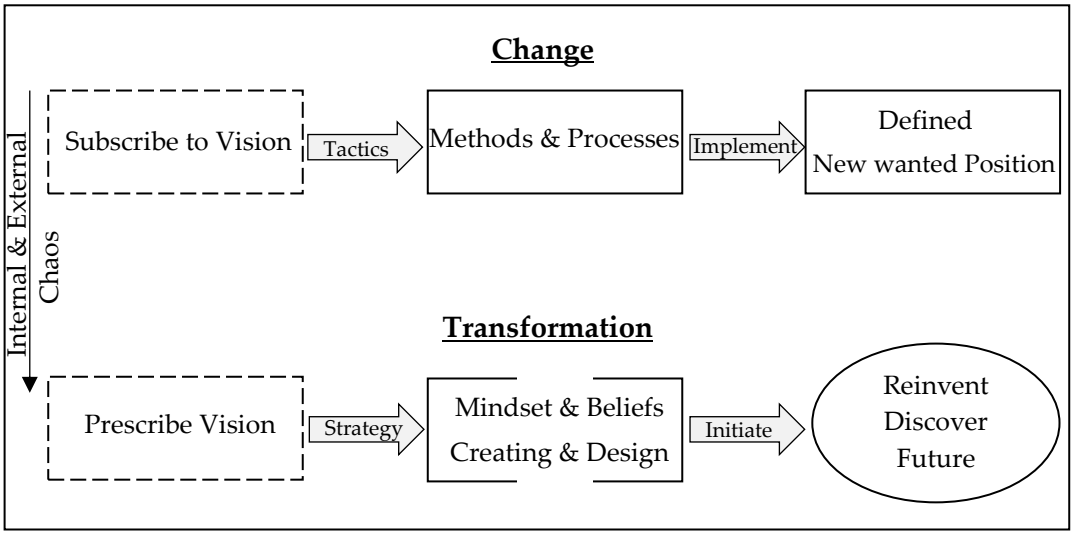

Figure 4: Incremental change vs. Discontinuous transformation.
[Source: adapted from Ashkenas, 2015, para. 7 – 9; Chaudron, 2019]

A recent contribution has incorporated ecological and human social sustainability practices into a new systematic change model that enables higher levels of performance (Stace, 2017). By proposing newly shaped culture and work environments, the re-evolutionary perspective of organizational discontinuity marks the point of transformation threshold and offers the duality of actions and structures for interconnected development paths. In line with the re-invention capability of corporations, this attitude implies ongoing transformation by uncovering an organizations' hidden context.

2.2 THE CONSTRUCT OF ORGANIZATIONAL AGILITY

Organizational agility, which is composed of several interrelated concepts such as flexibility and leanness, appears as a response to the complexity of the VUCA environment. Although present research applies human, organizational, and strategic factors to reveal various dimensions and approaches, the multidimensional concept of organization agility rather constitutes a disparate picture. This thesis, therefore, explores the theory of agility through a review of the literature on organizational science, manufacturing, information systems, and dynamic capabilities. After all, a conceptual structure emerges that concentrates on

the driving antecedents and dependent consequences on organizational agility. Specific emphasis is placed upon attributes, capabilities, and practices that promote workforce agility.

2.2.1 Definitions and Dimensions

Many researchers have approached the multi-dimensional and complex topic of organizational agility from different perspectives. Nowadays, it is assumed to be the business paradigm of the 21st Century that companies need to survive and prosper in a chaotic business environment (Margherita, Sharifi, & Caforio, 2020). The concept of agility has its roots in the 1990s, with the publication of the research work from the Iacocca institute entitled '21st Century Manufacturing Enterprise Strategy: An Industry-led View,' also known as the 'Lehigh Report,' which proposed new ideas of manufacturing strategies. Earlier research on agility already emerged in the 1950s, mainly dominated by the structural-functional sociological theory of Parsons (Prange, 2016). Parsons' phase model with its four system problems order resulted in the initial word of 'A-G-I-L.'

The widespread impact of the 'Lehigh Report' led to a rising management discourse traced back to Welch's interview, Welch being the legendary chief executive officer of General Electric, in which he emphasized the leadership imperative to cultivate an organizational focus on "speed, agility, and simplicity" (Tichy & Charan, 1989, p. 114). Consequently, the concept of agility was extended from its manufacturing context toward an organizational trait. Later, the adoption of agile methods became especially prominent in software development, whereupon the 'Agile Manifesto' was published in 2001 (Beck et al., 2001). The promulgated principles set new priorities among organizational theories. More studies have focused on the concept of agility relating to different internal and external contexts that can be classified into three contrasting groups of research, as presented in the next textual synopsis of the literature on agility.

The first group views agility from an external perspective within changing environments, combining sense and response capabilities (C. Yang & Liu, 2012). The results therein indicate that agile organizations need strong knowledge management (Dove, 1999) and market orientation (Lu & Ramamurthy, 2011). In this regard, Singh, Sharma, Hill, and Schnackenberg (2013) propose a bi-

dimensional model of organizational agility in terms of the magnitude of variety (i.e., flexibility) and the rate of variety (i.e., speed) for responding to environmental changes. These sense-response enablers help organizations precipitate rapid transition, whereby aligning competitive advantage and resilience.

The second group of researchers focuses on internal capabilities with an operational perspective to strategic alignment (Tallon & Pinsonneault, 2011) and dynamic capabilities (Teece, Peteraf, & Leih, 2016). Goldman, Nagel, and Preiss (1995) presented four strategic dimensions of an agile organization, namely enrichment of customers, competitive enhancement by cooperation, mastery of uncertain change, and leverage of key people and information. In this sense, Yusuf, Sarhadi, and Gunasekaran (1999) characterize agility as an ability to reconfigure an organization's extant resources and technologies for successful exploration of competitive operational strategies, such as cost efficiency, quality improvement, and flexibility. Recent studies also shed light on IT, speed, and innovation as the main properties of organizational agility (Felipe, Roldán, & Leal-Rodríguez, 2016; Lu & Ramamurthy, 2011; Tallon, Queiroz, Coltman, & Sharma, 2019). The empirical research shows that IT capabilities have a positive impact on firm performance, resulting in a higher level of organizational agility.

With its characteristic roots in adaptability as a reactive facet and flexibility as a proactive facet, the concept of agility encompasses exploitation and exploration opportunities, both relating to the construct of ambidexterity (Sherehiy, Karwowski, & Layer, 2007). O'Reilly and Tushman (2008, p. 192) state that the conceptualization "entails not only separate structural units for exploration and exploitation but also different competencies, systems, incentives, processes, and cultures – each internally aligned." In such a view, organizational flexibility is much more dependent on people than on technologies, highlighting the importance of dynamic capability-building processes associated with organizational resilience (S. M. Lee & Rha, 2016; O'Reilly & Tushman, 2013).

Consequently, the third group of researchers postulates agility as an inclusive approach to different business areas (i.e., human resource agility, business processes, or supply chain agility). According to Sambamurthy, Bharadwaj, and Grover (2003), agility is composed of three interrelated dimensions, namely customer, partnering, and operational agility. A large variety of definitions and

conceptualizations within agility research have emerged in recent years, providing review evidence of common themes in Table 1. In this context, the above-mentioned body of literature is extended by additional articles highlighting specific examples and theories.

Table 1: Summary of common dimensions and themes in the literature on agility. [Source: own version]

Sub-dimensions	Elements	Selected Author(s)
Dynamic capabilities	Sense and respond capabilities (5-S framework); Flexibility and Speed; Customization; Environmental and market orientation; Ambidexterity	Baškarada & Koronios (2018b), Chakravarty et al. (2013), Goldman et al. (1995), S. M. Lee & Rha (2016), Lu & Ramamurthy (2011), Park et al. (2017), Sambamurthy et al. (2003), Yusuf et al. (1999)
Information processing	Technology and infrastructure; Information systems architecture; Innovation dynamics; Process engineering; Tactics and operations; Firm performance (strategic and financial)	Chakravarty et al. (2013), Felipe et a. (2016), Gligor et al. (2016), Goldman et al. (1995), Lu & Ramamurthy (2011), Park et al. (2017), Sambamurthy et al. (2003), Sharifi & Zhang (2001), Tallon & Pinsonneault (2011), Yusuf et al. (1999)
People agility and competencies	Knowledge management and skills; Organizational structure; Leadership and decision-making; Partnering networks; Agility building teams; Communication and Culture	Appelbaum et al. (2017), Breu et al. (2002), Hovorka & Larsen (2006), Muduli (2017), Sarker & Sarker (2009), Sherehiy & Karwowski (2014), Sherehiy et al. (2007), Wendler (2013), C. Yang & Liu (2012)

Others have differentiated between resource agility in terms of human, technological resources, and process agility. Research fields concentrate on flexible core processes and linkage of agility, dealing with the nature of stakeholder interaction and properties in organization networks (Sarker & Sarker, 2009). The coherent measurement scale developed by Charbonnier-Voirin (2011) investigates the behavioral level of agile practices, initiating psychometric properties for the development of agile capabilities of reactivity, reading the market, and learning. In

this context, the psychological approach toward employee empowerment has increased the alignment of cognitive processes, values, and individual behavior.

Similarly, the conceptualization of organizational agility neither reduces to a singular dimension nor underpins the concept in absolute terms. The multitude of definitions posed by the research of several researchers, ("notion of the agile workforce has been discussed as central to creating the agile organization through information and communications technology applications," Breu et al., 2002, p. 21; "encompasses a firm's capabilities related to interactions with customers, orchestration of internal operations, and utilization of its ecosystem of external business partners," Sambamurthy et al., 2003, p. 245; "identify the critical agile dimensions and next reconfigure or integrate extant resources and capabilities," C. Yang & Liu, 2012, p. 1024; "a bi-dimensional concept that involves a change in (a) magnitude of variety (i.e., flexibility) and/or (b) rate of variety generation (i.e., speed)," Singh et al., 2013, p. 2; "very broad and multidimensional construct of six major dimensions that shares three common dimensions with the concept of resilience," Gligor, Gligor, Holcomb, & Bozkurt, 2019, p. 467) is therefore synthesized into the following definition:

> Organizational agility is a multidimensional concept comprised of an organization's ability to develop dynamic sense-and-response capabilities based on environmental changes, by flexibly reconfiguring resources, processes, and structures speedily through information and learning competencies across the entire workforce.

2.2.2 Review of Prior Research

The conceptualization of the organizational agility construct is based upon a variety of underlying frameworks, aiming to investigate specific aspects or perspectives of agility. To develop a suitable basis for empirical research, further consolidating prior agility theory is needed while examining the most applicable frameworks. According to the academic study of Wendler (2013), the variety of agility frameworks differentiates into four domains, namely agile manufacturing, agile software development, agile workforce, and agile enterprise. As mentioned in Section 2.2.1, research relating to the agile manufacturing system and strategies refers to earlier frameworks that originated from the manufacturing domain. The

remaining three areas are much younger, and the most recent publications (from 2010 onwards) mainly belong to this group.

In this context, the Agile Manifesto (2001), as proposed by 17 leading software developers and consultants, can be seen as a trigger for further studies. The framework emphasizes four principles that set new priorities in preferring (1) individuals and interactions over processes and tools, (2) working software over comprehensive documentation, (3) customer collaboration over contract negotiation, and (4) responding to change instead of accomplishing to a plan (Beck et al., 2001). Simultaneously to research about agility in manufacturing and software domains, comprehensive approaches relating to agile enterprise capabilities have been presented in Charbonnier-Voirin (2011), Sambamurthy et al. (2003), and Sherehiy et al. (2007). Along these lines, Sherehiy et al. (2007) developed a review of enterprise agility concepts, frameworks, and attributes that apply to all aspects of an agile organization: flexibility, responsiveness, a culture of change, speed, integration, and low complexity, high quality and customized products, and mobilization of core competencies. The agility frameworks are interrelated and have overlapping areas, like organizational culture, teams and collaboration, customers, abilities and competencies, cooperation, as well as technology (Wendler, 2013). Importantly, all attributes must be compiled into specific indices for each organization area, i.e., organization, workforce, technology, and operations (Sherehiy et al., 2007).

Consequently, the frameworks are very ambiguous without any stable structure or arguments. This insight becomes again significant for distinguishing and observing the agility framework in separate areas of research. The most prevailed concepts of teams, culture, and cooperation among each of the four domains underline the crucial role of people and behavioral values with an innovative mindset when talking about agility (Wendler, 2013). In the same context, Appelbaum, Calla, Desautels, and Hasan (2017, p. 6) demand a "continuous change deep into the corporate DNA, beyond the process level, into the psyche of the people driving the organization." However, there is an absence of empirical evidence relating to the agile workforce framework, as only a few publications could be identified. This situation, in turn, represents an indicator of

a further research gap in the literature that is considered in more detail in the following chapters.

Among the reviewed literature, the underpinnings of agility are developed through the dynamic capabilities' framework. Building on the RBV of the firm, the dynamic capabilities framework focuses on second-order abilities in terms of entrepreneurial management capabilities (Teece et al., 2016). In this regard, distinctive methods that support organizational agility are of particular relevance for many businesses. Change leadership researcher Kotter (2014) highlights the need for a dual-operating system that combines the entrepreneurial capability of an innovation network with the efficiency of traditional hierarchical structures. Especially well-established companies are "optimized much more for efficiency than strategic agility," and thus are no longer up to the task of winning in this faster-moving world (Kotter, 2014, p. 4). The proposed serial-to-parallel conversion, therefore, promotes an innovation engine among employees that is not bounded by the structure of the existing hierarchy.

Furthermore, the agility wheel reference model, which refers to the four-step general model of Deming (1986), represents a three-step path of comprehensive management initiatives for agility development. Three crucial dimensions are associated with three macro-areas, namely establishing a strategy for action (plan), action implementation (do), and measuring the resulting performance of agility building (check) (Margherita et al., 2020). The remaining and sequential dimension of the act, as proposed by Deming, can be implemented as an in-process feedback connection across the entire system. In this vein, the 5-S framework developed by Baškarada and Koronios (2018b) examines five dynamic capabilities that underpin organizational agility, namely sensing, searching, seizing, shifting, and shaping. These capabilities are mainly composed of interactions with customers, exchange and learning opportunities from business partners, and redesign abilities of internal operation processes (Sambamurthy et al., 2003). However, relevant intra-company factors of strategy, structure, employees, and leadership may interact differently within the dynamic capability framework (Baškarada & Koronios, 2018b). These components emerge as the next research gap for investigation. The frameworks in scope draw a qualitative distinction between risk, in terms of organizational crises, and uncertainty, whereby agility is needed to manage the

latter (Teece et al., 2016). The concept of resilience, in contrast, is associated with the resistance and flexibility of an organization and its "ability to [anticipate], absorb, adapt to, and/or rapidly recover from a potentially disruptive event" (Richter, 2015, p. 71; Sanchis, Canetta, & Poler, 2020). According to this tendency, the direct linkage between resilience and agility results in an elusive understanding of the significance of capability building processes in evolving organizations.

Laloux (2014) has undertaken groundbreaking theoretical and empirical studies within the area of human consciousness development to describe organizational forms over the last 100,000 years. Whereas organizational progress used to be several centuries, it is now only a few years until the next stage of evolution. Evolution seems to be accelerating ever faster with people operating from different paradigms together must quickly adapt to changing circumstances. Laloux (2014) assigns a color to each of the stages, referred to as Impulsive-Red, Conformist-Amber, Achievement-Orange, Pluralistic-Green, and Evolutionary-Teal, characterizing them precisely because each new degree of consciousness introduces breakthrough ideas and complex challenges (see Figure 5).

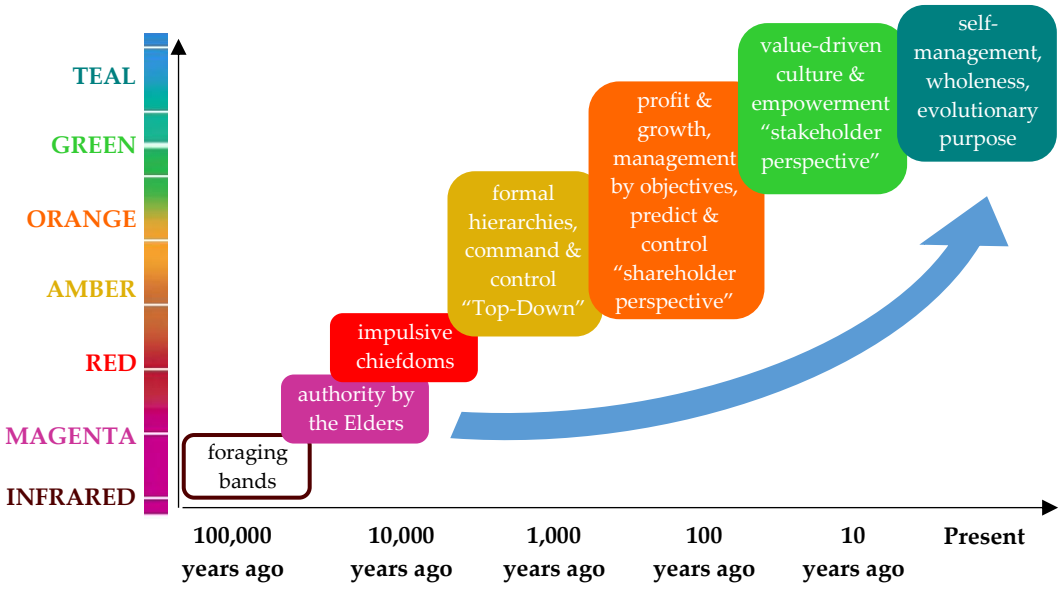

Figure 5: Evolution of the main organizational paradigms.
[Source: adapted from Laloux, 2014, pp. 35 – 36]

Over the last years, many questions have emerged relating to where modern organizations are heading and what characteristics they need in order to deal with the old paradigms and phrases. According to Laloux (2014), this evolution is affected by the colors 'Green' (agile) and 'Teal' determined by pluralistic organizations comparable to a clan or family vibrant culture with shared values and employee empowerment as living systems. It should be noted, however, that every stage can use practices from earlier stages, even though differently suited in each context. Connections between agility and resilience, in turn, become decisive aspects of organizational evolution.

The agile organization focuses on how to build both agility and resiliency at the individual, team, and organizational levels (Holbeche, 2018). Previous studies have also found a coherence between agility and resilience sharing three distinct dimensions, i.e., the ability to adjust tactics and processes toward more flexibility, accelerate operations, and scan the environment (Gligor et al., 2019). Through this resource allocation perspective, the combination of agility and resilience carries impacts and improvements for the entire supply chain, which can also help avoid redundancies and inefficiencies. Moreover, recent research sheds light on the coherence between resiliency and re-invention capabilities, emphasizing socio-economic areas of culture, leadership, and knowledge management (Ahl, 2019; Ahl & Heckmann, 2018).

Whether the transition to a new stage of consciousness accomplishes evolutionary or whether the change depends upon other factors will be addressed as a topic in the following chapters on organizational agility. In particular, the uncontrollable and controllable effects of environmental change and organizational innovativeness influence a firm's risk-taking capability, resulting in the positive development of robustness. Consequently, a future risk event can be weakened in its strength by the creation of ambiguous risk defense mechanisms (Ahl & Heckmann, 2018). In summary, the most common academic studies on agility focus on three main approaches, namely enabler capabilities, and attribute frameworks, practices and processes, and sense-response dimensions. The achievement of agility is associated with a set of antecedents and enabling factors, which are outlined in the next section.

2.2.3 Antecedents of Organizational Agility

Despite the rising practical importance of agility, scientific research is still fragmented in terms of antecedents of organizational agility. According to the literature, less attention is paid to how to create agility while focusing more on its outcomes (Glinkska, Carr, & Halliday, 2012). As such, organizational agility requires an architecture with effective technologies, processes, strategies, and qualified employees. In this regard, antecedents of agility are related to different levels within organizations and can be subdivided into four general categories, namely environmental, structural, technological, and behavioral areas (Tallon et al., 2019). To further move on, these proposed categories are discussed below.

First, environmental enablers play a crucial role in shaping agility. Chakravarty, Grewal, and Sambamurthy (2013) note that environmental effects stimulate different types of agility in unique ways, specifically entrepreneurial and operational perspectives. Characterized by high uncertainty and dynamism, conditions indirectly impact the strategic development of organizational agility. This insight was echoed by Tallon and Pinsonneault (2011), who consider the relationship between agility and organizational performance moderated by environmental dynamism. In terms of a firm's strategic orientation toward the external environment, two related concepts are vigorously discussed in the literature.

Previous studies have revealed that market orientation combined with supply chain orientation leads to a positional advantage for firms (Gligor, Holcomb, & Feizabadi, 2016). More precisely, market intelligence also includes the concept of organizational learning through external partners, such as suppliers, distributors, and customers. Strong customer orientation has a significant impact on organizational agility, providing a crucial tool for the organization's survival, competitiveness, and growth (Braunscheidel & Suresh, 2009). As a result, the environmental orientation exploits the organizational integration of alertness to changes by creating trust, commitment, and cooperative norms among the intangible supply-side and demand-side competencies (Blome, Schoenherr, & Rexhausen, 2013). Vice versa, these competencies can serve as a resource base to develop dynamic capabilities but are under considerable tension with greater environmental dynamism.

Second, structural and organizational enablers substantially influence an organization's agility in different perspectives. They comprise high-level areas on strategic orientation and business model navigation, as well as decision-making processes (Tallon et al., 2019). Depending on environmental issues, the strategic orientation influences the building of dynamic capabilities by creating strategic IT alignment that facilitates agility. In essence, the research implies the relational fit between information technology and business strategy (Tallon & Pinsonneault, 2011). Considering the extent of strategic alignment, the scope of organizational structures is gaining more and more importance. The fulfillment of operational goals in terms of speed, quality, cost, and effectiveness directly reflects a firm's functional capability and strategic thinking. Operational innovation and excellence capabilities, in turn, represent a firm's driving forces by offering the possibility to deploy new markets and implement new business models (Christensen, 1997; O.-K. D. Lee, Sambamurthy, Lim, & Wei, 2015; D. Miller & Friesen, 1982).

Several researchers have empirically investigated what kind of structure enables the best advantages for corporations (Kanten, Kanten, Keceli, & Zaimoglu, 2017; Teece et al., 2016). According to these studies, two main approaches, namely mechanistic and organic systems of organizations, facilitate the responsiveness to working conditions (Burns & Stalker, 1961). Both have a high impact on employees' behaviors and organizational activities concerning information and knowledge processes. Fredrickson (1986) and Gunasekaran (1999) analyzed the three characteristics of an organic structure that are composed of low formalization, decentralization of decision-making, and a flat structure. Mechanistic structure, in contrast, is marked by hierarchical structures with a high degree of formalization and centralization. For developing organization-wide agility, organic formations become a crucial component for the adaptation to changing circumstances (Gunasekaran, 1999). By building on this insight, organizational structures provide patterns of social connections that affect motives and behaviors among network participants (Holsapple & Li, 2008). This network perspective strongly affects the work-design system of organizations, intending to contribute toward higher levels of organizational agility.

The third group of antecedents is mainly composed of technological enablers and key properties of IT infrastructure and resources. Thus, several researchers

provide evidence that the existence of IT competencies plays an enabling role in achieving agility (Chakravarty et al., 2013; Lu & Ramamurthy, 2011). Within an organizational context, information technologies mostly refer to supply chain management and business processes that allow firms to harness higher levels of competitiveness. However, IT competencies are moderated by multiple contingencies arising from environmental dynamism, highlighting the finding that IT is more likely to facilitate agility during volatile conditions (Chakravarty et al., 2013). Likewise, technical aspects of flexible manufacturing and reconfigurability through business intelligence and communication technologies are essential for firms to achieve sensing agility, decision-making agility, and acting agility (Park, Sawy, & Fiss, 2017). Consequently, the concept of IT ambidexterity – the ability to simultaneously exploit and explore IT resources – enhances organizational agility by facilitating operational capabilities (O.-K. D. Lee et al., 2015).

As such, the strategic alignment of IT with the business strategy can be seen as a sensing capability, while IT infrastructure flexibility acts as a direct response capability to a contingency (Tallon & Pinsonneault, 2011). Moreover, Sambamurthy et al. (2003, p. 247) view information technologies as digital options generators, consisting of "IT-enabled operational capabilities in the form of digitized enterprise work processes and knowledge systems." In this regard, the information systems area promotes data-driven platforms that help achieve time reductions and quality improvements critical to the overall supply chain network. As a result, the degree of information processing capability is related to the human resources capital abundance across internal business units.

As one result of this ongoing analysis, the three enablers discussed above belong to direct antecedents of supply chain agility (Braunscheidel & Suresh, 2018; Yusuf, Gunasekaran, Adeleye, & Sivayoganathan, 2004). In this vein, the last group of agility enablers mainly corresponds to indirect antecedents in terms of behavioral and cultural drivers that go far beyond the process level into the psyche of the people. These capabilities connect to an upstream system that determines the pre-described direct effects of agility (Braunscheidel & Suresh, 2018). Research has revealed that cultural components of innovation and risk climate have a motivating function within organizations (Ahl, 2019; A. Kock & Gemünden, 2016). Summarily, innovativeness and risk-taking competencies are business-wide capabilities that

embrace the agile mindset. Enabling change-responsive actions by encouraging cooperation leads to coordination and communication, and thus, these two variables directly impact organizational agility (Gligor & Holcomb, 2012).

Based upon a thorough review of existing literature, Braunscheidel and Suresh (2009) consider organizations as being proactive, flexible, effective, and quick. Agile behavior, as such, is formed by juxtaposing the components of radicalness, proactiveness, responsiveness, and adaptiveness. These dynamic capabilities affect an organization's performance, innovativeness, and competitiveness. In this regard, Breu et al. (2002) and Sherehiy (2008) have most notably addressed the concept of employee empowerment as an indispensable enabler of agile behavior. The studies highlight elements of commitment to learning, open-mindedness to proactive behavior and change, creativity, and knowledge sharing routines as major impediments to agility. It must be noted, however, that these findings are mainly dependent on internal integration initiatives (Braunscheidel & Suresh, 2018).

This circumstance, in turn, entails the need for leadership and integrative thinkers with strong cultural values while creating an agile vision and mission for the organization through network fluidity. Interestingly, successful firms usually focus on a diversified mix of values and cultures, as widely adopted from Cameron and Quinn's (1999) Competing Values Framework (Felipe, Roldán, & Leal-Rodríguez, 2017). External inter-organizational dependence and trust are also vital components for the cultural aspects of market orientation that the empirical research covers. Customer orientation includes several psychological characteristics and values, such as resilience, responsiveness, and flexibility (Holsapple & Li, 2008; Kanten et al., 2017). In concordance with main cultural characteristic traits, firms could benefit from an improved inter-departmental alignment, as well as external connectedness. However, this behavioral dimension accomplishes a more medium- to long-term transformation of the entire organization. Supply chain initiatives, in contrast, are more tangible and can be associated with short-term actions (Braunscheidel & Suresh, 2018). The next paragraph thereupon describes the affordability and relevance of the consequences of organizational agility in greater detail.

2.2.4 Consequences of Organizational Agility

By drawing on the extant research relating to the effects of organizational agility, most studies have highlighted a positive link between agility and firm performance. As there are differences in the performance outcomes, the next paragraphs provide a short overview of the most widely known consequences.

First and foremost, agility can be conceptualized as an end in itself or a means to an end (Tallon et al., 2019). It is, thus, either recognized as a first-order impact at the process-level (O.-K. D. Lee et al., 2015; Lu & Ramamurthy, 2011) or represents a second-order impact at the firm-performance-level (Chakravarty et al., 2013). Besides this performance-based point of view, agility is also associated with an increasing rate of survival in the competitive global context. Combining these insights leads to the proposition that agility has a stronger influence on firm performance in more volatile markets relative to stable environments (Tallon & Pinsonneault, 2011). Whether agility results in the desired outcomes seem yet to be dependent upon the characteristic traits of the situation (Singh et al., 2013). For this intend, further research and analysis of the contextual factors are needed and have a key role to play in developing the conceptual framework.

The empirical literature has outlined different lenses of firms' performance in terms of financial performance (i.e., revenue, sales turnover, growth, and profitability) or strategic performance (i.e., innovativeness, responsiveness, competitiveness, and customer loyalty). Recent research also indicates that agility has an impact on service performance throughout the entire supply chain (Gligor & Holcomb, 2012). This generic conceptualization entails the two elements of operational (i.e., reliability, delivery, quality, and cost) and relational performance (i.e., responsiveness, assurance, and empathy). In this regard, the literature highlights that IT-enabled organizational agility positively affects firm performance (Sambamurthy et al., 2003; Tallon & Pinsonneault, 2011).

The outlined consequences are essentially dependent on the various types of organizational agility. Similarly, customer agility emerges as a performance-enhancing paradigm through its dynamic capabilities (Sambamurthy et al., 2003). Operational agility, however, has a direct positive relationship to firms' financial and market performance (Blome et al., 2013). Contrarily, the network structure becomes a critical competitive strategy source of a company's performance for

valuable and imperfectly imitable partnering agility (C. Yang & Liu, 2012). These perspectives underpin another distinct aspect of strategic fit, indicating that corporations with an alignment in strategy and structure should perform better than their competitors (Gligor et al., 2016).

The circumstance of providing organizations with strategic flexibility positively influences firm performance in times of crisis, which represents another indicator for the enhancement of resilience. Thus, agility can enable a firm to be resilient to emerging threats by cultivating agile absorption and can, therefore, result in superior long-term performance (Glinska et al., 2012). Firms, in turn, have the power to re-emerge as market leaders. Table 2 shows constructs for measuring organizational agility that appear in several groups of studies. They serve as references for developing the conceptual framework for this thesis.

Table 2: Analysis of publications relating to main constructs of organizational agility. [Source: own version]

Construct	**Theoretical Lenses**	**Study References**
Entrepreneurial Agility - *Customer agility* - *Operational agility* - *Innovation capacity* - *Proactiveness*	Dynamic capability-building, ambidexterity, innovation management	Chakravarty et al. (2013), Gligor et al. (2016), S. M. Lee & Rha (2016), Ravichandran (2018), Sambamurthy et al. (2003)
Adaptive and Workforce Agility - *Partnering agility* - *Market orientation* - *Learning orientation* - *Adaptive & Generative behavior* - *Resilience* - *Structure* - *Empowerment*	Contingency theory, networking theory, ambidexterity, knowledge creation, behavioral and technical capability perspective	Braunscheidel & Suresh (2009), Breu et al. (2002), Chakravarty et al. (2013), Lu & Ramamurthy (2011), Sarker and Sarker (2009), Sherehiy (2008), Tallon & Pinsonneault (2011)
Firm Performance - *Financial profitability* - *Market competitiveness* - *Strategical, operational & relational improvements*	RBV of agility, Theory of IT alignment and processing	Gligor & Holcomb (2012), O.-K. D. Lee et al. (2015), Tallon & Pinsonneault (2011)

2.2.5 Agility and New Work: Conceptualization of Workforce Agility

The synergy generated from the previous cross-sections results in an elusive understanding of organizational characteristics that are conducive to the agile firm's performance. Most academic studies have focused on the operational components of speed and flexibility, whereas little attention has been paid to behavioral and psychological values and patterns that are important for building an agile mindset. In this sense, the concept of workforce agility plays a vital role in determining the agility of the organizations and has seen rising contributions in recent decades (Alavi, Abd. Wahab, Muhamad, & Arbab Shirani, 2014; Gunasekaran, 1999; Muduli, 2017; Munteanu et al., 2020; Sherehiy, 2008). However, the absence of empirical studies relating to how these attributes affect the workforce illustrates the difficulty of measuring psychological effects that go far beyond the corporate DNA.

Pursuant to the '2019 Deloitte Global Human Capital Trends,' the attitudes toward the overall work environment are still mixed. Only 53% of survey respondents felt their organizations were effective, or very effective, at creating meaningful work, highlighting a declining ability to create transparency and trust among employees (Deloitte Insights, 2019). In essence, the firm's RBV emphasizes the link between an organization's strategy, internal resources, and performance. Workforce agility, in turn, seems to be a critical component for creating organizational agility by affecting the four strategic purposes of costs, time, quality, and diversity (Glinska et al., 2012).

According to Goldman et al. (1995), the competitive agile edge reveals through a skillful, knowledgeable, and experienced workforce. Consequently, workforce agility relates to both the ability and the attitude or behavioral perspective demonstrated or required by employees in the face of unpredictable organizational change within volatile business environments (Muduli, 2017; Varghese & Bini, 2018). However, researchers have different views on this topic and propose various conceptualizations of workforce agility. Sherehiy et al. (2007), with their work derived from the models of Griffin and Hesketh (2003) and Dyer and Shafer (2003), consider workforce agility as a dependent variable. By contrast, other studies view workforce agility as an independent (Charbonnier-Voirin, 2011; Safari, Maghsoudi, Keshavarzi, & Behrooz, 2013) or mediator variable (Bosco, 2007;

Vázquez-Bustelo, Avella, & Fernández, 2007; Ye-zhuang, Fu-jiang, & Hai-feng, 2006). Table 3 provides an overview of the current status of research on workforce agility and its enablers.

Table 3: Chronological overview of research studies on workforce agility and its dimensions. [Source: own version]

Reference	**Antecedents / Attributes**	**Measurement Dimensions**
Breu et al. (2002)	Knowledge management and IT - *Intelligence, competencies, collaboration, culture* - *Information systems*	Dependent variables: *Speed, flexibility*
Sumukadas & Sawhney (2004)	Employee involvement and management practices - *Information sharing, training, salary-skill-based pay, improvement incentives, non-monetary incentives, team-based production incentives* - *Power sharing*	Dependent variable: *Multiple tasks*
Ye-zhuang, Fu-jiang, & Hai-feng (2006)	Agility strategy goals - *Organization management, people, manufacturing & information technologies*	Mediator variable: *Agility capability* Dependent variables: *Business performance, customer satisfaction*
Sherehiy & Karwowski (2014); Sherehiy (2008); Sherehiy et al. (2007)	Agility strategy - *Product, cooperation, organization, people* Work organization - *Job demand, control, uncertainty, complexity, skill variety*	Dependent variables: *Proactivity* - Initiation, anticipation - Solution, improvement *Adaptivity* - Interpersonal, cultural - Collaboration - Learning, responsibility *Resilience* - Positive attitude - Tolerance - Coping with stress
Muduli (2017)	Organizational practices and psychological empowerment - *Training, compensation, involvement, teamwork, information systems* - *Meaning, competence, self-determination, impact*	Dependent variable: *Workforce Agility* - Adaptability, flexibility development, speed, collaboration, competence, collection of information

In particular, this thesis sheds light on the widely practiced concept of workforce agility as a dependent variable with its main antecedents. Sherehiy and Karwowski (2014) identified three dimensions that shape an agile workforce, namely proactivity, adaptivity, and resilience. Each element can empower a dedicated attitude and behavior that promotes the overall construct of workforce agility. This study measures the construct with the items proposed by Sherehiy et al. (2007) and Alavi et al. (2014). Hence, the concept of workforce agility reaches company-wide applicability.

From an IT perspective, Breu et al. (2002) investigated ten key attributes of an agile workforce, which can be grouped into five capabilities, namely intelligence, competencies, collaboration, culture, and information systems. Findings from current research suggest that employee proactivity, innovativeness, resiliency skills, and possessing self-motivation are essential behavioral components of workforce agility (Patil & Suresh, 2019). A positive attitude toward learning and an organic organizational structure enables psychological empowerment, which in turn promotes workforce agility (Alavi et al., 2014). In addition to empowerment, Sherehiy and Karwowski (2014) assert that workforce agility also depends on the level of emotional intelligence and transformational value-based leadership style. Consequently, transformational leadership leads a decisive part in organizational agility as it stimulates the capacity and readiness of the workforce with a mediating role of creativity (Veiseh, Shiri, & Eghbali, 2014).

Leaders must be skilled in several different 'agilities,' each of them representing a strong mindset with emotional capacities. The described facilitators determine the organization's values and its characteristic traits. However, leadership development requires more than just building the competencies themselves. It is equally decisive to provide the culture, the structure, and the management processes for cultivation (Munteanu et al., 2020). These areas, in turn, represent a significant gap in corporate practice as only 41% of employees think their organizations are ready, or very eager, to meet the new leadership requirements (Deloitte Insights, 2019). This insight needs further investigation since the influence of cultural values has not been empirically evaluated in prior publications on workforce agility and is, therefore, discussed in the next chapter.

2.3 THE STRENGTH AND BREADTH OF ORGANIZATIONAL CULTURE

Agile working procedures involve new corporate values, principles, and daily routines, thus, often entail a radical change in the existing management framework. The significant role of culture and leadership in seeking and reaching organizational change has long been perceived by many researchers. In general, organizations work as symbolic entities by following models implicit on their members' minds, while individuals share a universal orientation with a stretched purpose (Hofstede, Hofstede, & Minkov, 2010). This ambiguous nature of culture influences inspirational leadership behavior and the effectiveness of planned actions. Concurrently, leaders can influence the beliefs, values, and practices, as reflected in the Upper Echelons Theory. This chapter discusses the accountability of individuals with meticulous attention to empowerment, responsibility, and personal growth, as well as metrics like trust, commitment, and learning within the organization.

2.3.1 Approaches to Research on Organizational Culture

The various number of organizational culture studies (arising from the Latin word *cultura* meaning cultivation) began to rise in the U.S. during the 19th Century. Originating in the field of anthropology, cultural studies have made a significant contribution to the science of humanity. Up to now, enthusiastic, historical, sociological, and psychological debates have continued among researchers, who evolved diverse sets of heterogeneous definitions of culture and its attributes. The American anthropologists Kroeber and Kluckhohn (1952) compiled a list of 164 different denotations of culture, ranging from 'social legacy the individual acquires from his group' to 'total way of life of a people,' which have a pervasive influence on cross-cultural psychology of the human spirit. At around the same time, Jaques (1952, p. 251 ff.) first referred to the culture of the factory as a "customary and traditional ways of thinking and doing things" and emphasized that new employees must learn to adopt these ways of behavior to be accepted in the organization. In this sense, the learning process and patterns of behavior became extensive aspects of the corporate culture.

Other studies have also developed instruments for assessing the fit between individuals' preferences and organizational cultures. In this context, O'Reilly, Chatman, and Caldwell (1991) highlight seven different factors, such as innovation, outcome orientation, aggressiveness, detail orientation, stability, respect for people, and team orientation. Each of these factors systematically defines the person-organization fit with commitment, satisfaction, and turnover. Many other studies have examined the positive relationship between organizational culture and firm performance. Notably, the research work by Kotter and Heskett (1992) is often discussed among researchers, who group the findings into a contingency model (Bluedorn, 1993). According to this, the best-performing organizations have strong cultures, but only if there is a culture-environment-fit with change values for continuous re-adoption to the environment in the four essential traits of mission, adaptability, consistency, and involvement (Denison, 2001; Miroshnik, 2013).

Based on this, Kotter (2014) developed the eight-step change process model, which anchors new approaches in the organization's culture at the end of transformation processes. Against this background, organizational culture constitutes the bridge for merging inner realities of corporations with external demands from the outer marketplace (Alpay, Büyükbalcı, & Dülger, 2018). To better explain both directions, two models and typologies have emerged as to the most important studies: Schein's and Hofstede's organizational culture research, which are briefly outlined in the next paragraphs.

The strategy of change focuses on changing behavior by changing the way of thinking, which refers to Schein's (1992; 2004; 2010) multi-layered organizational culture model. Schein's model of organizational culture has its roots in the 1980s and explains the formation of the corporate culture by dividing it into three layers, namely artifacts and behaviors, espoused values, and assumptions (see Figure 6, p. 41). As one of the most influential researchers of organizational culture, Schein accelerates the theory of organizational culture and leadership as "a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration" (Schein, 2004, p. 17).

The outermost Level 1 represents the most visible area and includes artifacts or behavioral patterns, art, technology, structure, and processes. The layer

embodies the climate of the organizations, and therefore, is both easy to observe and very difficult to decipher. Espoused beliefs, values, norms, and rules shape the intermediate Layer 2 of organizational culture. They serve as a source of identity and core mission, enabling consensus through social validation (Schein, 2010). If the perceived values become shared knowledge among group members, beliefs and values will transform into shared assumptions based on prior learning processes. Level 3 and most essential layer of culture consists of basic patterns of underlying assumptions and has the power to decipher the paragons as well as to predict future behaviors of a group. This area encompasses taken-for-granted beliefs such as relations to the environment, nature of reality, time-space, nature of the human activity, and nature of human relationships that are uncontestable and extremely difficult to change (Schein, 2010).

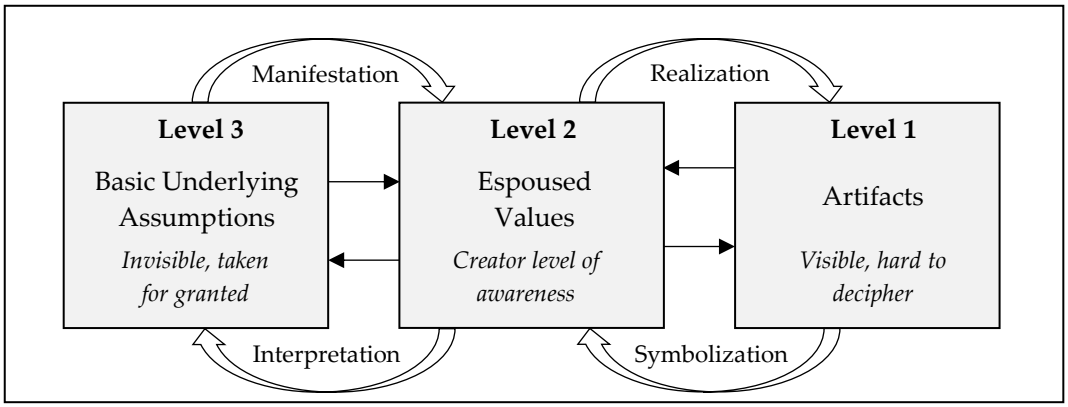

Figure 6: Schein's levels of organizational culture and their interactions.
[Source: adapted from Schein, 2004, p. 26]

Schein especially emphasizes the crucial role of leaders in creating, supporting, and changing the content of organizational culture to cope with divisionalization and inner-differentiation (Schein & Schein, 2017). However, the anthropological model mainly focuses on top-down culture production and stresses the creation of a monoculture through the values espoused by leaders. Ethical dilemmas are mainly disregarded, leading to a weakening of the model's adaptation to this research work. Later, Hawkins (1997) refined Schein's model of three levels (first edition, 1992) into five areas of organizational culture and added two extra dimensions, namely emotional ground and motivational model roots.

According to this research, it becomes indispensable to distinguish between espoused and enacted culture, considering emotional conditions that link the organization and its members (Hawkins, 1997). During recent time, many academic studies have empirically delineated how the layers of Schein's organizational culture model partially mediate the effects of values that support innovation and, subsequently, measure firm performance (Denison, 2001; Hogan & Coote, 2014; referring to Chapter 2.4.2 for more details). When corporate culture responds to external influence, as an open innovation system, the organization expresses its identity through the continuous equilibrium of its cultural understanding. Thus, the projected image mirrors beyond the organizational boundaries (Hatch & Schultz, 2002).

Based on a large survey considering values and related sentiments of people in over 50 countries around the world, Hofstede et al. (2010) build upon existing research from a national and organizational perspective. The researchers developed a model with six dimensions (initially four dimensions; Hofstede, 1991) of national culture and define culture as the "collective programming of the mind, which distinguishes the human members of one group from another" (Hofstede et al., 2010, p. 6). It can, thus, be concluded that the emerging definitions mainly comprise intangible factors of human relations, power distance, and political aspects. They especially emphasize the existence of subcultures and micro-cultures, often perceived as countercultures to the overall organizational culture (Martin, 2001; Schein, 2010).

Both the current literature and managerial practice conceptualize organizational culture in two ways; first, the intra-organizational perspective of interpersonal processes and group dynamics, and second, the organization's outer environment with the culture at the national level and its community partners (Schein & Schein, 2017; Wisniewski, Paszkowski, & Wisniewska, 2020). Hofstede et al. (2010) found clear links but also differences between national and organizational cultures, demonstrating how practices, not values, manifest themselves and how organizations solve problems. Their results show that national cultures, which belong to anthropology, differ mainly at the innermost level of values. Organizational cultures belonging to organization sociology vary at the outermost level of practices, namely symbols, heroes, and rituals.

Further investigation regarding national cultures is rooted in the mental software acquired in childhood, whereas corporate cultures are exhibited from the practices people engage in when entering a work organization (Supriadi & Sui Pheng, 2018). Much more research has also highlighted the strong positive relation between several cultural characteristics of European countries and their innovative strength (Moonen, 2017). Along with these insights, a group of researchers found that cultural diversity makes an organization stronger, yet it is historically determined and socially constructed by a human being (Hofstede et al., 2010). This static approach is often seen as a weakness in the application of Hofstede's cultural dimensions model.

Furthermore, it is possible to define organizational culture as the assumptions, values, and beliefs within a system of shared behaviors among organizational members that contribute to the social glue and psychological interaction with the environment. It represents "a phenomenon related to emotions rather than the rational minds of an observer" (Ertosun & Adiguzel, 2018, p. 54). In this context, Holbeche (2018) addresses employee engagement drivers and high-performance culture needs with organizational agility. Regarding organizations as complex human systems, agility depends on a changeable culture that is composed of primary (according to Schein: i.e., leaders, rewards, and recruitment) and secondary (i.e., organization design, procedures, and systems) mechanisms (Holbeche, 2018).

Cultural characteristic traits, thus, are used for internal and external relations, setting a strong focus on long-term survival and differentiation in terms of the nature of management behavior that manifests itself in different cultural typologies. Much research work is directly related to the most common metric for cross-cultural organizational analyses; the Competing Values Framework (CVF), introduced by Cameron and Quinn in its most widespread adaptation from 1999, and discussed in more detail in Chapter 2.4. It represents the theoretical basis for this research by following previous studies stating that quantitative assessments pose an opportunity to measure the statistical effects of single cultural dimensions on individual behavior (Denison, Nieminen, & Kotrba, 2012; Miroshnik, 2013; O'Reilly et al., 1991; Rousseau, 1990). Based on this decision, former academic studies argue supportively for distinct human values having a significant impact

on corporate-wide agile behavior, with underlying research gaps identifying extensive modes of action.

Consequently, global trends and national contexts in terms of sectoral specific factors appear observable as cultural aspects and artifacts of an organization that influence the behavior of its members. Peculiar to the similarities between the two directions, people build organizations relating to their values, and societies entail organizations that reflect their prevailing values (Schwartz, 1999; Supriadi & Sui Pheng, 2018). In conclusion, values as the main components of corporate culture are further outlined in the next paragraph.

2.3.2 Upper Echelons Theory: Relationship between Values and Behavior

According to the classic models of culture, values occur as taken for granted presumptions relating to social and personal reality (Miroshnik, 2013; Schein, 2010; Schwartz, 1994; 1996). In particular, sociological conceptions of culture link intrinsic values to the "selection and evaluation of behaviors and events" (Illes & Vogell, 2018, p. 353). Following Schein (1988), perceptions of a culture influence emotional reactions and individual behavior. These behaviors, in turn, play a role in how participants anticipate changes. Thus, similar to behavioral patterns, characteristic cultural dimensions also adapt according to their needs. The result represents the construct of culture as the combination of three sub-systems based on its value-components for the macro-value system, meso-value system, and micro-value system (Miroshnik, 2013).

A central premise of this bounded rationality represents the Upper Echelons Theory, published by Hambrick and Mason in 1984. It details the relationship between top executives' characteristics, including past experiences, values, and personalities, and their effect on organizational outcomes. As organizations are symbolic entities, management often is a joint decision-making activity that characterizes behavioral integration through its specific composition (Hambrick, 2007). The meta-construct of behavioral integration, in turn, positively affects both the exploitation as well as the exploration of knowledge and promotes a deeper understanding of a team members' cognitive resources (Evans & Butler, 2011). Corporations operating within turbulent business environments, therefore, "require a culture in which top management values exposing the brutal facts of

reality, welcomes task-centered conflict, and recognizes the worth of collaborative decision making" (Evans & Butler, 2011, p. 92). It is, thus, stated that a profound characterization of organizational culture types requires the perspective of values, as values represent core components that influence the intrinsic behavior of its corporate members (Collins & Porras, 1996). Cultures with a strong value structure, in turn, can create organizational effectiveness and competitive advantages (Barney, 1986; Miroshnik, 2013).

In that regard, Hofstede et al. (2010) define value as a great tendency to prefer specific relationships to others through continuous learning acculturation of cognitive structures that motivate action. The research group describe the organizational culture dimension through the assessment of the macro-value sub-system as a combination of six values, namely individualism/collectivism, power distance, uncertainty avoidance, masculinity/femininity, long-term/short-term orientation, and indulgence/self-restraint (Hofstede et al., 2010). The theoretical model allows international comparison between cultures and poses a useful tool in leadership tasks when assembling diverse teams. In this sense, Triandis (1993) adapted Fiedler's contingency model from 1967 regarding the role of situational leadership style to Hofstede's cultural dimensions and created a culturally contingent leadership model. Values appear as being a critical part of both relations, thus, leading to the result of culture as a contingent factor in a multicultural leadership environment (Albritton, 2007). An example of the practical application of contingency theory represents the 'Z' theory developed by Ouchi (1981). It is often referred to as popular management theory, combining existing management theories of X and Y of the American psychologist McGregor with the Japanese system of management practices in use in the 1980s. According to the Z theory, which consists of three main features as subtlety, intimacy, and trust, successful organizations have a culture that reflects the values of their employees by adopting the management style to the specific culture (Ouchi, 1981).

In a practical view, corporate values are designed and approved by the top management team. As a result, employees perceive values and norms quite differently at the individual level, which elucidates the effect of social pressure (Ahl, 2020). Organizational members are consequently urged to follow norms through 'espoused values,' resulting in the loss of motivational qualities, personal

identification, and organizational agility. It is, therefore, important to shed light on psychological meanings, factors, and social connectedness for a culture of 'shared values.'

In essence, individualism represents the emotional independence of groups or organizations. The nature of individual culture, or micro-value sub-system of basic human values, as proposed by Schwartz (1992; 1994; 1996), accounts for ten personal values that arrange along two elementary dimensions: openness to change vs. conservation and self-enhancement vs. self-transition. Surprisingly, Schwartz concluded that the average value priorities of most societies result in a similar order, taking individual ratings of integral values into account (Schwartz, 2012). The Theory of Basic Human Values widely refers to an extension of previous approaches to intercultural research theories, grounded in the motivational goals inherent in individual needs. In its current state, "the integration of human values into the organization's values will actively incorporate the transformation process towards an agile organization" (Ahl, 2020, p. 10). This finding is also accompanied by research from the field of neuroscience, which sees social connectedness as a central factor for personal identification with corporate values (Ruff & Fehr, 2014). In this respect, the individual desire to conform to a group is pressured by emotional experiences of social exclusion, creating neural reactions as strong as physical pain. This fact, in turn, could have a substantial impact on the psychological empowerment and capabilities of the workforce, which will be examined more closely in the next chapter.

Organizational culture theorists, however, argue that corporations have a relatively narrow set of values (Ertosun & Adiguzel, 2018). It composes of the threefold cluster of ethical values (being), behavioral values (doing), and aspirational values (becoming) that traverse the meso-value sub-system of corporate culture (Ahl, 2020; Zwetsloot, Scheppingen, Bos, Dijkman, & Starren, 2013). The underlying studies reveal the fundamental characteristics of a forceful culture, like trust and participation, that achieve improved levels of organizational mindfulness (Schwartz et al., 2012; Thomson & Emmens, 2018). In times of transformational processes, values such as trust, respect, courage, and openness prevail at the individual level, while organization-wide creativity, collaboration, and discovery should be realized through the everyday routine of transparency,

adaptation, and commitment (Ahl, 2020). It is, thus, suggested to encompass timeless guiding core values with a core purpose in corporate value statements. These attitudes stimulate not only change but also transformation processes according to organizational sustainability and the envisioned future. However, core values are only discovered over time (i.e., at least 50 – 100 years), but remain firm elemental factors for corporate success, as examples like Procter & Gamble, Sony, or the World Disney Company show (Collins & Porras, 1996).

2.3.3 The Psychological Empowerment of the Workforce

Theory relating to psychological empowerment emerged in the 1980s as a linking mechanism between leadership and employee-related behaviors (Conger & Kanungo, 1988; Thomas & Velthouse, 1990). Consequently, understanding the coherence between corporate values and individual behavior is becoming highly important. First and foremost, psychological empowerment is less concerned with structural conditions within organizations. It focuses on the perception of these conditions among employees regarding the role and degree of work fulfillment. In this sense, setting the stage for intrinsic orientation and motivation practices ensures higher levels of employee performance and citizenship (Dust, Resick, & Mawritz, 2014; Flohrer, 2014). Motivation theories can explain the behavior and attitude of employees. Theorists such as Maslow (1954), McClelland (1961), and Herzberg (1966) developed content theories, stating that people have individual needs that motivate their actions. Laloux (2014) has used the fifth stage of Maslow's hierarchy of needs (self-actualization) as inspiration for organizational Evolutionary-Teal development. Maslow ascertains the level for 'self-actualization' as the desire to accomplish everything that someone can do to become the most that he or she can be (Maslow, 1954).

Following this conceptual work, Spreitzer (1995; 2008) subsequently manifested a construct of four cognitions that are linked to the individual work role relating to meaning, competence, self-determination, and impact. Meaningfulness represents the fit between personal values and beliefs and the value of the work goal or persistence (Thomas & Velthouse, 1990). A real purpose appears as the heartbeat or raison d'être of every organization that reflects their member's "idealistic motivations for doing the company's work" (Collins & Porras, 1996, p.

68). High perception of meaningfulness manifests in commitment, involvement, and concentration of energy (Muduli, 2017). Competence, in turn, refers to the extent to which personal abilities match task demands with subsequent self-efficacy to mobilize cognitive resources (Spreitzer, 1995). Individuals expressing low levels of self-efficacy tend to avoid situations of fear, obstacles, and initiate behaviors to build and improve the relevant skills. Self-determination includes the individual's sense of autonomy and control for originating and continuing work behaviors (Dust et al., 2014). It reflects decision-making processes relating to work methods, pace, and effort with greater levels of trust on the part of their leaders (Hill, Kang, & Seo, 2014; Muduli, 2017). Finally, impact refers to the degree to which an individual's behavior or effort can affect the strategic direction, operational processes, and outcomes of the organization (Spreitzer, 1995; To, Fisher, & Ashkanasy, 2015).

Stephenson (2006), an influential anthropological network theorist who developed the Quantum Theory of Trust, describes the collective cognitive capability of organizations through the view of subatomic physics. The invisible pattern of human interaction held together by trust takes the shape of a chemical or physical structure. Trust implicitly governs the fate of losing the working knowledge through the movement of leading people and the toxic effects of bureaucracy within organizations (Stephenson, 2006). In her view, it becomes fallacious to replace hierarchies through networks. Identifying the traces of trust (i.e., connectors) among a network of people plays a primary role in drawing a more accurate picture of organizational culture. It supports the cultural change management process in the very early stage (Stephenson, 2012).

Holbeche (2018) highlights the fact that individual performance relies on aligning the corporate strategy with personal objectives and actions. Together, the four cognitions outlined above reflect a proactive, rather than passive, approach to an individual's behavior relating to work roles. Accordingly, enthused actions, composed of flexibility, resilience, and persistence, are also referred to as favorable work attitudes of innovativeness (Seibert, Wang, & Courtright, 2011; Thomas & Velthouse, 1990). To date, organizational empowerment implies to energize the entire workforce and becomes a crucial aspect for detecting possible underlying relationships between corporate culture and workforce agility within

transformation processes. Several studies reveal that "employees with higher levels of resilience are more likely to experience feelings of greater empowerment which in turn positively influence workforce behavior, job performance, [and] work-related stressors" (Tian et al., 2015, p. 412). These associations especially have significant effects on combating job burnout, thus, emerging as useful options in corporate practice.

Additional to this evidence, organization-wide benefits may comprise shortened decision-making processes and improved response and delivery times for customer enrichment through agile workforce behavior and transformational leadership. Transformational leaders possess enthusiasm, confidence, and optimistic characteristic traits that alter an employee's self-concept by encouraging the four facets of psychological empowerment (Dust et al., 2014). In this sense, smart working practices have the power to foster a healthier and more productive workforce, promoting feelings of agility (Muduli, 2017; Thomson & Emmens, 2018). Corporate culture appears to be much more important than ever for employees, even when it comes to salary and bonuses.

2.4 THE COMPETING VALUES FRAMEWORK

Cultural and organizational forces increasingly involve paradoxical tensions. This subchapter reviews the widely-applied literature following extensive psychometric testing and validation of organizational culture within a professional management context. As such, particular attention is paid to the CVF as the basis of the Organizational Culture Assessment Instrument (OCAI). It relates to different well-known personality trait assessment tools, such as the Myers-Briggs Type Indicator test, the 'Big Five' personality traits, or the four psychological types discovered by Jung (1971). Based on the competing demands and views, the opposed cluster of values, as well as different types of organizational culture, are reflected. This proceeding is conditioned, however, through the capabilities of ambidexterity, which are identified as possible resources to advance paradoxical conceptualizations of exploration and exploitation activities across organizations.

2.4.1 Theoretical Lenses

The CVF, initially developed by Quinn and Rohrbaugh (1983), based on Campbell's effectiveness criteria from 1977, is used to determine an organization's primary cultural orientation. In a two-stage study, three underlying dimensions, such as focus, structure, and means-ends, were found to best present the competing set of core values of organizational effectiveness (Cameron & Quinn, 1999). In this regard, the framework highlights the trade-offs and tensions within organizations and their leaders. These facets express through the continuum of the focus dimension, namely internal versus external orientation (horizontal axis) and the structure dimension in terms of flexibility versus stability or control on the vertical axis (Cameron & Quinn, 2011; Lavine, 2014). The third value dimension, means-ends, links managerial specific behaviors that originate from values and beliefs. The distinct reactions represent the mechanisms (means) that subsequently affect workforces' attitude, thus relating each culture type to desired effectiveness criteria (ends) (Hartnell, Ou, & Kinicki, 2011). According to Schein (2004; 2010) and Cameron and Quinn (2011), the CVF's collective memory system consists of basic underlying assumptions, values, and beliefs, which are outlined in more detail in Chapter 2.4.2.

The next paragraphs shed light on specific artifacts of different culture types. Over time, Cameron and Quinn, as well as other researchers at the University of Michigan, have continued to refine and utilize the CVF, referring to it as the 'entrepreneurial cycle' which organizations must deal with within these cultures. It, therefore, represents nowadays one of the 40 most influential tools for diagnosing imbalances in the culture of businesses and is called the 'Organizational Culture Assessment Instrument' (OCAI) (Brunetto, Xerri, & Nelson, 2014). More recently, a fourth 'head-heart,' also referred to as a motivational trait, has been included for nonprofit and voluntary organizations. This dimension expressly focuses on the "interdependent nature of cognition and affect in directing the attitudes and behaviors" of stakeholders from conceptualization (head) to consciousness (heart) (Grabowski, Neher, Crim, & Mathiassen, 2014, p. 911). Although at first glance, it may seem suitable only for voluntary agencies, it is also useful for examining the tension between head and heart, the composition and actions of managers and board members of for-profit organizations. Thus, the CVF

applied in this thesis also sheds light on the fourth, accompanying dimension of motivation (Forgas & George, 2001; Grabowski et al., 2014).

In essence, the instrument consists of six categories of overall corporate culture, including dominant characteristics, organizational leadership, management of employees, organization glue, strategic emphases, and criteria of success (Cameron & Quinn, 1999, pp. 18-27). Cameron and Quinn (1999; 2011) identified four culture types that refer to characteristic leadership styles: clan, adhocracy, hierarchy, and market culture. As a generalization basis for these types, researchers found a great analogy to the theoretical framework of Boisot (2010), who defines culture as a knowledge asset and describes four different types of transactions in the information-space; bureaucracies, markets, fiefs, and clans (Moonen, 2017). However, this study uses the original nomenclature of the CVF. By considering corporate culture evolution, organizations are seldom characterized by a single cultural type – they are, in a word, paradoxical (Lavine, 2014; Quinn & Cameron, 1988). With this in mind, Cameron and Quinn (2011, p. 64) emphasize that "new or small organizations tend to progress through a predictable pattern of organization culture changes" starting at the adhocracy level (upper right), evolving from a clan (upper left) moving toward a hierarchy culture (lower left) until it finally develops into a market form (lower right).

Figure 7 (p. 52) depicts an illustration of this development through the four types of organizational culture, including the most notable characteristics, which represent specific behavioral artifacts and effectiveness criteria. The legitimate question arises of how the reverse change for long-established organizations proceeds over the long-term. In this vein, the adhocracy culture type is externally oriented and mainly locates in turbulent environments with a high degree of uncertainty, ambiguity, and information overload (Cameron & Quinn, 2011). The glue that holds this type of culture together, also referred to as innovation culture, is the prioritization of customer needs in combination with a strong commitment to experimentation, surprise, and delight (Cameron & Quinn, 2011; Martins & Terblanche, 2003). It is characterized by a dynamic, entrepreneurial, and creative workplace supported by flexible organizational structures, clear vision, and mission statements to cultivate innovation and cutting-edge position (Martins & Terblanche, 2003). Due to the organization's purposefulness and open

communication, people are likely to take risks. In line with these artifacts, the clan culture type follows a more internal orientation of human affiliation, teamwork satisfaction, and commitment (Hartnell et al., 2011). "It is like an extended family" that is held by loyalty, morale, and tradition (Cameron & Quinn, 2011, p. 48). Consequently, this culture type facilitates employee involvement, participation, and open communication for a human work environment.

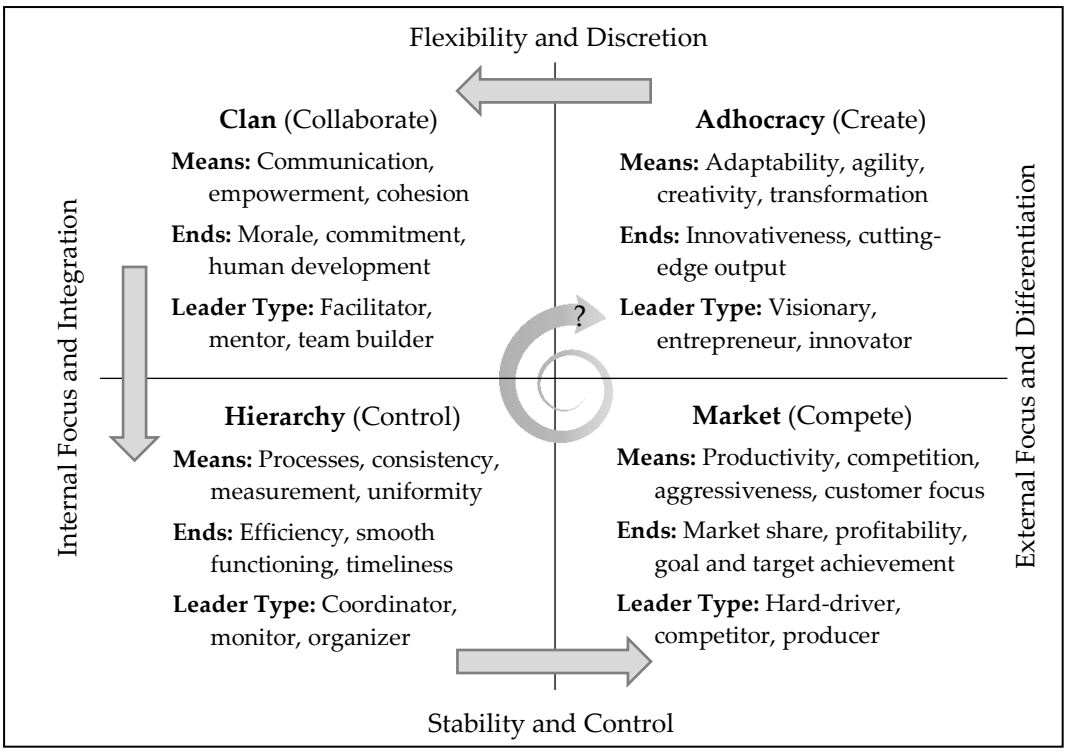

Figure 7: The Competing Values Framework (CVF) by Cameron and Quinn.
[Source: adapted from Cameron & Quinn, 2011, pp. 58; 64 – 65]

In contrast to the fast-changing climate assumption of the adhocracy culture, hierarchy cultures emerge because "the environment was relatively stable" (Cameron & Quinn, 2011, p. 42). Organizations are characterized by clear lines of decision-making levels, standardized procedures, and control mechanisms with an internal focus. Through these means, managers try to foster a smooth functioning of the firm, combining stability, efficiency, and predictability (Keskin, Akgün, Günsel, & İmamoğlu, 2005). Market culture, in turn, is strongly oriented toward

the external environment to increase an organization's competitive position and gain market leadership. Several researchers argue that "market orientation is a response partially derived from the organization's innovation culture," including similar antecedents (Dobni, 2008, p. 543). This type of culture is more a "results-oriented workplace," leading to productivity, profitability, and shareholder value in the immediate term (Cameron & Quinn, 2011, p. 46). Market organizations prefer goals and target achievement with conditional rewards to motivate employees, who aggressively outperform stakeholders' expectations (Hartnell et al., 2011).

The OCAI measures each quadrant-based culture profile using a pre-tested quantitative questionnaire. In this context, the six dimensions can analyze the current culture type based on observable artifacts and, therefore, measure the ideal or preferred culture profile by underlying values and assumptions (Rus, Chirică, Chiribucă, & Mălăescu, 2017). Within each dimension, the respondent is asked to reflect the four cultures of the CVF, mapping the assessment of current and preferred cultural development in the industry-specific culture diagram (Martin, 2011). In line with the argument that organizational cultures are fragmented in nature and have many subunits, varying degrees of congruence between the six dimensions may occur. As such, an "increased degree of cultural incongruence stimulates awareness of the need for organizational change" (Rus et al., 2017, p. 59).

Recurrent questions relate to how the culture evolution circle (see Figure 7, p. 52) evolves in turbulent environments from hierarchical or market cultures to adhocracy types of corporate culture, and thus, should be taken into deeper consideration (Maximini, 2018). In particular, there is disagreement about how cultural patterns change in large, mature organizations (Cameron & Quinn, 2011; LeCouvie & Pendergast, 2014). Nevertheless, the CVF appears to be a suitable tool for this research project because it integrates many different values and levels of analysis. It ranges from the identification of personal leadership styles to the assessment of group values within organizations that may be congruent with new circumstances or challenges. Here, the varying relationships with effectiveness criteria between the synthesized CVF from research literature and conceptualizations of agility frameworks should be borne in mind when studying the evolutionary fitness of mature organizational culture change (Gligor et al., 2016). In the following sections, it is shown that identifying essential values for each

culture type can help develop a suitable agility framework from a paradoxical perspective.

2.4.2 Organizational Values and Principles behind Culture Types

Several authors have widely discussed the various elements of the collective memory system of organizational culture. This includes a small set of core values, i.e., usually between three and five, as well as perceptions, beliefs, and definitions relating to the organization's ideology (Cameron & Quinn, 2011; Collins & Porras, 1996; Rus et al., 2017; Schein, 2004). From the perspective that deeply held core values will seldom change over time, these must be authentic to the behavior of organizational members. In this sense, the well-known typology in understanding the deep-level elements is provided by the CVF, which relies on different core assumptions of dynamic tension that support a broad self- and social-reflection of collective values and beliefs. Jung's Theory of Psychological Types (1971) discerns varying basic modes of human personality, including polarities with four psychological functions; Thinking vs. Feeling and Sensation vs. Intuition. They occur in one of two different life attitudes, namely introversion and extraversion (Blutner & Hochnadel, 2010).

Considering the similarities between the four CVF culture types and Jung's psychological types, one can argue that flexibility vs. stability (clan/adhocracy vs. market/hierarchy part of the CVF-quadrant) relate to feeling vs. thinking. The internal vs. external focus axis (clan/hierarchy vs. adhocracy/market part of the CVF-quadrant) is similar to introverted vs. extraverted attitudes. Each culture type, however, may either prefer sensory or intuitional capabilities as general psychological traits. Next to this classification, the emergence of the Five-Factor Model of Personality (i.e., Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) has led to the renewed interest in the role of applied psychology and leadership within organizations (Zhao & Seibert, 2006). Research suggests that the first four traits of the Five-Factor Model correspond with the CVF-OCAI quadrant in the form of Clan Culture = Agreeableness, Adhocracy Culture = Openness, Market Culture = Extraversion, and Hierarchy Culture = Conscientiousness (Belasen & Frank, 2008). Neuroticism, in turn, refers more to the adjustment and emotional stability of organizations and their individuals in terms

of the work environment and can be applied to all culture types. The benefits of this paradoxical approach are substantial; it induces greater creativity of respondents and enables leaders to reframe complementary possibilities of polar sites (Lavine, 2014). In this case, the opposing nature of the four CVF culture types is underpinned by basic assumptions, beliefs, and values along with paradoxes predicted for each type, as described in Table 4.

Table 4: Value attributes of clan, adhocracy, hierarchy, and market cultures. [Source: adapted from Hartnell et al., 2011 p. 679; Lavine, 2014, p. 199]

Culture Type	**Assumptions**	**Beliefs**	**Values**	**Managerial Paradoxes**
Adhocracy	Change and Innovation	An idealistic and novel vision induces people to be creative and take risks.	Growth, stimulation, variety, autonomy, responsibility, and attention to detail.	Increasing resistance to change by increasing pressures to change.
Hierarchy	Stability and Control	People meet expectation by following clear roles and formal procedures.	Precise communication, routinization, formalization, and consistency.	Keeping an eye on the big picture without getting bogged down in too many rules and procedures.
Clan	Human affiliation	People have loyalty, trust and membership to the company that fosters open communication and employee involvement.	Attachment, affiliation, collaboration, knowledge-sharing, trust, participation and support.	Involving people in decision-making processes can increase the effectiveness of the decision but might decrease the efficiency of the process.
Market	Competition and Achievement	People have clear objectives and are rewarded based on their achievements.	Communication, competition, competence, and target achievement.	Using KPI systems to align individual with organizational goals, while not spending too much time on setting goals and reviewing performance.

It thus becomes vital to investigate how businesses need to balance competing values to remain viable over the long term. As outlined in Chapter 2.3.2, it is still crucial to analyze behaviors and values, as they directly affect employees' attitudes and work output. The great cognitive and behavioral complexity is illustrated within the CVF. The diametric opposite allows leaders to identify areas of weaknesses that are depicted as a conceptual floor with opportunities for action in tension with areas of strength that are thought of as a ceiling (Lavine, 2014). This central point is inspired by Herzberg's (1966) Two-Factor Motivator-Hygiene Theory, which focuses on the effect of internal and external factors related to job satisfaction as fundamental human needs. A set of positive motivators, e.g., achievement, recognition, or responsibility, contribute to fulfillment at work (the ceiling), while the lower bound is determined by potential sources of dissatisfaction or hygiene factors, such as interpersonal relations, salary, or company policies. In this sense, the different culture types can explain why specific motivators and hygiene factors did not affect some employees (Sledge, Miles, & Coppage, 2008).

Following the discussion from the last chapter, the question is raised as to what principles are necessary for long-established corporations to develop toward adhocracy cultures. In light of this framework, several researchers highlight the relationship between organizational culture, agility, and innovativeness by addressing normative social expectations through innovation culture models (Morente, Ferràs, & Žizlavský, 2018). According to Martins and Terblanche (2003), creativity and innovation occur as basic cultural norms in times of organizational change. This conclusion refers to the open systems approach, celebrating innovation, agility, and speed with its external environment.

The CVF influences the elementary elements of cultural openness to innovation in two ways; (1) through socialization, and (2) through underlying values and behaviors in terms of external focus (i.e., be value-seeking, solutions-oriented at the leading edge of new knowledge), together with flexibility and discretion (i.e., creativity, risk-taking, freedom, teamwork, communicative, instill trust and respect, and be fast in decision-making) (Dobni, 2008; Hogan & Coote, 2014; Moonen, 2017). Supportive norms that appreciate and acknowledge employees' accomplishments, responsibilities, and efforts are specifically exposed in stories, physical layout, rituals, and language of the organization that enhance

corporate commitment (Hogan & Coote, 2014). These character traits have also been revealed within empirical studies on organizational agility and its coherence between resilience, innovativeness, and the mediating relationship to firm performance. The scales for resiliency are mainly based upon organizational change management behavior following Zwetsloot et al. (2013). The researchers utilize aspirational value factors such as adaptivity, organizational mindfulness, collaboration, and networking relationships with informedness. Innovativeness, in turn, is measured using the six-dimensional framework as proposed by Shoham, Vigoda-Gadot, Ruvio, and Schwabsky (2012), Ruvio, Shoham, Vigoda-Gadot, and Schwabsky (2013), Ali, Sun, and Ali (2017), as well as Ahl and Heckmann (2018).

Considering the nine elements of the latest International Organization for Standardization (ISO) norm 22316:2017 relating to organizational resilience and security, socio-cultural resilience factors are used to leverage crisis prevention and corporate robustness, enabling a proactive defense (Ahl & Heckmann, 2018). Weick and Sutcliffe (2007) clustered the principles of high-reliability organizations in creating a diversity of perspectives, generating sensitivity, pursuing resilience, introducing a culture of mistakes, and providing external support in decision-making. Consequently, further studies propose to "establish three clusters of values, namely ethical values (being) that include trust or interconnectedness, behavioral values (doing) that comprise transparency or responsibility, and aspirational values (becoming) that help to build resilience" (Ahl, 2020, p. 11).

Recently, empirical work on corporate value statements from the automotive industry has found an overarching value cluster of six elements, namely (1) Trust, (2) Responsibility, (3) Openness, (4) Appreciation, (5) Pioneering, and (6) Challenge (Ahl, 2020). Interestingly, core values such as agility, cooperation, and organizational learning are apparent in business excellence models from the U.S. (MBNQA) and Japan (JQA and Deming Prize). European excellence models, in turn, focus on continuous improvement, result-oriented, and fact-based management, indicating hierarchical types of culture (Talwar, 2009). Nonetheless, European corporations postulate adhocracy elements in their value statements, which leads to different perceptions shared by organizational members. As a decisive point of view, the source of organizational agility in this research relies on two main perspectives of ambidexterity, namely resiliency and innovativeness. It

is, therefore, increasingly important to investigate the nature or composition of an ambidextrous culture and its influence on workforce agility.

2.4.3 Ambidexterity as Dynamic Capability

Ambidexterity, or a firm's ability to simultaneously exploratively (radical) and exploitatively (incremental) pursue innovation activities, acts as a synergetic effect in performance- and innovation-oriented cultures (Duncan, 1976; Gibson & Birkinshaw, 2004; Khan & Mir, 2019; O'Reilly & Tushman, 2008). Referring to corporate practice, 80% of corporations nowadays underemphasize exploration and overemphasize exploitation (O'Reilly & Tushman, 2013). From a conceptual point of view, the literature usually distinguishes between sequential, simultaneous, and contextual ambidexterity (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2013). Both forms of sequential and structural ambidexterity dare to resolve the tensions between exploration and exploitation through structural means by following independent activities. However, the strict separation within this traditional approach of ambidexterity has resulted in many failed innovation initiatives (Gibson & Birkinshaw, 2004).

In recent years, several researchers have suggested that ambidexterity should be first measured and implemented on the individual or contextual level, enabling employees to pursue both goals simultaneously (Caniëls, Neghina, & Schaetsaert, 2017). Gibson and Birkinshaw (2004) describe an organizational context as a function of a culture through the interaction of stretch, discipline, and trust. Therefore, successful contextual and ambidextrous organizations need to balance conflicting tensions, particularly relating to individual abilities and external relations. In this sense, further findings have shown a significant relationship between the four variables studied, namely divergent thinking with focused attention, and cognitive flexibility and intelligence (fluid and crystallized), referring to the dependent variable of task adaptive performance (Good & Michel, 2013).

Based on the external perspective, supply chain ambidexterity consists of three interrelating capabilities, namely visibility (sensing), agility (seizing), and flexibility (reconfiguring), which lead to supply chain resilience and firm performance (S. M. Lee & Rha, 2016). Other researchers have also highlighted the

close relationship between structural and contextual ambidexterity. Kotter (2014) describes the practical methodology for solving the occurring challenges through a 'dual-operating system.' The main goal here is to maintain structure and systems for today's functions while coincidentally growing employee innovation networks through ambidexterity (Kotter, 2014). The serial-to-parallel conversion, in turn, implements a new engine that is not bounded by the structure of the existing hierarchy. Drawing on the Technology-Organization-Environment Theory, other studies reveal that information technology capability and knowledge management capability, as well as environmental dynamism, are positively associated with the effect of innovation ambidexterity relating to firm performance (Soto-Acosta, Popa, & Martinez-Conesa, 2018).

While most ambidexterity research focuses on the organizational level, researchers have noted the extensive role corporate culture plays in producing unit-level ambidexterity. Wang and Rafiq (2014) found a positive direct relationship between organizational culture and contextual ambidexterity. As such, an ambidextrous culture conceptualizes as a higher-order construct of corporate diversity and a shared vision. This distinctive capability of encouraging creativity with a few simple, formal rules enables different performance outcomes of a business unit and a balanced new product innovation portfolio.

Other studies have investigated the impact of national culture on organizational ambidexterity and innovation. In this sense, ambidextrous behavior enables team innovation through Hofstede's dimensions of power distance, collectivism, and masculinity (Rodriguez & Hechanova, 2014). Accordingly, a collectivistic culture can help alleviate the tension between exploration and exploitation activities but is hampered by a centralized hierarchy system within an organization (Z. Yang, Zhou, & Zhang, 2014). Furthermore, little is known about how different organizational culture types affect employee empowerment or workforce agility through ambidexterity. Only a few recent empirical-based studies in this field examine the link between individual ambidexterity and two types of supportive organizational cultures, specifically a culture of empowerment as well as a knowledge-sharing culture (Caniëls et al., 2017).

It seems that a culture of empowerment is positively related to intrinsic motivation by stimulating explorative activities. Extrinsic motivation, in turn,

exerts a moderating effect on ambidextrous behavior, whereas a perceived knowledge-sharing culture has neither an effect on ambidexterity nor intrinsic motivation (Caniëls et al., 2017). In contrast to this insight, there are further implications for corporate innovation management by emphasizing the extent of tension stemming from paradoxical personal drivers, i.e., passion and discipline. Such pressure in individual drivers is alleviated through a collectivistic culture in three stages of organizational learning (i.e., knowledge creation, retention, and transfer), indicating a balancing act to achieve internally ambidextrous innovation (Z. Yang et al., 2014).

The findings suggest that conceptual ambidexterity is closely related to two corporate culture types of the CVF, namely adhocracy (innovation-oriented) and clan (collaboration-oriented) cultures (see Table 4, p. 55). Although ambidexterity extrapolates as a function of heterogeneous resources and individual capabilities, little information exists on industry-specific and cross-cultural differences. Few studies indicate that innovation ambidexterity in small- and medium-sized enterprises (SMEs) possesses the ability to outperform their competitors, especially in dynamic environments (Soto-Acosta et al., 2018). However, there is a lack of a comprehensive understanding of how intra-organizational processes work and whether other factors, i.e., environmental issues, are also at play in larger corporations. The next chapter, therefore, centers on the role of work environment uncertainty before building the final conceptual framework for this research work.

2.5 THE CONTINGENT EFFECT OF CORPORATE ENVIRONMENTAL FORCES

The aspect of change may be affected by previous experiences that comprise organizational culture traits, internal and external pressure, and communicative features (K. Miller, 2011). After synthesizing internal contingencies relating to the culture-agility-behavior construct, extant research also sheds light on the immediate external context in which these capabilities operate. In terms of strategic intent, recent academic studies have focused on the role of organizational slack and environmental factors with whom the focal organization interacts (Khan & Mir, 2019; Meinhardt, Junge, & Weiss, 2018). However, growth in the number of published articles over time shows a dominant increase in the organizational

environment as a moderating variable over the past two decades (Meinhardt et al., 2018).

Based on this work, more attention is being paid to how dynamic tensions and environmental conditions can affect the deployment of organizational capabilities and existing ways of working in the VUCA world (Green et al., 2019). The required environment of trust can have a moderating effect on uncertainty, which gives space for designing organizational models that can face the occurring challenges (Stephenson, 2006). This theoretical lens is explained through the situational approach of the contingency theory, where profound cause and effect relationships are known. Contingency forces or contextual variables in uncertain business environments do not have a universal influence on firms. These factors cause different behaviors, processes, and capabilities (Chan, Yee, Dai, & Lim, 2016; Meinhardt et al., 2018). Accordingly, the consideration of environmental dynamism gives further support to the assumption that external tensions of uncertainty can also be a potential source of adaptation and new learning (Ruiz-Ortega, Parra-Requena, Rodrigo-Alarcón, & García-Villaverde, 2013). Consistent with the contingency theory, it is the degree of openness of innovation strategies that depends on firm-specific internal factors as well as external environmental factors. Within this point of view, the influence of environmental dynamism amplifies the positive effect of innovation ambidexterity on firm performance if the corporation can create an appropriate organizational context (Soto-Acosta et al., 2018). It, therefore, is unreasonable to regard the external environment as static with its damaging effects.

First and foremost, many short-range aspects are concerned with an organization's performance. However, long-term entrepreneurial orientation components are associated with the process of culture formation, which becomes social capital and property in the internal environment through external means (Schein, 2004). Schein (1988) explicitly states that corporate culture is pervasive and forms when organizations solve the problems of external adaptation and internal integration. What matters is not "whether or not a culture type is 'good' or 'bad' […]," but rather on the relationship of the culture to the environment in which it exists (Schein, 2004, p. 8).

According to Aldrich (1979) and Dess and Beard (1984), an organization's environment is accentuated by three dimensions with distinct forces, namely munificence, dynamism, and complexity. Each of them represents similar features of the VUCA acronym. Firstly, environmental munificence is concerned with the scarcity or abundance of critical resources that cause strategic personnel changes and put pressure on organizations. The varying benevolence of environments can have a critical influence on the potential effectiveness of a firm's resources and capabilities, affecting the growth of resources within firms through higher levels of external knowledge. Hence, environmental munificence positively impedes organizational ambidexterity and the broad searching strategies for innovation and subsequent work performance, thereby lowering organizational tensions (Khan & Mir, 2019). Munificence affects not only the survival and growth of organizations but also the barriers for new entrants to enter such an environment.

Secondly, environmental dynamism, in turn, refers to the speed and unpredictability of change in the industry (Goll & Rasheed, 2004). The concept of dynamism often is measured by environmental turbulence or a high-velocity environment (Mohammad, 2019). Firms need to pursue proactive environmental scanning with speedy information dissemination across the entire organization. Goll and Rasheed (2004) suggest that instability in demand indicates environmental dynamism. However, researchers still disagree about the potential impact of dynamism on contextual ambidexterity and innovative expectations.

Interestingly, the contingent effect of environmental dynamism strengthens the positive outcome of the innovation climate on outbound open innovation through monetary benefits within SMEs (Popa, Soto-Acosta, & Martinez-Conesa, 2017). In contrast, the relation between innovation climate and inbound practices is not dependent on environmental dynamism and competitiveness in SMEs (Popa et al., 2017). This aspect has its roots in the fact that SMEs have comparatively fewer resources for screening the external environment and focus on efficiency and price competition. In pursuit of ambidexterity, organizations can get stuck in resource-constrained environments that lead to poor innovation performance and diminishing returns (Khan & Mir, 2019; Porter, 1985). In this case, highly dynamic environments provide ample opportunities for intra-organizational resource reconfigurations that result in greater operational flexibility in the long term (Peng

& Lin, 2019). Other studies have empirically demonstrated the highest effect on the competitive advantage of firms when environmental dynamism is intermediate (Schilke, 2013).

Thirdly and lastly, the dimension of complexity describes the number, for example, of customers, suppliers, and competitors, and heterogeneity of activities within an environment (Duncan, 1976). Most researchers define environmental complexity as the level of competition and its concentration within the industry. Other studies also highlight the coherence between the complexity of business systems and the associated challenges to strategic decision-making (Jeschke & Mahnke, 2013; 2016). Five parameters define the complexity of a system, namely multiplicity, interdependency, diversity, dynamics, and imponderability, also referred to as the "MIDDI"-model (Jeschke, 2020). In this context, decisions in complex environments are characterized by the high degree of the system elements multiplicity, combined with a high density of the elements' interrelations. System elements' diversity, dynamics, and their interdependencies require a consecutive monitoring routine along with an evolving situational approach (Jeschke & Mahnke, 2016). Dichotomizing these parameters resulted in a set of 32 types of system designs, each requiring a different rationale. Clustering analyses to reduce uncertainty from high multiplicity, cross-impact-analyses to cope with interdependency, specialization against high diversity, sound Business–Process–Management to stay above high dynamics, or risk-management to handle high imponderability represent important examples mentioned here (Jeschke, 2020).

In general, organizations operating in complex, dynamic or munificent environments possess higher levels of uncertainty and unpredictability, where inertia can create situations of 'hyperturbulence' (Goes et al., 2000; Meinhardt et al., 2018; Rowe, Besson, & Hemon, 2017). The ability to tolerate uncertainty mainly applies to broader cultural contexts that value ambidexterity (Schein, 2004). Recent research stresses the significant impact of organizational culture, innovation climate, and employees' commitment on the adoption of open innovation in terms of inbound and outbound practices (Popa et al., 2017). Knowledge creation and open innovativeness, accompanied by intense internal differentiation, are decisive forces that help perceive weak signals of uncertainty, and thus, reduce socio-technical inertia in skills and systems (Rowe et al., 2017).

However, individual cognitive structures are strongly influenced by environmental uncertainty and may also potentially inhibitory features in the decision-making environment. Measurement scales based on previous research work by Clampitt and Williams (2005) propose a three-factor solution for creating separate dimensions of work environment uncertainty, which has been widely used as a crucial contextual variable in many other studies, as outlined in Table 5.

Table 5: Summary of the work environment uncertainty construct related to organizational decision-making. [Source: own version]

Construct	Attributes and Sample Measures	Other Sources
Work Environment Uncertainty (Clampitt & Williams, 2005)	**Factor 1: 'Expressed' Uncertainty** *Encouragement of employees to express doubts or misgivings, levels of threat, diverse knowledge, and information* - Industry concentration ratios - Perceived industry opportunities and technological breadth - Number of competitors - Speed-up communication	Jang et al. (2018), Jeschke & Mahnke (2013; 2016), Meinhardt et al. (2018), Peng & Lin (2019), Rosenbusch et al. (2013)
	Factor 2: 'Outcome' Uncertainty *Availability of resources, scarcity and existence of opportunities* - Industry, market, demand growth - Capital expenditures and investment plans	Aldrich (1979), Dess & Beard (1984), Goll & Rasheed (2004), Khan & Mir (2019), Meinhardt et al. (2018)
	Factor 3: 'Perceptual' Uncertainty *Degree of change, absence of patterns and unpredictability of future developments* - Speed of change (preferences, demands, needs, attitudes) - Corporate foresight - Entrepreneurial orientation and innovativeness	Chan et al. (2016), Dess & Beard (1984), Azadegan et al. (2013), Schilke (2013), Khan & Mir (2019), Ruiz-Ortega et al. (2013), Tajeddini & Mueller (2018)

Many studies still build upon the hypothesis that national cultures express different levels of 'uncertainty avoidance' (Hofstede et al., 2010). They have succeeded in finding correlations between specific job resources, e.g., participation in decision-making and employee strain (Jang, Shen, Allen, & Zhang, 2018; Munteanu et al., 2020). By working around the understanding of unavoidable uncertainty, researchers have argued the reconceptualization of complex problem solving toward finding ways to cope with "dynamically uncertain decision-making contexts" (Osman & Palencia, 2019, p. 2). In this vein, different work climates emerge, with varying beliefs, values, and assumptions across the entire workforce. This event sheds light on the question of how groups behave and perform in real-world organization locations when change is possible but not given, and results of actions can be less predicted (Green et al., 2019).

As a result, the moderating force of work environment uncertainty appears as a useful approach to understanding individual-level relationships within organizational cultures (Schein, 2004; 2010; Schein & Schein, 2017). The underlying framework for this research purpose is composed of four elementary characteristics within the "Uncertainty Management Matrix," ranging from the status quo to unsettling, stifling, and dynamic climates (Clampitt & Williams, 2005, p. 17). Consequently, the current investigation addresses the gap in the literature relating to how the organization embraces or avoids uncertainty and change in the external environment through the individual employee's perception. Based on this assessment, the next chapter develops the conceptual framework for this thesis.

2.6 CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

Many researchers have deduced and compiled the need for organizations to become growing, learning, and adapting living organisms (Denning, 2018). Consequently, individual business components must adapt to rapidly create new value for customers as well as sustain survival and growth opportunities in severely uncertain business environments. Under the dynamic capabilities' view of the firm, the following conceptual model represents an exhaustive analysis of the two relevant research areas from Chapters 2.3 and 2.4, namely the four organizational culture typologies and the field of workforce agility. The contingency effect exerts pressure by the main factor of work environment

uncertainty, as outlined in Chapter 2.5. In total, eight hypotheses are proposed for statistical testing, examined in different sub-hypotheses in the preceding sections. The more general argument is dominated by the assumption that environmental conditions and the underlying forces of uncertainty will positively influence agility scores, as elaborated in greater detail below.

Linking CVF culture types to workforce agility and psychological empowerment

Using Cameron and Quinn's (2011) original CVF taxonomy, this research aims to explore which cultural value types – clan, adhocracy, hierarchy, and market culture – are more likely to drive workforce agility determinants. Each of the four culture typologies can promote psychological empowerment, and thus, is measured by the CVF proposed by Cameron and Quinn (2011). The first intention is, therefore, to explore which culture or culture combination exerts a sustained influence on the endogenous construct. Due to its specific value attributes, the adhocracy culture seems to constitute the most suitable culture type for becoming agile. Adhocracy cultures, as denoted in Table 4 (p. 55), proactively encourage values of risk-taking, adaptability, and creativity, thereby facilitating innovation. Employees' positive attitude toward changes, new ideas, or technology represents real sources of opportunities by fostering a higher level of resilience (Muduli, 2017). Per the factors outlined above, the following hypothesized relationship between adhocracy culture types and dimensions of workforce agility is proposed:

H_1: *Adhocracy culture is positively related to workforce agility.*

Clan cultures, in turn, focus on the internal organizations' awareness of human well-being, open communication, and collaboration ties, as well as the dissemination of knowledge throughout the entire organization. Lean structures, flat hierarchies, and a strong commitment to employees create a sense of ownership, trust, and responsibility (Hartnell et al., 2011). These adaptive behaviors influence the collective psychological empowerment of workforce agility. Thus, it is hypothesized that the clan culture has a positive influence on employee agility at the unit-level (see Figure 8, p. 70):

H_2: *Clan culture is positively related to workforce agility.*

Market culture conditions indicate different outcomes for workforce agility. First and foremost, this type of culture maintains a strong external focus on customers' needs and expectations to garner competitive foresight (Cameron & Quinn, 2011). Consequently, organizations with a market culture maximize their surface of continuous improvement, proactivity, and information sharing through communication with key stakeholders (Felipe et al., 2017). In contrast, organizational members are encouraged to competitively and aggressively attain the targets set by the leader. "Winning is a dominant objective" (Martin, 2011, p. 294), thus rewarding the ambitious goals of delivering lucrative financial results to shareholders. This statement is consistent with previous work relating to psychological traits that point to the characteristic empowerment of reclusive people who follow only an individual root. In this sense, the unhampered sharing of knowledge across different organizational levels, as well as team effectiveness reflecting the values inherent in agile behavior, requires further and closer examination. Hence, a negative relationship between the market culture type and the flexible workforce level in an organization is proposed (see Figure 8, p. 70):

H_3: *Market culture is negatively related to workforce agility.*

Finally, organizations that mainly focus on internal efficiency and control are subjected to hierarchical culture types. Due to the high degree of formalization, procedures, rules, and regulations, hierarchical organizations find it difficult to sense and respond to continuous environmental changes. Managers are accustomed to working with caution and high internal pressure while experiencing a higher stress level in unexpected situations. "The stress of belonging to hierarchies itself is linked to disease and death" (Seppälä & Cameron, 2015, n.pag.). These cutthroat organizations fail to recognize the hidden costs incurred through employees' lack of loyalty, trust, and engagement. As a result, leadership roles demonstrate the monitor and coordinator functions, representing the opposite to entrepreneur or innovator experts (Cameron & Quinn, 2011). It is, therefore, expected that the hierarchy culture type leads to lower levels of workforce agility in organizations (see Figure 8, p. 70):

H_4: *Hierarchy culture is negatively related to workforce agility.*

Different studies also found empirical evidence that organizational effectiveness in terms of employees' cognitions toward organizational commitment and job satisfaction is highest in organizations of higher education that emphasize both adhocracy and hierarchy cultures (Cameron, Quinn, DeGraff, & Thakor, 2014; Felipe et al., 2017). Accordingly, the diverse cultural mix of typologies is evaluated in greater detail. Another presumption states that positive work cultures are more productive, including employee engagement, satisfaction, and operational performance (Seppälä & Cameron, 2015). In this sense, the appropriate culture for each organization seems to depend on the organization's industry type and its strategic direction.

Moreover, the research model also provides deeper insights into the single components of workforce agility that can be useful for deriving managerial implications. As such, other complementary theories and propositions from previous empirical research are applied to bolster support for the following hypotheses. Sherehiy and Karwowski (2014) group the behavior of an agile workforce into the following three dimensions of psychological empowerment: proactivity, adaptivity, and resilience. Table 3 (p. 37) summarizes the role of the three separate components. Thus, the following hypotheses are concluded:

H_5: *Workforce agility is positively related to higher levels of proactivity.*

H_6: *Workforce agility is positively related to higher levels of adaptivity.*

H_7: *Workforce agility is positively related to higher levels of resilience.*

The complete construct is measured through respondents' self-assessment of their agility attributes, attitudes, and individual behaviors. The pre-designed questions of Sherehiy et al. (2007) and Alavi et al. (2014) are used and explained in more detail in the methodology part of Chapter 3.2.1.2. Furthermore, it becomes crucial to gather data on industry type, location, age, and size of the firm, as well as the respondent's position and job tenure as control variables.

The widely applied OCAI construct represents a sound basis for investigating these cultural differences, which will be used to gain first insights into an organization's underlying culture type, separated by industry type. Based on the historical ties of agility, the following analysis distinguishes two industry-

specific types in terms of manufacturing or producing branch (the 'old' economy), and the service and IT sector (the 'new' economy). The assessment of an organization's culture is reviewed for both the current and preferred state and then mapped on the culture tension vector diagram, as described in Chapter 2.4.1. Combined with the survey on linking organizational culture types to workforce agility, this 'two-step approach' provides the flexibility to embrace new developments in corporate culture research. This procedure is indispensable for determining the implementation of transformational change. The alignment of existing trends from employees' values, thereby, ascertains the development of strategic and operational guidelines for culture transformation.

Moderating variable of work environment uncertainty

Additionally, environmental uncertainty appears as a moderating variable in the relationship between diverse organizational variables, i.e., entrepreneurial orientation, corporate social responsibility, and financial performance. A large and growing body of research emphasizes that the acceptance of agile values and principles in corporate cultures are also strongly influenced by environmental forces (Felipe et al., 2017; Schilke, 2013; Tajeddini & Mueller, 2018). Due to the external focus of adhocracy and market cultures, both types are more at ease with innovative responses and cope better with environmental forces that create uncertainty around unpredictable scenarios. Moreover, these environmental conditions have a positive impact on the values linked to a superior workforce agility level.

Contrarily, the internal focus of hierarchy and clan cultures entails a certain degree of formalization and efficiency over seeking market opportunities. However, the value of clan cultures inevitably lies in their flexible organizational structure and dissemination of knowledge through open communication that can overcome this limitation. Likewise, hierarchy cultures pursue high levels of efficiency and profitability in a perfect working system. In uncertain decision-making conditions, these cultural types will be forced to leave their comfort zone while adapting to external requirements to maintain long-term success and survival. Taking all preceding contributions together, Figure 8 (p. 70) depicts the conceptual research model for this thesis, including the main hypotheses relevant to the diagnostic analysis.

Briefly, it is hypothesized that the values for an enhanced level of workforce agility are subsequently diffused and smoothly assumed by the organization. This theoretical support proposes that work environment uncertainty positively moderates the relationship between different culture types and workforce agility by enhancing culture values linked to higher levels of workforce agility. To capture uncertainty, the key constructs proposed by Clampitt and Williams (2005) and further elaborated by various researchers (Jang et al., 2018; Meinhardt et al., 2018) are used to develop the measurement scale (see Table 5, p. 64). Accordingly, the moderating force of environmental uncertainty is expected to positively affect the culture–workforce–agility relationship (see Figure 8):

H8: *Uncertainty in the work environment positively moderates the link between the different types of corporate culture, namely adhocracy, clan, hierarchy, and market, and the construct of workforce agility.*

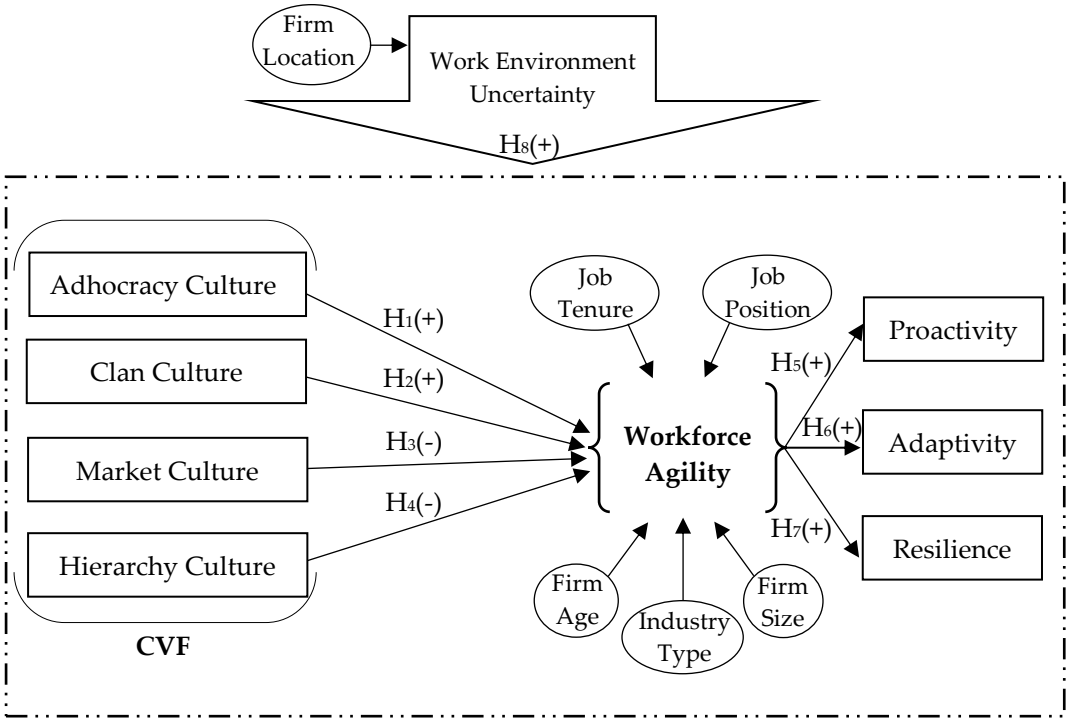

Figure 8: Conceptual research framework and hypotheses of this thesis.
[Source: own version]

2.7 CHAPTER SUMMARY AND CONCLUSIONS OF THE LITERATURE REVIEW

As the 21st Century business environment continues to be characterized by high levels of uncertainty, complexity, and dynamism, the introductory part of Chapter 2 discussed the concepts of 'Change' and 'Transformation' from various perspectives. At such times, organizations experience a shift in consciousness toward the idea of broader transformational change, with transformation extrapolated as an extreme manifestation of change. The transition into a new stage of consciousness has brought about a distinct ability to collaborate. In this regard, organizations need to consider the external challenges of competition and offering value propositions to their stakeholders. Additionally, the internal perspective of workforce mobilization and engagement supports strategic ambition with an emphasis on driving employee behavior. Organizational culture must adapt to this trend. The result is a social movement that depends upon the individual employee acting as a linchpin for successful or failed change and transformation processes.

Since the late 1950s, companies have pursued the same basic organizational change models that are no longer able to respond to blatant and significant circumstances. To cope with such dynamism, organizations need a radical revision of commercial priorities, strategic approaches, and methods. This emerging paradigm is called organizational agility, which refers to the underlying dimensions of dynamic capabilities, information practices and processes, as well as people's characteristics and behavior. At least three dimensions of how corporate culture constitutes a driver for organizational change have been applied to the universal definition of organizational agility (see Chapter 2.2.1, p. 25).

Once again, cultural components appear as the main drivers for embracing an agile mindset, which has a high effect on entrepreneurial orientation, the corporate workforce, as well as on firm performance. Prior research has shown that the concept of workforce agility, its behavioral and psychological values, and patterns are understudied dimensions within corporate culture research work. Consequently, this study considers employees' relationships with the organization and their leaders, as well as their work experience related to emotional and intellectual attachment, as one part of the research framework. The setting refers to

workforce agility, as stated by Sherehiy and Karwowski (2014) and Munteanu et al. (2020).

Moreover, organizations are social and physical constructions that represent our current state of development and strive for healthy entities with a high emphasis on shared learning, innovation, experimentation, and self-renewal. The business paradigm is shifting more toward humanism, often considered "the collective programming of the mind" (Hofstede et al., 2010, p. 6). Therefore, an elusive understanding of organizational culture, its forces, and outcomes may shape the improving capacity for organizational change along with the ability to make decisions in times of risk and uncertainty. The systematic literature review helped uncover different cultural conceptualizations based on the distinctive theories of Schein (2004; 2010; Schein & Schein, 2017) and Hofstede et al. (2010).

Building on Schein's layered model of organizational culture, the second level of 'espoused values,' also known as the creator of awareness, is regarded as an intermediate key asset for culture development. In this sense, values can be classified into the ethical, behavioral, or aspirational extent, which mainly differentiates the nature of emotional reactions and managerial behavior, as summarized in the Upper Echelons Theory. Within the corporate practice, resistance to organizational change is attributable to the effect of social pressure, as employees are forced to reflect and modify their behavior according to the espoused values of the management team. Propositions on dealing with resistance vary considerably. However, since values are prerequisites for individual behavior, this chapter found suggestions on integrating human values close to social connectedness into corporate value statements.

Moreover, the missing link between employee-related and leadership behavior prevailed in the mechanism of psychological empowerment. Empowerment and autonomy in decision-making are regarded as crucial enablers for workforce agility, energizing higher levels of individual resilience. Another assumption is that the combination of agility and resiliency significantly relates to the capability-building process in organizations. The third section of the literature review thereupon examined the various elements of the collective organizational memory system of culture, based on Cameron and Quinn's (1999; 2011) cultural dimensions. The CVF represents a widely accepted diagnostic tool and

distinguishes four groups of culture types, namely market, clan, hierarchy, and adhocracy cultures, for analyzing cross-cultural differences as well as for developing transformational leadership. The main goal is to identify behavioral and motivational manifestations for a more paradoxical view of leadership development and contextual ambidexterity. The reason for this is that cultures are assumed to change and evolve through a predictable circle of a pattern (see Figure 7, p. 52). In this respect, this chapter identified the reverse change of long-established organizations as a research gap.

An ambidextrous organizational culture is most likely a distinct enabler of workforce agility by fostering the 'dual-operating system' in terms of adaptive and consistent culture. The literature review postulated two CVF culture types, namely adhocracy (innovation-oriented) and clan (collaboration-oriented) cultures, which are closely related to the simultaneous pursuit of exploitation and exploration activities. Corporations operating with high-volatility must balance competing values to remain successful over the long-term. Although environmental conditions have been extensively researched over the past two decades, the studies did not consider the dynamic nature of the industry environment relating to dynamic capabilities and workforce agility. Here, the market-based view emphasizes the contingency effect of organizational tensions that could exert a positive impact on ambidextrous capabilities in coherence with culture development and inter-functional collaboration. Finally, these insights led to the assumption that the construct of environmental uncertainty in terms of dynamism, munificence, and complexity plays a significant moderating role in the relationship between corporate culture and workforce agility.

In essence, this chapter proposed an empirical framework for how different layers of organizational culture can support the elements of psychological empowerment that are crucial to workforce agility. Because the framework itself is relatively new and not well studied, there is a poor understanding of what a process model for transformational culture change might resemble. The findings of this thesis are intended to contribute to research by applying the CVF concept of organizational culture in the context of managerial realization and cultural development in corporate practice. The hypotheses are based on the preceding theoretical and empirical foundations, highlighting relationships pictured in the

conceptual model, according to Figure 8 (p. 70). Building on those achievements, Figure 9 shows a framework that comprehensively depicts the links between the sub-topics of the literature review. In that regard, the literary work ascertains the theoretical model and status quo that offers research gaps to guide this research. The entirety of the fields shown combines the research hypotheses developed in the last part of this chapter.

On this basis, Chapter 3 discusses the methodology approach, the selection of respondents, and the analysis techniques to be used, as well as sheds light on the development of the present survey questions. Each model or method described is highly relevant to the research objectives.

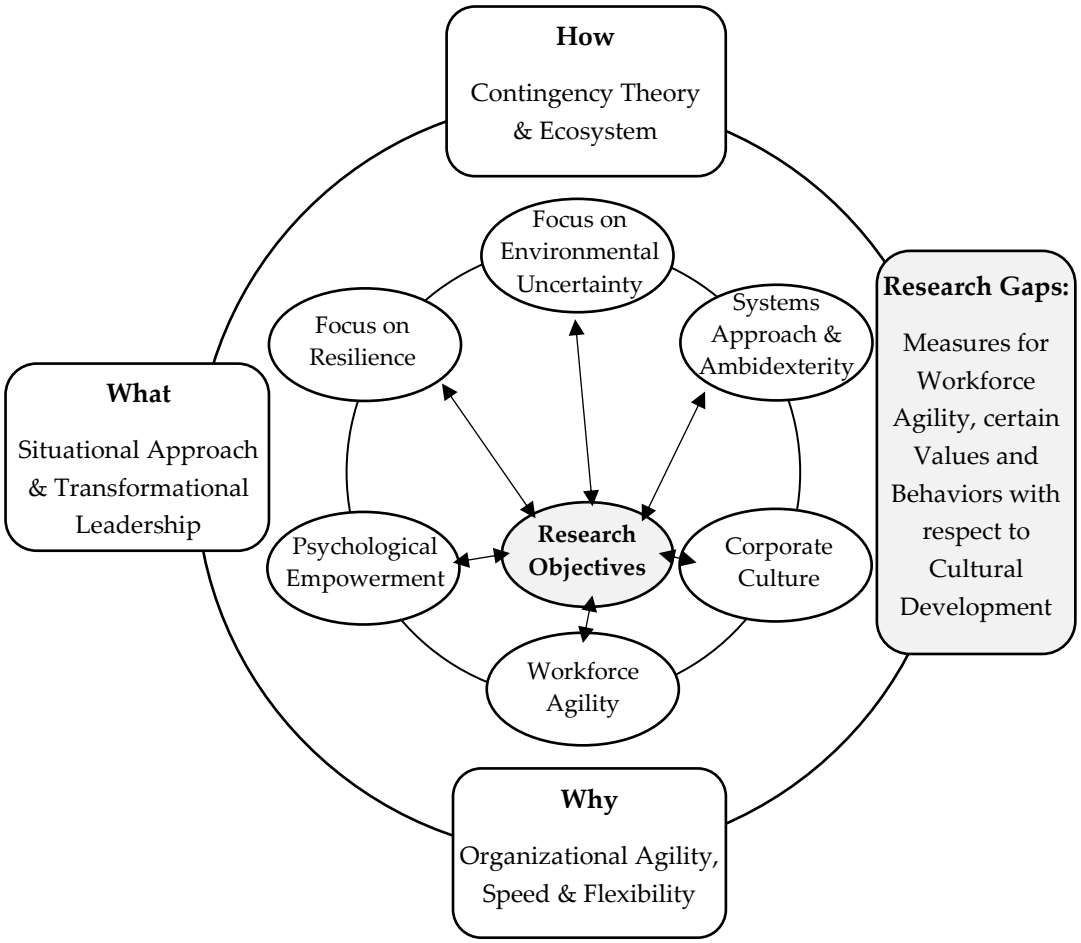

Figure 9: Theoretical framework and the link between literature review and sub-topics.
[Source: own version]

CHAPTER 3. RESEARCH METHODOLOGY

"Methodology should not be a fixed track to a fixed destination – but a conversation about everything that could be made happen."

John C. Jones (*1927)
in Design Methods (1970; 1992)

3 RESEARCH METHODOLOGY

Before undertaking the empirical analysis relating to the influence of different organizational culture types on workforce agility, it is necessary to investigate the social science phenomenon and its research approach. The main research questions and objectives were outlined in Chapter 1. Consequently, the purpose of this chapter is to discuss the research approach with its underlying philosophy. In the pursuit of elementary goals, the research strategy expounds on research instruments and practices. In this regard, the quantitative research approach differentiates from the philosophy research paradigm in terms of ontology, epistemology, and axiology. The second stage of the investigation employs the survey approach regarding the role of its research design, sampling framework, methods, and research quality indicators, as well as the data collection process. All reflections comprise relevant literature to substantiate the position of integral research contributions for this thesis. The chapter concludes with a brief discussion on the ethical considerations as well as methodological limitation issues encountered during the research.

3.1 RESEARCH APPROACH AND STRATEGY

The review of the literature has indicated a great debate in assessing the most appropriate research approach for cultural studies. In general, the term 'approach' represents the underpinning rationale relating to how the research is being carried out. Therefore, the propositions concentrate on plans and procedures for seeking knowledge from broad assumptions to detailed methods. Consequently, the overall decision faces the inquisition of which approach to use for the study. More precisely, three central questions require significant attention from researchers, such as the 'how,' 'what,' and 'why' to research. The literature review often outlines various reasons for what to research. Before deciding upon the suitable methodology for how to study the different ends on a continuum of quantitative, qualitative, or mixed-methods approaches, research work also necessitates a philosophical solution as to why to research (Creswell & Creswell, 2018). As a result, the researcher should be aware that these assumptions are consequential

and influential to each other. The conceptual framework and its specified indicators employing an exploratory review of academic articles, management journals, and monographs are now subjected to a quantitative-statistical review.

Following a phenomenological perspective, reality represents a social construct with different degrees of beliefs and interpretations (Newman & Ridenour, 1998). The literature postulates three research approaches that differ from each other in several ways. On this basis, the debate has been raised as to whether science can be a value-free (quantitative) or value-laden (qualitative) nature of human social interactions. Whereas quantitative research needs solid conceptual grounding and searches for the 'truth,' qualitative research persuades through the comprehensive description, observation, and interpretation of reality across cases by generalizing to theory (Yin, 2018). On many occasions, researchers mix methods through triangulation of data sources to achieve their outcome. The latter may take the risk that the study is not sufficiently embedded in the theory due to its qualitative origins and must often make the effort of managing data inconsistencies (Brannen, 2005; Malina, Nørreklit, & Selto, 2011). Evaluating and aligning the paradigmatic philosophies of both methods represents a central challenge for seeking convergence. Therefore, the research strategy in this study is rather seen as a learning process of locating and verifying reality than a theory-testing exercise. It is used to quantify attitudes, opinions, and behaviors by extracting meaning from the context with as much validity and transparency as possible based on conceptual grounding.

Fundamentally, this thesis starts with an evasive understanding of the philosophical stance and uses a non-experimental quantitative research strategy, where the research approach implemented has been that of post-positivism. Pollack (2007) associates this hard-lined and high-structured paradigm with deductive reasoning, reductionist techniques, and attributes often associated with rigor and objectivity. According to this approach, researchers usually begin with theory-driven hypotheses that aim to test their impacts through large sample sizes of data to build protection against bias and generalize or replicate the findings from a sample to a population (Creswell & Creswell, 2018). Thereby, subjective thoughts, interpretations, or opinions of the respondent do not predicate findings (Bell, Bryman, & Harley, 2018). Examining the causal relationship among variables using

statistically-based methods, the empirical investigation of phenomenon also allows the explanation and extension of assumptions as an ambidextrous way of seeking knowledge (Pollack, 2007). As such, quantitative studies have some shortcomings as they show greater levels of inflexibility in terms of modifications during the research process. Moreover, researchers who engage in this form of inquiry must ensure a common understanding of underlying questionnaires and objectives. Figure 10 shows a summary of the research approach of this thesis and its subsequent deliverables.

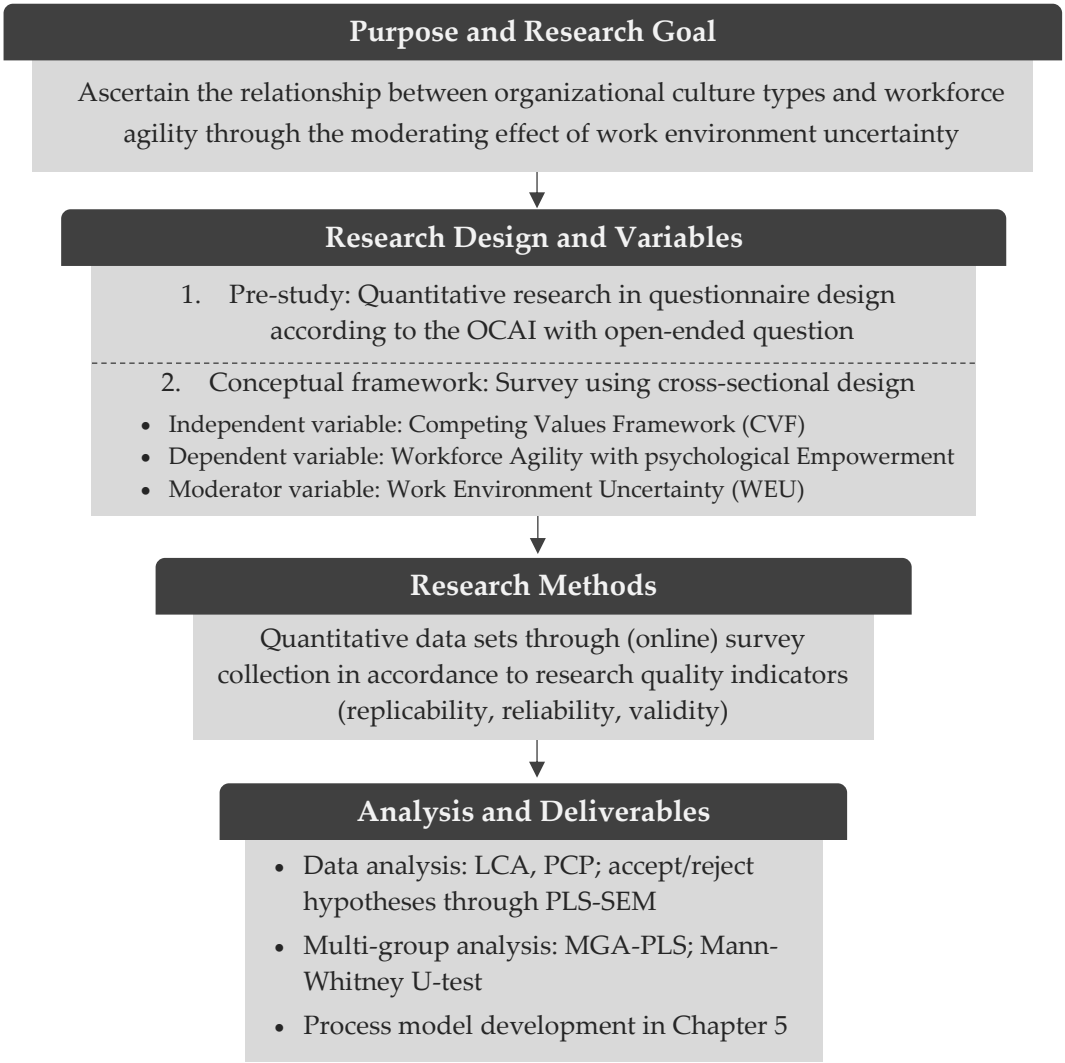

Figure 10: Research approach and strategy.
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In the pursuit of this strategy, two rounds of data collection were undertaken in three stages of the research process. The first phase of this research work consisted of conducting a pre-study based on the OCAI, as presented in Chapter 2.6. By combining qualitative elements of an open-ended question, the study considered pre-theory science, for which more-relevant quantitative tools seemed promising for progress. The purely quantitative research approach, designed as a survey, aimed in the second step to identify underlying relationships and dependencies. After obtaining the statistical results, the last step of the research work proposed a supporting process model of workforce agility in corporate practice. Before further detailing the implementation, the next sections elaborate the philosophical world view and ethical considerations of the study, as well as the chosen research approach to answer the proposed research questions.

3.1.1 Philosophy and Criteria of Empirical Research

The decision to conduct research work from a quantitative, qualitative, or mixed-methods approach mainly depends on the nature of science concerning the research questions, design, and goals. Understanding the philosophic underpinning of these different research approaches is pivotal to build on the right choice of methodology. Guba and Lincoln (1994, p. 105) define a research philosophy as the "basic belief system or worldview that guides the investigator." Ontology, epistemology, and axiology are the well-known key components or roots in research philosophy that guide a set of shared beliefs for the research paradigm (Creswell & Creswell, 2018; Saunders, Lewis, & Thornhill, 2019). These considerations divide different perspectives on the analysis of social phenomena into several categories based on the nature and structure of knowledge.

The most comprehensive philosophical framework has been developed by Burrell and Morgan (1979), who refer to objectivism (scientific) and subjectivism (phenomenological) as continuum opposites like science. Nonetheless, creating an overall philosophical perspective also requires consideration of a second dimension, the society's evolvement, which is often neglected in research debates. A sociological dimension has emerged from the conflicting views of the nature of society in terms of regulatory or radical change, which is particularly relevant to business and management research. In short, the dimension of radical change

adopts a critical perspective on organizational affairs and proposes ways for fundamental change. Contrarily, the regulatory view of society assumes a rational improvement of operations that are less critical within the existing state (Creswell & Creswell, 2018). Within this context, both dimensions of nature and science have led to four different paradigms for the analysis of social theory, i.e., functionalist, interpretive, radical humanist, and radical structuralist (Burrell & Morgan, 1979). Each of the paradigms generates fresh insights into real-organizational issues and problems, and thus, is linked to the traditional philosophies outlined in the next sections. Figure 11 shows the interrelationships between the central building blocks of the research regarding the philosophical assumptions of this study, following the definitions of Laverty (2003, p. 23) and Grix (2002, p. 179 ff.).

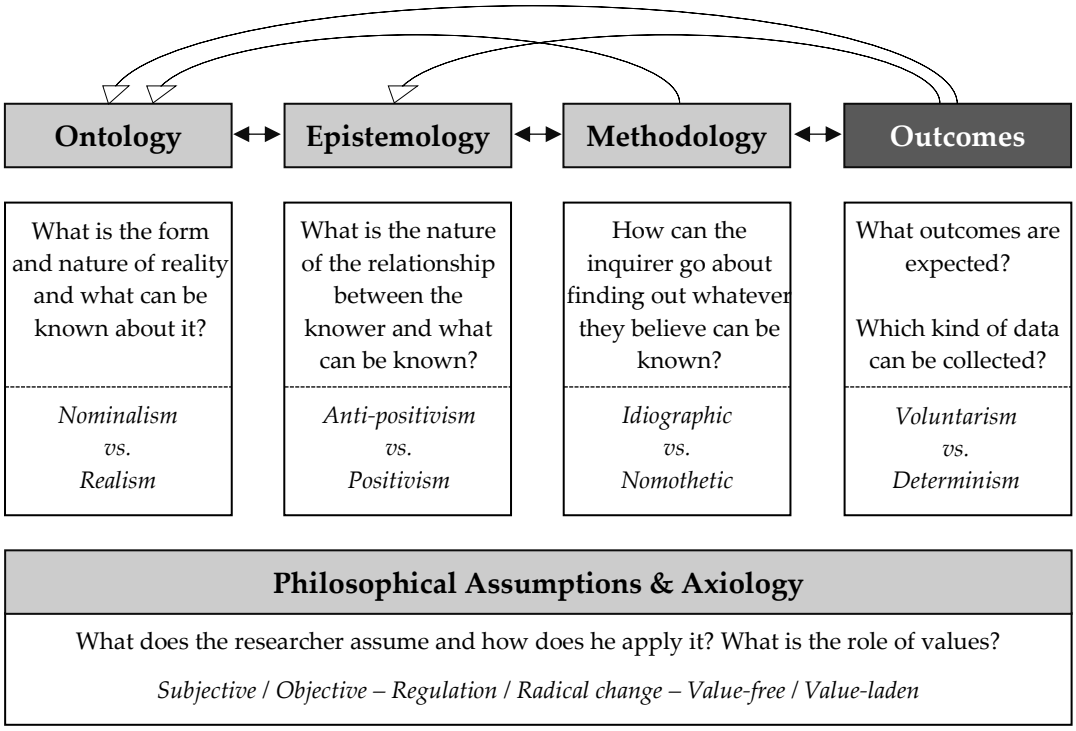


Figure 11: The key building blocks of defining a research paradigm.
[Source: adapted from Grix, 2002, p. 180]

Ontology, also referred to as the starting point of all research, is concerned with the nature of reality or being from a physical and social point of view. The

second assumption, epistemology, deals with the sources that constitute adequate knowledge. It focuses on the nature, causality, validity, and limits of inquiry through either or both observable phenomena (resources) of a singular verifiable truth and subjective meanings (feelings) in the specific context (Saunders et al., 2019). Adhering to the interpretation of research findings, axiology – or the researcher's view of the role of values – is influenced by making judgments of prediction or understanding in coherence with social inquiry (Creswell & Creswell, 2018; Saunders et al., 2019). Above all, the ethical research goals are concerned with what is critical and valuable at all stages of the research process. Together, these worldviews define the individual philosophical assumptions as well as the appropriate data collection techniques that inform the overall research strategy and the distinct methods of that strategy.

In the broadest sense, the research paradigms outlined define four research philosophies such as positivist/post-positivist, constructivist, transformative, and pragmatic approaches (Creswell & Creswell, 2018; Mertens, 2015). Quantitative modes are the dominant methods of research in social science. Researchers, in the tradition of the natural scientist, assume an observable social reality that must be asserted deductively in a value-free way. In this sense, positivism implies that reality exists independently of social actors. It intends to use objective approaches to create law-like generalizations and closed cause-effect models that provide credible data and facts.

According to the four paradigms of Burrell and Morgan (1979), sociological positivism is mainly related to the functionalist paradigm. It pertains to the objectivist and regulatory dimensions in which most business and management research is conducted. Studying work motivation in organizations through existing theories and data collection techniques usually account for functionalist research (Hassard, 1991). Functionalists define societal culture as stable phenomena with distinct characteristics that can be observed, measured, and manipulated across nations (Romani, Mahadevan, & Primecz, 2018).

During the late 19th and throughout the 20th Century, the investigative strategies associated with quantitative research were those that invoked the post-positivist worldview (Creswell & Creswell, 2018). The criticism of the traditional positivist perspective was about finding the absolute and single truth, independent

of context and using exact measurements as in the social world, which allowed the emergence of post-positivist epistemologies and ontologies. For some, the term is ambiguous, encompassing both interpretivism and objectivist positions (Corry, Porter, & McKenna, 2018; Fox, 2008). For others, it represents a philosophical worldview found in the work of the sociologist Max Weber, who developed the concept of 'verstehen' or understanding rather than explaining. Post-positivists "hold a deterministic philosophy in which causes (probably) determine effects" (Creswell & Creswell, 2018, p. 6), and regard the absolute truth as an aspiration from social actors that produce reality as active subjects. The process of understanding essentially involves the intention and context of these different social realities. It, thus, constitutes a distinctive characteristic trait for contingency studies by stressing out the Popperian theory of falsification over the theory of verification (Guba & Lincoln, 1994). For post-positivists, it becomes methodologically paramount to develop numeric measures of observation that can study the behavior of individuals (Creswell & Creswell, 2018).

In relation to this cultural study, multiple contextual variables comparing management practices across countries have received increased attention (Romani et al., 2018). Constructivism, or the opposite stance to positivism, represents the underlying philosophical approach to qualitative research. The conceptualization has mainly evoked during the 1990s and into the 21st Century. Constructivist researchers often participate in the processes of interaction among individuals. Thereby, constructivism refers more to interpretivism of socially constructed meanings of a situation. From an axiological perspective, constructive research is value-bounded and involves an in-depth blend of people's experiences, attitudes, and beliefs. As such, interpretivism is a direct product of the German idealist tradition of social thought, as clearly reflected in the theses of Immanuel Kant. In contrast to the quantitative approach, theories, or patterns of meaning are developed inductively by acquiring facts through observation (Saunders et al., 2019). Combined with a sociological perspective, the interpretive paradigm is concerned with understanding the underlying meanings attached to organizational life and cultural identities at the level of subjective experience, e.g., examine work routines as participant-in-action within intercultural interactions (Creswell & Creswell, 2018; Romani et al., 2018).

Another popular paradigm of research challenges both positivism and interpretivism worldviews. The transformative paradigm, or critical theory, relies on the idea of independence of reality from the human mind and is mainly "interpreted through social conditioning" (Saunders et al., 2019, p. 117). In this sense, the critical theory approach is arguably closely related to critical realism, as both share common Marxist origins but reject positivist accounts of knowledge production. Table 6 provides a synopsis of beliefs that guide research actions combining a list of (dis)advantages based on Creswell and Creswell (2018).

Table 6: Synopsis of the research paradigms – critical realism vs. critical theory. [Source: own version]

Element	**Critical Realism (Post-Positivism)**	**Critical Theory (Post-Modernism)**
Ontology	Critical realism; probabilistic approximation of reality	Historical realism; 'virtual' reality is tangible, socially placed, and shaped by values
Epistemology	Dualist; critical objective; probable truth; determinism; reductionism	Transactional and subjective knowledge creation through dialogic value-laden methods
Axiology and Purpose	Explanation; prediction; control; theory verification	Critique; transform; discourse of power relations
Main advantage	Triangulation or multiple methods approaches to gain a deeper appreciation of culture; social phenomena are both scientific and transcendental	Political involvement and participation of minorities; potential to enact large-scale social change for both large and small groups of people
Main disadvantage	Lack of prediction and generalization for untested theories; resource capacity	Unfavorable results and risk for the minority/majority culture; lack of clarity in terms of guidelines and roadmaps
Name of social theory	**Radical structuralist**	**Radical humanist**

The post-modern paradigm contains a transactional epistemology with an ontology of historically placed realism that respects the axiology of cultural norms (Kivunja & Kuyini, 2017; Mertens, 2015). As stated within the scientific way of research, change is linked to societal, educational, and cultural structures by focusing on inequities, social conflicts, and contradictions. There is an active effort to effect change through collective freedom and social transformation. L. Cohen, Manion, & Morrison (2017) associate two distinct research methodologies with

critical theory, namely ideology critique and action research. Based on an educational perspective, the core beliefs in critical research are value-laden and aspire to initiate dialogues with participants, including marginalized people. To critically examine realities from cultural, historical, and political perspectives, researchers appreciate the importance of multi-level studies (Abdul Rehman & Alharthi, 2016). Qualitative data are mostly generated, although quantitative data may also be used depending on the subject in question, as the researcher can act in two different roles simultaneously. In this sense, researchers working within this paradigm adopt a critical, changing perspective on organizational affairs. It is also referenced in Burrell and Morgan's (1979) view of the radical humanist paradigm, which places central emphasis on transcending the limitations of existing settings. The main themes of management training are studied for a "pathology of consciousness" (Hassard, 1991, p. 277) through this subjectivist philosophy in work organizations.

Following post-modern thought, cultural diversity and dynamism belong to the focus of inquiry, i.e., within emancipatory or participatory action research (Romani et al., 2018). The radical structuralist paradigm advocates an objectivist perspective that tends to be related to realism with a strong influence from the conflict theory described by Marx and Weber. Studies inspired by radical structuralist thought examine structural patterns and reporting relationships, e.g., how employment relations and power imbalances of social, economic, military, or political direction can influence management and produce dysfunctionalities (Romani et al., 2018). Building upon post-colonial theory, the paradigm lends itself well to experimental and quasi-experimental research in cultural studies of ethnography while investigating intrinsic tensions between different cultural groups at play and hybridity (Hassard, 1991; Romani et al., 2018). In this study, respect for cultural settings and norms was sought, which is consistent with the researcher's epistemological beliefs that have become a relevant tool for the research methodology.

Although prima facie an appealing position, pragmatism has emerged in recent decades as the underlying philosophical underpinning for mixed-methods research (Tashakkori & Teddlie, 2003). The pragmatic paradigm has been widely used by social researchers undertaking practical applied research. Primarily,

researchers focus on the research problem and underlying research questions, shedding light on the actual behavior, beliefs, and consequences of participants. Instead of following a mono-paradigmatic orientation, the researcher adopts both objective and subjective perspectives using multiple or mixed-methods of qualitative and quantitative origins (Creswell & Creswell, 2018). As a result, researchers pragmatically advocate a non-singular reality ontology with value-laden axiology that combines relational, socially constructed epistemology (Kivunja & Kuyini, 2017). Knowledge is provisional, and the truth is what works at the period of investigation. However, the nature of mixing methods results in mixed paradigms, and critics have argued that mixed-method studies are unfeasible and fundamentally flawed, showing lower levels of methodological rigor (Shah & Al-Bargi, 2013). In a sense, this paradigm finds its roots in triangulation through complementarity, convergence, and dissonance among the findings. The challenge here is to overcome the rigid boundaries of the two worldviews.

3.1.2 Philosophical Stance and Assumptions of this Study

The previous section highlighted the four different paradigms for conceptualizing a research work based on the philosophical assumptions of the researcher. In this regard, the underlying research approach for this study was chosen due to the nature of the research problem, which aims to describe and measure the relationship between two research constructs in quantitative aspects. More precisely, a hypothesis has been proved to be successful only if enough correlation between the hypothesis and its corresponding observation of the research area can be shown (Corry et al., 2018). Consequently, this research is typical of applied science, intending to find a practical solution to a business-related problem on a big database in a real industry setting. In the historical context of the still-ongoing qualitative-quantitative debate on having a link between a paradigm and the applied methodology, the current research world acknowledges an overlap and mutual influence of methods as well as the continuously changing paradigm system (Niglas, 2010).

First and foremost, the research stance underlying this thesis adopts the worldview of post-positivism, which assumes an objective but imperfect reality

from both nomothetic and etic perspectives. To some extent, this position shares similar ontological and epistemological grounds with positivism but attaches great importance to reflexivity in research practice. The steps moving from theory and hypotheses development toward the collection of data that either support or refute the theory, with necessary revisions or additional testing, are paramount to the post-positivist lenses (Creswell & Creswell, 2018). Applying numerical measures of observation is the primary foundation for studying the behavior of individuals using a non-experimental survey method. Saunders et al. (2019) utilize the research onion for recommending that ontology and epistemology are the outer layers and wrap around methodologies and approaches. Figure 12 summarizes the classification based on Saunders' research onion and encircles overarching topics relating to the research design of this thesis.

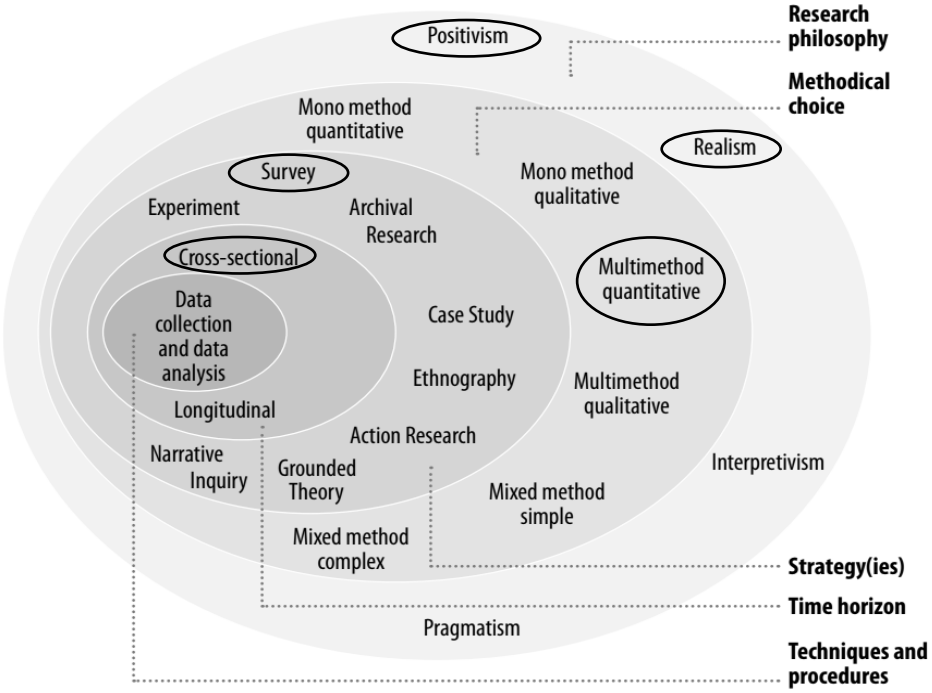


Figure 12: The studies' research design marked in Saunders' 'research onion.'
[Source: Saunders et al., 2019, p. 130]

As social scientists need to be reflexive about their meaning-attribution of research, this study included the main elements of post-positivism as well as critical realism. In some ways, the social world has a dual character based on a multitude of value-laden, theory-laden, and context-dependent factors (Groff, 2004). This assumption has led to the empirical investigation of the social world, its structures, and mechanisms that cause facts and events. Methodologies that measure, control, predict, construct laws, and ascribe causality are widely used in science and are often associated with the falsificationist view from 1968 of the modern philosopher Sir Karl Popper (L. Cohen et al., 2017). According to their post-positivism research work, Guba and Lincoln (1994, p. 107) highlight an attractive illustration to explain the verification-falsification distinction; "whereas a million white swans can never establish, with complete confidence, the proposition that all swans are white, one black swan can completely falsify it." Stressing the virtues of falsification, inform at its best how individuals perceive the world (Baškarada & Koronios, 2018a).

Popper's rejection of positivism's inductive approach led to the emergence of the hypothetico-deductive method, which was also utilized in this study. The process begins with the formulation of hypotheses developed from novel conceptualizations and theories of a specified phenomenon, followed by gathering empirical data to test and falsify these hypotheses against observed effects. Various claims see underdetermination as a logical consequence of the hypothetico-deductive method, in which theories are evaluated solely based on their observable, deductive outcomes. In this sense, Duhem-Quine's thesis of underdetermination sets limits on hypothetico-deductive testing by highlighting that any individual theoretical claims cannot be tested in isolation from its surrounding hypotheses. Thus, it cannot be justified based on logic and experience alone (Carrier, 2011). As a result, data underdetermine hypothesis evaluation, as they can always be represented by empirically equivalent theories. However, accepting underdetermination becomes a necessary premise to constructively exploit analogies between competing paradigms in the philosophy of science for this thesis. Often described in the literature as "an epistemological test tube" (Carrier, 2011, p. 197), Duhem-Quine underdetermination can also be interpreted as a positive claim about options left to scientific theorizing by experience. It, thus, serves as a touchstone with an epistemic function, since otherwise progress in science will, at some point, be severely hindered (Pietsch, 2011). The hypothetico-

deductive approach includes seven steps that can be described as a cyclical process depicted in Figure 13.

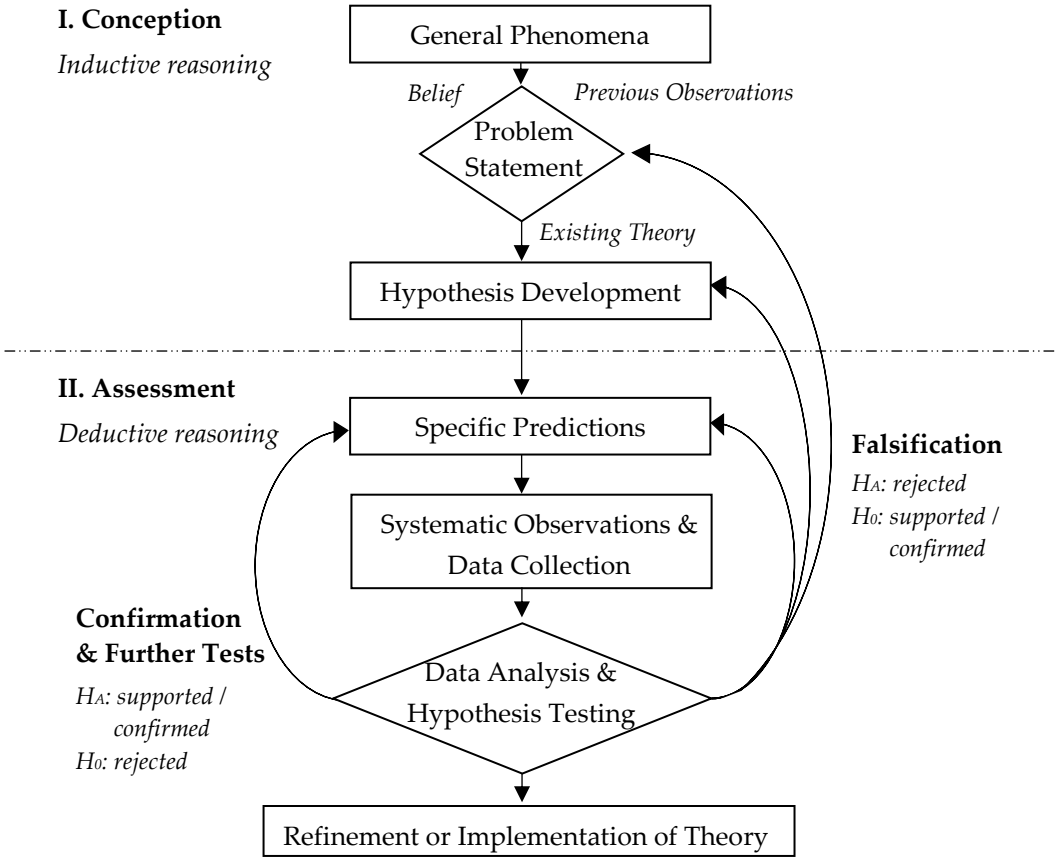


Figure 13: The hypothetico-deductive research process in hypothesis testing.
[Source: adapted from Ju & Choi, 2018, p. 5; Keshavan, 2012, p. 109]

The theory-driven conceptual framework presented in Chapter 2 is based on an established, quantitatively developed questionnaire that best fits the epistemological and theoretical perspectives of the researcher. As organizations are not homogenous, it was important to use a balanced sampling strategy. The rationale for utilizing the deductive, quantitative approach was that it examines how different organizational culture types and practices relate to workforce agility and empowerment by analyzing industry-specific data from large samples. Due to the complexity of the context, the research work turned out to be a multi-level

strategy, i.e., an explanatory multi-method design arranged in sequence (Morse, 2003). The quantitative analysis comprised two studies (Quantitative Study 1 & Quantitative Study 2) that aimed to extend the findings from the first study, each using a series of different data analysis techniques. Both questionnaires mainly concentrated on the 'who, what, and how' questions. By conducting the one empirical research strategy in combination with two methodologies, it was possible to gain deeper insights into competing cultures in workforce psychological empowerment. Following the clear sociology of change within the radical structuralist paradigm, the concept of culture involves perspectives of heterogeneous, changing, and involving blurred boundaries (Romani et al., 2018). As debated by Cameron and Quinn (1999; 2011), such methods help researchers perceive, theorize, and study different types of culture.

All research objectives were pursued through a survey strategy in combination with an open-ended question. Regarding the quantitative data analysis, this study focused on Structural Equation Modeling (SEM), which provides a sound basis for causal analysis in social research. Indeed, the technique has proven useful in the context of the economic and social sciences since the 1970s, using tools that construct cause-effect relationships by hypothesizing, modeling, and testing explanatory mechanisms. After peeling away the first elementary layers of Saunders et al.'s (2019) research onion, the next chapters shed light on thoughts belonging to the core center of data collection, statistical modeling approach, and analysis.

3.2 RESEARCH DESIGN: THE SURVEY APPROACH

After critically evaluating the research strategy and its philosophical stances, the primary purpose of this section is to outline the appropriateness of drawing conclusions from studies that employ survey research. Therefore, it is necessary to investigate the major design decisions associated with phases of research, research quality indicators, ethical considerations, sampling framework, time orientation, and methods of data analysis. Although these decisions are directly related, they often behave independently of each other, revealing the potential for bias if the study evolves a multi-method approach. Given this range of options, conducting survey research relies on critical rationalism, observation, and experimentation.

3.2.1 Survey Research Methodology

Survey research evolved as a research methodology in the 20th Century when great attention to mass-media publicity during World War II rapidly expanded throughout North America (Wolf, Joye, Smith, & Fu, 2016). U.S. surveys became popular for examining issues central to the war (e.g., the morale of soldiers). A particular focus was placed on public opinion surveys, which even established major social research institutes in American universities. However, there is an important distinction to be made between surveys and survey research (Creswell & Creswell, 2018). While surveys (e.g., marketing surveys or political polls) rely on different data collection and measurement techniques, the latter concentrates more on the process of quantitative information collection and the advancement of scientific knowledge. Based on scientific literature, data collection through surveys for research purposes can be divided into four broad categories, namely structured observations, structured record reviews, interviews, and self-administered questionnaires (Creswell & Creswell, 2018). All survey research designs represent a set of research procedures that collect primary data directly from a sample in order to generalize those findings to a pre-defined population in terms of distinctive attitudes, opinions, beliefs, perceptions, and behaviors or characteristics (Bell et al., 2018).

Survey methodology formulates the strategy of this 'fact-finding' study following a cross-sectional design of data collection at a specific point in time. Quantitative Study 1 and Quantitative Study 2 typically involved quantitative items. However, Quantitative Study 1, conducted as a pre-study for a deeper understanding of the practical problem, also included a qualitative, open-ended question. Both surveys used a standardized, existing set of questions and response categories with slight modifications to facilitate the identification of patterns of association. All independent and dependent variables in the model predicated in Chapter 2.6 were collected at time T_1, which encompasses several observations, meaning that each case in this study is a different respondent (Bell et al., 2018). Accordingly, the survey data depict expected relationships among these variables derived through a series of values and observations with the questions 'who, what, and how' (Saunders et al., 2019). Table 7 shows the structure of the cross-sectional approach, also referred to as the "rectangle" of data (Bell et al., 2018, p. 63).

Table 7: The data rectangle in cross-sectional research. [Source: Bell et al., 2018, p. 63]

T_1	**Variable$_1$**	**Variable$_2$**	**Variable$_3$**	**…**	**Variable$_n$**
Case$_1$					
Case$_2$					
Case$_3$		Likert scale records of respondents			
…		(e.g., ranges from 1 – 7; -9 for missing values)			
Case$_m$					

This research work used an electronic survey method, which is an established method for data collection following the 'Tailored Design Method' of Dillman, Smyth, and Christian's (2014) for mail and internet surveys. From these examples, online questionnaires are capable of reaching a cross-border, large-scale range of respondents financially unfeasible in a limited timeframe (Bell et al., 2018). Nonetheless, each method of inquiry has its weaknesses that should be addressed. Surveys are generally inappropriate when an elusive understanding of the historical context of particular computing phenomena is needed. It was, however, not the scope of this research study, as general personal or demographic information was adequate to meet the objective research goals of critical realism and the post-positivism paradigm. Furthermore, the human bias of respondents, unwillingness, or inability to provide information, which may occur in some cases, affects the overall goal of generalizability (Morgan, 2013). Consequently, the survey design had to have a psychometrically rigorous question construction and was pre-tested before its general elevation.

The last step required data analysis and rational interpretations of the results to build statistical inferences (Creswell & Creswell, 2018). Thus, the quantitative aspects of this field study on corporate culture typologies and workforce agility were effectively integrated into psychographic profiling. In favor of a natural setting within business environments, a body of techniques helps define groups and clusters of people based on psychological, sociological, and organizational factors (Payne & Wansink, 2011). Within this framework, the explanatory sequential combination of Quantitative Study 1 and Quantitative Study 2 allowed for a rigorous design that took time for their quantitative and qualitative components.

3.2.1.1 Questionnaire Design

The questions or items relating to a survey instrument need considerable thought, as they control the ability to represent populations from samples (Morgan, 2013). In this vein, questionnaires must be formulated in such a way that each respondent can exactly understand the content of the questions, and there are no differences in meaning. As mentioned previously, the development of the organizational culture variables proceeded via two stages.

The pre-study questionnaire of Quantitative Study 1 used the well-established OCAI method outlined in Chapter 2.4.1, including three distinct control variables. Academic studies have revealed that the instrument has good psychometric properties (Rus et al., 2017). Categories proposed by Cameron and Quinn (1999; 2011) were reviewed twice as part of the organizational analysis; in the first instance to identify the organization's current culture, and secondly, to ascertain how the culture should be developed in five years to meet the future demands of the environment and underlying challenges. Within each category, the respondent had four choices reflecting the four cultures of the CVF by rating them on general Likert scales. Based on the extensive evaluation of different industry types, the process of assessment was mapped to a specific organization's culture profile, revealing the inherent tensions between these cultures found in Chapter 4. Moreover, participants were asked to specify the five most important corporate value statements as part of an open-ended question. This procedure represented the necessary first step in initiating a culture change strategy.

The creation of the main survey questionnaire of Quantitative Study 2 to validate the conceptual framework was presented in Chapter 2.6. The key idea emerging from the literature review was to examine underlying relationships and influences of organizational culture types in relation to an organization's likelihood to accelerate workforce agility. Because dynamic environments can directly cause organizational tensions, work environment uncertainty was examined as a moderating variable. Consequently, the questionnaire consisted of four specific parts, such as independent, moderator, dependent, and control variables. The designed questionnaire was used to gather data on each of these variables.

Regarding Table 8, the different types of variables create a pivotal aspect of determining large-scale models on research questions, hypotheses, and underlying

survey items a priori (Creswell & Creswell, 2018). In this context, the research questions from Chapter 1.2 were included and mapped according to the survey questions. After the researcher made the primary design decisions associated with the questionnaire preparation phase, the next step was to define survey items and measurement procedures for the fieldwork phase of data collection.

Table 8: Applied variables, research questions, hypotheses, and survey items. [Source: own research]

Type of Variable	**Research Questions and Hypotheses**	**Items on Survey** (see Annex 2, p. 231)
Control variable *- might have confounding effect on the findings*	./.	Questions 1 to 6 on an observation's overall environment (Part I)
Independent variable *- correspond to treatment variables; represent inputs or causes*	RQ. 1: What are typical behavioral determinants for creating workforce agility? **H_1, H_2, H_3, H_4**	Questions 7 to 22 in Part II 'Organizational Culture Types'
Dependent variable *- influenced by the independent variables*	RQ. 2: What type of organizational culture helps to reinforce the value of an agile workforce? **H_5, H_6, H_7**	Questions 23 to 44 in Part III 'Workforce Agility'
Moderator variable *- affects the strength of the relationship between the independent and dependent variable*	RQ. 3: How does work environment uncertainty affect the capability-building processes between corporate culture and workforce agility in different organizational contexts? **H_8**	Questions 45 to 56 in Part IV 'Environmental Uncertainty'

3.2.1.2 Definition and Measurement of the Variables

The question-driven research design in this academic study follows a logical sequence that links the studies' hypotheses to the empirical data and ultimately to the conclusions. Therefore, all questionnaire items were developed based on a review of the current literature on organizational culture, psychological empowerment, and workforce agility and aimed at a cross-sectional survey with business organizations as the subject. This procedure was valuable for the epistemological and theoretical perspectives, as all research areas were closely aligned. The next paragraphs specify the research variables introduced in Chapter 3.2.1.1 in greater detail for their measurement.

Quantitative Study 1

Following Quinn and Spreitzer's (1991), Kalliath, Bluedorn, & Gillespie's (1999), and Strack's (2012) abridgments of the scales, the measurement scale used four out of the six OCAI categories, namely dominant characteristics, organizational glue, management of employees, and criteria of success. Items within the remaining categories of organizational leadership and strategic emphases were largely covered by the foregoing four OCAI categories. Figure 14 shows the design of the instrument for the scale of organizational glue. Annex 1 (p. 225) documents the complete list of items for the OCAI measurement.

2-Steps-Procedure: 1. Please evaluate the **current** situation in your company. 2. Please evaluate the **preferred** situation in your company.	*Strongly disagree* … *Strongly agree* -2 -1 0 +1 +2
The glue that holds the organization together is…	
…loyalty and mutual trust. Commitment to this organization runs high.	○-○-○-○-○
…commitment to innovation and development. There is an emphasis on being cutting edge.	○-○-○-○-○
…the emphasis on achievement and goal accomplishment.	○-○-○-○-○
…formal rules and policies. Maintaining a smooth-running organization is important.	○-○-○-○-○

Figure 14: Questionnaire design of the OCAI-scale for organizational glue.
[Source: own version]

As part of the original version within the OCAI, respondents were asked to allocate 100 points among the four cultural areas. As such, the answers referred to the extent to which each type of culture was likely to apply to the organization being assessed. All parts in both the current and preferred approaches are 100% complementary and were calculated by averaging the response scores for each domain (Cameron & Quinn, 2011). This cognitive requirement was often considered uncommon in screening instruments because it resulted in erroneous responses combined with an average negative inter-correlation that confounded the evaluation (Strack, 2012). Due to this fact, Quinn and Spreitzer (1991) with

Kalliath et al. (1999) simplified the response format to the usual 5- or 7-point Likert scales. This procedure was also adopted for the measurement in this pre-study, using a 5-point Likert scale for better allocation of the underlying point structure from one, denoted as 'strongly disagree' to five, denoted as 'strongly agree.'

In the third part of the study, the questionnaire offered respondents the opportunity to express their thoughts and understanding of values within their organization through an open-ended question. This question allowed for an in-depth identification of the values that are most important in the individual work environment. Respondents who participated in the survey were also asked to provide at least five examples of how value statements are implemented into practice, ranking them in the process. In creating a ranking, the values were arranged in a series, with the first value being the most important, the second value being the second most important, and so on. This procedure made it possible to determine differences between the assessments of different values.

However, the forced ranking method is often criticized for weakening creativity through the limited number of intrinsic values, while it also depends on the number and complexity of jobs (Braithwaite & Law, 1985; Velasquez & Hester, 2013). Therefore, paired comparisons (e.g., per job position) were used in this research work to provide sound and defensible comparative clarity for different groups. The final step involved the collection of control items in terms of organizational characteristics, i.e., industry type, firm size and location, company age, job tenure, and work position. In total, the OCAI tool closed the gap between quantitative and qualitative cultural research.

Quantitative Study 2

To evaluate the influence of organizational culture types relating to workforce agility through the moderating effect of work environment uncertainty (WEU), the questionnaire for Quantitative Study 2 specified the set of structured, pre-defined, closed questions (Alavi et al., 2014; Cameron & Quinn, 2011; Clampitt & Williams, 2005; Muduli, 2017; Sherehiy & Karwowski, 2014; Strack, 2012). The structured questionnaire included a total of 50 core and six control items mainly generated from the literature review. Four to eight items could be grouped into one variable measuring attitudes and behaviors. Afterward, these variables could be

further assorted into scales, which were composites in this study. All survey items used a 7-point Likert scale for measurement, except for the control variables. Each element was validated through a pre-test conducted with eight researchers and eleven practitioners. In terms of reliability, scales with more choice points are regarded as more reliable because they better reflect a respondent's real evaluation (Dawes, 2008). For example, a seven-anchored scale is considered very accurate while reaching high marks for ease of use and therefore seems more appropriate for electronically-distributed questionnaires. A longer Likert scale often leads to confusion and bias from fatigue, whereas shorter scales force respondents to form opinions, thus, interpolating the results (Al Mamun, Kumar, Ibrahim, & Mohd Nor Hakimin, 2017; Dawes, 2008). The complete set of questions, including translations and item codes, can be found in Annex 2 (p. 231).

1. *Independent variables – Competing Values Framework (CVF)*

In the first step, the respondents were asked to evaluate the CVF as an antecedent of workforce agility, which has been cited as a crucial driver in various research work. To measure the OC variables, Quantitative Study 2 used the OCAI instrument proposed by Cameron and Quinn (1999; 2011), which was also applied in the Quantitative Study 1 of this research with a total of 16 items. Regarding the inclusive dimensions, namely dominant characteristics, organizational glue, management of employees, and criteria of success, the scales encompassed four items measuring each of the four culture typologies as unidimensional constructs.

2. *Dependent variables – Workforce Agility (WA) Scale*

Various approaches exist that are used to measure the attributes of an agile workforce. Based on the previous literature review in Chapter 2.2.5, the concept of workforce agility (WA) was assessed as a multidimensional composite shaped by three dimensions, namely proactivity, adaptivity, and resilience (Alavi et al., 2014; Sherehiy et al., 2007). These constructs were evaluated in this study using questionnaire items designed by Sherehiy (2008) and applied by Alavi et al. (2014) with the dimensions outlined in Table 3 (p. 37). Seven items measured the proactive dimensions, which referred to personal anticipation of change-related problems and their resolution through initiatives and actions that had positive effects and improvements to the changing environment. The adaptive component was

evaluated by seven items and mainly related to changing one's behavior to better fit new environments through continuous learning procedures. The resilience element encompassed the ability to cope efficiently with stress, despite uncertainty, and included a positive attitude toward unexpected situations, even when strategies applied to solve a problem have failed. This type of question was mainly concerned with psychological empowerment and measured with eight items.

3. *Moderator variable – Work Environment Uncertainty (WEU) Scale*

The literature review revealed a large number of academic studies addressing the moderating role of the organizational environment (Meinhardt et al., 2018; Popa et al., 2017). WEU refers to the complexity and unpredictability in corporate decision-making, where different firm climates arise. To measure the moderating variable in this case, 12 items from Clampitt and Williams (2005) were used. These statements indicated the level of expressed uncertainty relating to how the organization encouraged employees to express doubts or misgivings (i.e., business opportunities and sense-making communications). In addition, the degree of outcome uncertainty referred to the predictability of occurrences with expenditures. And finally, perceptual uncertainty dealt with increasing attentiveness to changing circumstances and innovations (i.e., the rate of obsolescence of products or services, demand, and consumer preferences).

4. *Control variables*

It is reasonable to assume that significant differences in the impact of corporate culture types on workforce agility may occur across different organizations and industry types. Consequently, a set of six specific control variables were considered in this study. The first dummy variable was used for industry type to assess multi-group differences, divided into manufacturing and service industries, including communications. In this context, firm location also plays an important role in Hofstede's dimension of uncertainty avoidance, which reflects how organizational members in different subsidiaries cope with uncertainty about the future (Hofstede et al., 2010). The specific control items were found to be most important in influencing the independent construct of CVF and the moderating variable of WEU and were thus included in the model as formative single-item dummy constructs to draw inferences about firm characteristics.

According to the RBV, firm size has a positive effect on resource allocation. It was, therefore, measured by the number of employees in the organization to deduce enterprise size. Furthermore, the item for firm age was considered to be accelerating with the number of years since establishment. It denotes a firm's development stage regarding the development of explorative and exploitive capabilities. Additionally, the item for job tenure referred to institutionalized managerial attitudes and beliefs in terms of the number of years the respondent has been employed in the organization. Different job position types, e.g., expert, factory manager, or top executive, were also checked to assess the extensiveness of job-related characteristics. In this case, the variables represented the elementary enabler of social ties regarding psychological empowerment and anchored actions of an agile workforce.

3.2.2 Survey Execution Process

Several issues spring up throughout the process of executing survey research in practice. One challenge to understanding survey research is the overwhelming diversity of existing approaches to investigation and measures themselves. Another one relates to the applied survey administration techniques (Hinkin & Holtom, 2009). This section discusses cross-sectional data collection and the sampling process used to obtain a representative sample of the population being observed. Consequently, participants need information about the context of the project and the rules of participation based on the criteria of non-experimental design. In terms of consistency with the deductive-objective-generalized purpose, quantitative research constitutes a framework with a parsimonious set of variables and measures that follow specific rules of analysis procedures. Proceeding from the literature review in answer to the research questions, the next steps for data analysis and findings relevant to Chapter 4 are outlined.

3.2.2.1 Sampling Framework and Method

The survey methodology described in Chapter 3.2.1 serves to empirically validate the theoretical model. Both surveys were designed as cross-sectional studies using a questionnaire to collect data, with the intent of generalizing from a sample to a population (Creswell & Creswell, 2018). In this sense, the calculation of

the sample size represents a central element of data collection. Based on Saunders et al.'s (2019) review of sampling techniques, which can be distinguished between the probability (random) and non-probability (non-random) methods, a hybrid probability sampling technique was used here (for both the pre-and the main studies). As such, it included elements of non-probability-based methods (Saunders et al., 2019). Statisticians began to develop hybrid approaches to fill the theoretical gap. Probability sampling can ascertain that every part of the research population has an equal chance of being selected, making the results more representative while reducing sampling bias and systematic errors (Alvi, 2016). Non-random sampling, in turn, allows a sample to be drawn from a population that is infinite in the number of elements and is well-suited to developing an understanding of a quota-based population with less effort. Nonetheless, calculating the sample size becomes essential to reduce the cost of conducting a study while effectively proving the hypothesis. According to the researcher, probability sampling requires four stages, as outlined in the following paragraphs:

1. Identify the sampling frame from the research objectives

Concerning data collection, the population includes individuals who have the information the researcher wants to receive for answering the research questions. In this regard, the total relevant population and sampling frame referred to the entire workforce. However, there was no published list of all employees of an organization worldwide, indicating that the population is too general and consists of an infinite number of elements. Consequently, the common criteria used for stratified probability sampling with quotas were applied here. The workforce population was first divided into different homogeneous groups based on attributes or characteristics, also called strata (Alvi, 2016). Subsequently, a quota sample was created by combining subsets of the strata. This procedure attempted to produce a sample that was as similar as possible to the natural variability in the population (Ragab & Arisha, 2017).

For the study's case, the calculation of the exact population value was not expedient. It further became relevant to consider the overall industry structures, the size classes as well as their geographical distribution for the identification of candidates for participation. All research activities were particularly centered geographically in Germany and the respective countries in which the companies

maintain subsidiaries. According to the German Federal Statistical Office, there were 3.48 million companies with more than 30.86 million employees (employment base subject to compulsory insurance) in 2018 (Destatis, 2019). In order to obtain a reliable picture of the sampling frame, the occupational structure of the active working population could be divided by industry into 1.4% in the primary sector, 24.1% in the secondary sector of production, and 74.5% in the service or tertiary sector (Destatis, 2020). While over 99.5% of companies were small and medium-sized enterprises, large companies (2017: 15,061) dominated in terms of sales with a 45% share of the total number of employed people. It is noteworthy that there were 551 German companies with billion-dollar sales in 2017 (Deutsche Wirtschaftsnachrichten, 2019). Looking at all 30 companies listed in the DAX, a German blue-chip stock market index, 60% of employees worked abroad, making a bilingual created questionnaire indispensable. For this reason, and in view of the research questions, the pre-study of Quantitative Study 1 mainly considered the occupational structure of the active working population across all firm size categories. In contrast, the part of Quantitative Study 2 focused specifically on the dominant industry size classes in the secondary and tertiary sectors.

2. Decide on a suitable sample size

The choice of a suitable sample size depends on the confidence interval needed in the data, the tolerated margin of error, and the type of analyses undertaken. The basic guideline for defining a sample size for this research study yielded the following results:

Population (all companies and sizes in Germany): 3.48 million companies for which a required sample size for a margin of error lower than 5% resulted in more than 384 samples. Population (with more than 250 employees): 15,061 companies with a necessary sample size for a margin of error lower than 5%, resulted in approximately 375 samples. At this size, the margin of error was less than 5% and reached a 95% level of confidence (Saunders et al., 2019). The value of the minimum sample size ($n > 375$), which takes into account the occupational structure of the active working population, was used as a reference for the survey data collection of Quantitative Study 2. Nevertheless, a split considering the scientific contribution of the two types of industries yielded a higher sample size.

In a second step, the verification of minimum sample size was closely linked to the data analysis technique of the path models, which here refers to SEM employing the Partial Least Squares (PLS) approach in combination with the pre-evaluation of Quantitative Study 1. A widely used minimum sample-size estimation method in PLS-SEM is the '10-times rule' method. It is based on the assumption that the sample size should be greater than "(1) 10 times the largest number of formative indicators used to measure one construct, or (2) 10 times the largest number of structural paths directed at a particular construct in the structural model" (Hair, Hult, Ringle, & Sarstedt, 2017, p. 28). In this case (2), the construct with the largest number of structural paths directed at the construct in the structural model was four (five including the moderator variable), so the minimum sample size for using the PLS algorithm must be at least 40 (or 50), regardless of the strengths of the path coefficients. However, this method has been strongly criticized by many researchers as it leads to inaccurate estimations of the minimum required sample size and does not provide a sound basis for assessing statistical power (Aguirre-Urreta & Rönkkö, 2015; N. Kock & Hadaya, 2018).

An alternative to rule-of-thumb for sample size planning represents the most common approach of using power tables, which was adopted from the behavioral science literature on multiple regression analysis by J. Cohen (1988; 1992) in his seminal work on statistical power analysis. To determine adequate sample size, three values of significance level, effect size, and statistical power must be determined in advance. In the PLS-SEM literature, the method is referred to as the 'minimum R^2-method' (Hair et al., 2017). The statistical level of significance for most studies in the social science field targets an alpha level of .05. In addition, J. Cohen (1992) suggested setting the statistical power at .80, which is also a convention proposed for general use. The third is the minimum R^2 in the model, which includes values of .10, .25, .50, and .75, respectively described as weak, moderate, and substantial effect sizes in the endogenous constructs (Hair et al., 2017). For the SEM research purpose of Quantitative Study 2, the maximum number of independent variables in the measurement and structural model was four, with 65 observations considered to achieve a statistical power of 80% and detect R^2 values of at least .25 with a 5% probability of error (Hair et al., 2017, p. 25). As Quantitative Study 1 was the pre-study for the first part of Quantitative Study 2, the proposed number of observations ($n > 65$) took an additional element and

rough size for Quantitative Study 1 beyond the network of connections in the model. Again, considering more than one type of industry resulted in an approximate minimum number of cases of at least more than one and a half times, reaching $n > 98$.

Recent research has proposed another related method for estimating minimum sample size in PLS-SEM based on a variety of Monte Carlo experiments. In verifying the initial value of the minimum sample size ($n > 375$) for Quantitative Study 2, the inverse square root method was specifically attractive due to its simplicity of application. It resulted in a minimum required sample size of 160, considering J. Cohen's (1988; 1992) minimum acceptable effect size of .04 for complex models with $\beta \geq .197$ (N. Kock & Hadaya, 2018). However, the issue of multi-level data collection for Multi-Group Analysis (MGA) affected the estimation of the minimum sample size, i.e., collecting data in the different industry types, firm ages, or job tenures. In this case, it was advantageous in terms of statistical power to use at least a sample size four times larger ($n > 640$) because there was more variation at the industry level.

3. Select the appropriate sampling technique and the sample period

This research work utilized the model-aided sampling approach, which begins with a probability-based sampling of units combined with quotas to ensure minimum and maximum respondent sample sizes (Berzofsky, Williams, & Biemer, 2009). The online sampling method for Quantitative Studies 1 & 2 was composed of two different probability sampling techniques, such as a list-based sampling frame and pre-recruited panel surveys, including non-probability opt-in panels. Both the web and direct e-mail techniques represent probability-based methods. However, opt-in panels (volunteer or paid) can only be used via the web (Fricker, 2017). List-based sampling is most applicable to large homogeneous groups, such as intra-company networks, for which sampling frames were compiled with direct e-mail addresses. In this study, membership in the relevant strata, especially for half of the required secondary sector participants, was available and linked to the researchers' personal contact information.

The majority of participants left for the service sector were obtained via pre-recruited, internet-enabled panel surveys through the professional online service

provider 'Amazon Mechanical Turk' (AMT). The reason was due to the size of the AMT worker pool, low cost, and high-quality of the data produced (Buhrmester, Kwang, & Gosling, 2011; Strunz & Chlupsa, 2019). Participants consisted of Amazon Mechanical Turk freelancers (MTurks), who financially benefit from solving any task such as online surveys and behavioral experiments as fast as possible with comparable biases and heuristic behavior. Consequently, MTurks are mainly motivated by monetary compensation, whereas thinking-time is associated with costs and is not incentivized (Strunz & Chlupsa, 2019). In this sense, the cross-sectional sets of individuals generally provide demographic, socio-economic, and behavioral data consistent with cultural differences in uncertainty avoidance (Fricker, 2017; Strunz, 2019). In Quantitative Study 2, the use of the specific programming protocol allowed only 'Masters Workers;' full-time and part-time employees who are human and not automated working machines; with a mandatory Human Intelligence Task (HIT) approval rate of higher than 95% to participate. Regarding the 'Flag Run' experiment across different countries and learning environments, all MTurks recruited were restricted to the U.S. American MTurks only, as other experiments have previously measured highly significant cultural differences in complex decision-making and problem-solving conditions (Strunz, 2019).

To ensure high-quality data, MTurks were paid after the interviewer examined and approved proper completion. Thereby, MTurks average pay was above the U.S. minimum wage of 7.25 USD per hour, which served to act as a reputable requester. With the basic understanding of the limitations of the online survey provider MTurk in mind, the survey questionnaire purposefully included two reversed attention check questions to enhance the ability to obtain valid responses (Buhrmester et al., 2011). The respondents who did not pass the attention check questions were excluded from further analysis. Annex 3 (p. 241) demonstrates the complete AMT procedure for the MTurk client-side view of HIT.

Moreover, opt-in panels through requests on different websites (e.g., professional networks via LinkedIn and XING) helped to gather additional participants based on their professional experiences. In this regard, reaching a good and reliable proportion of research participants that fit the purpose of this study is broadly summarized in Table 9 (p. 105). To be representative, a total minimum

sample of at least 3,160 professionals were contacted via e-mail newsletters and web teasers, and at least 2,905 experts via direct e-mail. The typical response rate has historically been in the range of 15 to 25 percent for probability-based internal surveys, while external web surveys have averaged a 5% response rate (Fricker, 2017). In the end, both samples had to be larger than the minimum required sample size to gain a 5% margin of error.

Table 9: Final research sample using different sampling methods. [Source: own research]

	Sampling Method	**Sample Size** (Minimum Contacts)	**Initial Survey Mode**
Quantitative Study 1 (pre-study)		*n > 98*	
	Probability-based:		E-mail (70%)
	- List-based	345	
	Non-probability:		Web (30%)
	- Opt-in panel portals (volunteer)	600	
Quantitative Study 2 (main study)		*n > 640*	
	Probability-based:		
	- List-based - Pre-recruited panels (internet-enabled)	2,560	E-mail / AMT-Platform (80%)
	Non-probability:		Web (20%)
	- Opt-in panel portals (volunteer)	2,560	

4. Check sample representativeness

In the current study, the sample members contacted had a special relationship to the phenomenon under investigation and especially relevant work experience. Typically, representative sample characteristics focus on demographic and socio-economic categories that emerged from stratified sampling with quotas. While this method is more time-consuming and often requires more upfront information, the information yielded from each stratum is typical of higher quality in terms of sampling accuracy and reduced potential bias (Berzofsky et al., 2009). Within other studies from the research area of CVF and WA, most researchers have used geographically limited sample sizes of about 150 to 300 respondents to achieve representativeness (Alavi et al., 2014; Felipe et al., 2017; Sherehiy &

Karwowski, 2014). Others used large sample frames of approximately 400 to 600 people (Muduli, 2017; Rashidi, Syed, & Zaki, 2015; Wang & Rafiq, 2014). Following these findings, the number of respondents reached (n = 1,056) is representative in the case of Quantitative Studies 1 & 2.

3.2.2.2 Cross-Sectional Data Collection

The dissemination plan was to reach a total of more than 738 participants from different industries via two online survey-questionnaires. To ensure validity with the CVF assessment in Quantitative Studies 1 & 2, participants were randomized from individuals who were at the senior expert level and above. Academic research on competing values has justified that the framework is most effective at the middle and senior management level, where participants have more expertise in institutional processes, policy, and corporate strategy (Cameron & Quinn, 2011). Consequently, both surveys targeted expert and senior expert levels, mainly from German organizations with their subsidiaries abroad, who held different positions, e.g., consultants, coordinators, advisors, or specialists in internal departments. These people were identified as capable and knowledgeable enough to represent their workforce culture and complete the survey.

For both web-based surveys, the widely-known and professional data collection software 'SoSci' Survey was used, whose advantage is the application of various HTML-form elements. A short cover letter attached to the link explained the research purpose. Nevertheless, the study design was anonymous to build trust for people to participate in the surveys. Each study collected the answers simultaneously over a certain period. Responses for Quantitative Study 1 were obtained over two months from August to October 2019. Data collection for Quantitative Study 2 involved participants responding from February to May 2020, resulting in two complete excel data files (.csv) with 115 (Study 1) and 941 (Study 2) observations. The first attempt to reach participants in the target group was through a direct e-mail with list-based sampling that relied on the author's business contacts. To maximize the response rate, an incentive was offered for each person who completed the questionnaire. Respondents could provide their e-mail addresses to be entered in a draw to win one out of ten Amazon vouchers, each worth €15. After a reminder was sent to non-respondents two weeks after the

invitation, 104 answers (Study 1) and 428 answers (Study 2) were received within the first three weeks, reflecting a usably high response rate of 18.3%. Individuals responding to both surveys were on average 37.0 years old, and thus, slightly younger than the overall German (median age = 45.7), European (median age = 42.5), and U.S. (median age = 38.3) populations (United Nations, 2019). Furthermore, there was also a slightly higher distribution among male survey participants (52.6%) due to the final industry sector distribution.

For both studies, the second half of questionnaires were collected by opt-in panels with volunteer participation in social media channels. To name the most important examples here: Transformation and Innovation Success/Leadership/ Change and Agile Enterprise Architecture (i.e., LinkedIn, XING) as well as internal company platforms for knowledge exchange, e.g., the Connected Culture Club or Working Out Loud cooperation (via BMW Group PLAZA), with more than 7,606 organizational members (as of April 2020). This kind of publication usually leads to a lower response rate, and thus, reached a rate of just over 4.2%. The main reasons for not taking part in the study were mostly the lack of time from already strained employees.

The next step in collecting the missing questionnaires for Quantitative Study 2 was through direct contact and with the professional online service provider called 'AMT.' Currently, more than 12,000 freelancers with HIT approval rates higher than 95% can participate via AMT, and numbers could extend to more than 100,000, depending on monetary incentives and pre-defined variation in qualification profiles (Strunz & Chlupsa, 2019). By using pre-recruited panel samples, participants in the target group were assessed regarding their current working status and firm location, ensuring confidence in anonymity and ethical considerations as outlined in Chapter 3.2.3.

The final sampling collection took place on regular working days, from 3rd – 6th of March 2020, as Turks' behavior varies over a 24-hour day and on weekends. According to an online tracker showing hourly demographics of AMT workers (Difallah, Filatova, & Ipeirotis, 2018), the respondents indicated a well-balanced gender distribution of about 45.2% female and 54.8% male U.S. MTurks. Regarding age distribution, Annex 3 (p. 241) outlines the data available at the time of the survey, with an average of 35.03 years for both genders. This figure is relative to

the overall average age surveyed. MTurks' household income per year was below the average for the U.S. population (Difallah et al., 2018), with a median income of about $50,000 for an MTurks household (median for a U.S. household: $57,000). Thus, only 15% of Mturk workers earn more than $100,000 per year (26.5% of the U.S. household median). After reaching the quota sample size for each firm location stratum, participants were automatically screened out. A total of 88 U.S. employees participated in the study. Of these, 53 participants fully completed the questionnaire and passed the attention check question requirements. No technical problems were encountered, allowing the survey to be concluded.

3.2.2.3 Methods of Data Analysis

The anonymous analysis of the collected data uses complex statistical techniques that correspond to the objective of this study to examine the cross-sectional validation of the conceptual model, as outlined in Figure 8 (p. 70). In that regard, exploratory and explanatory data analysis must be distinguished as different approaches for the two studies in hand.

First and foremost, the complete data assessment of Quantitative Study 1 explored the organizational culture within a two-dimensional diagram through the OCAI tool. The allocation and measurement procedure of the variables is described in Chapter 3.2.1.2. This schema allocated the results in two ways, namely as an overall culture profile per industry type, i.e., production and service sector, aggregated from all four questions on the OCAI, and as a collection of plots from individual items on the OCAI, e.g., criteria of success. After mapping the organizational culture on the diagram, at least five descriptive analyses were delivered (Cameron & Quinn, 2011): (1) identifying the type of culture and its strength that dominates an organization, (2) revealing discrepancies between current and preferred culture typologies, (3) differentiating the congruency of the culture profiles generated by different individuals, i.e., experts, senior managers, or executives in the organization, (4) comparing an organization's culture with average culture profiles from the same industry, and (5) analyzing data against trends that have emerged over the past 20 plus years of using the OCAI among different organizations or industries. The main goal to keep the research questions

and objectives in mind was to accumulate the search within the open-ended question, which involved looking for relationships with a descriptive purpose.

Secondly, because of the small number of variables under observation, the evaluation of the OCAI lent itself to a Latent-Class-Analysis (LCA), which was introduced by Lazarsfeld and Henry (1968). The LCA represents a statistical procedure that attempts to clarify multivariate relationships by taking a cross-sectional latent variable mixture modeling approach into account (Berlin, Williams, & Parra, 2013). The use of an LCA is particularly recommended when the goal of the analysis is a cluster of response patterns where the entire response profile is of high interest to form subgroups that are internally homogenous and externally heterogeneous. It should be kept in mind, however, that the LCA affiliates to the item-response-theory and should be understood as a probabilistic approach that uses the maximum-likelihood-method for the conditional class assignment probability per person as well as the identification of relative class sizes (Berlin et al., 2013; Formann, 1978).

To reduce the complexity of the model and increase its interpretability, the number of latent classes within the sample is usually pre-based on theory. However, possible default information criteria for determining the model's fit under the maximum likelihood estimation framework imply the Akaike Information Criterion (AIC) together with the Bayesian Information Criterion (BIC). When testing models, the following rule applies: the lower the values for AIC and BIC, the better the model fits the data (Berlin et al., 2013; Petersen, Qualter, & Humphrey, 2019). The difference between the AIC and BIC is that the BIC has a higher penalty term to reduce overfitting of the model, and thus, was determined to be more suitable for this study. In addition to the calculations, it remains necessary to interpret the different classes regarding the response profiles. When no new patterns are differentiated, but only intensities, the solution with the smaller number of classes is chosen, even with a slight improvement in the indices. As a result, researchers could more confidently use the subgroups of individuals to investigate relationships with other corresponding constructs (Petersen et al., 2019). The Microsoft Excel statistical data analysis add-on, called XLSTAT-LG version 2019.4.1 from Addinsoft, was used to perform the LCA.

The data analysis for the second part of the Quantitative Study 1 used a qualitative-deductive content analysis by comparing pre-defined value categories. This approach is valuable when there is an extensive prior knowledge base and hypotheses regarding the research subject (see Chapter 2.4.2; Ahl, 2020; Schwartz, 2012). According to Mayring (2014), a content analysis serves to describe the content of statements in a systematic and intersubjectively comprehensive way. The overall aim of representing the respondents' answers as comprehensively as possible is achieved by classifying the content into categories while reducing and restructuring the text material. In this process, which Mayring (2014) calls structuring, the main categories are established and defined before the data are analyzed.

The resulting codebook (see Annex 4, p. 243) delimitates value categories from one another and defines the assignments for recurring answers through coding rules to count their frequencies. In this process, the final category system follows an iterative process using a repeated, procedural review of the material against the previously agreed-upon structures (Mayring, 2014). Furthermore, statistical visualization tools enabled the grouping of text components into the system of value categories. Parallel Coordinates Plots (PCP), as introduced by Inselberg (1985) and discussed by Wegman (1990) in the context of explorative data analysis, are a common way of visualizing and analyzing high-dimensional multivariate data. The most valuable aspect of using the PCP is the underlying data-mining process that investigates data profiles, relationships, and structures over many variables at a time. For carrying out the PCP, the Microsoft Excel statistical add-on, called XLSTAT version 2019.4.1 by Addinsoft, was used.

For analyzing the data of Quantitative Study 2, the choice fell on SEM, an approach widely used in the field of social science and business management for analyzing path models with latent variables. The rigorous analysis of the second-generation multivariate statistical method was applied within two stages in one simultaneous interaction while also accounting for measurement error (Henseler, Ringle, & Sinkovics, 2009). The first set of linear equations is known as the outer or measurement model, which itemizes the relationships between latent, unobserved variables. In contrast, the second set evaluates the hypothetical relationships between a latent variable and its manifest variables, which is referred to as the inner

or structural model (Henseler et al., 2009). This sequence ensures that all the measurement scales are valid and reliable. The six sequential procedure steps of conducting SEM are shown in Figure 15, as suggested by Weiber and Mühlhaus (2014) as well as Hair et al. (2017).

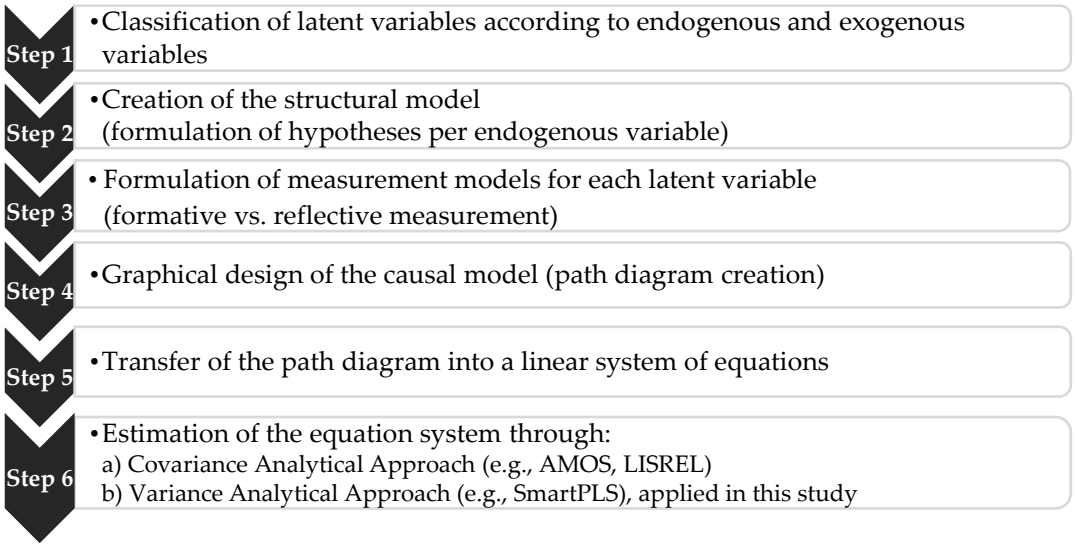


Figure 15: Procedure steps to the Structural Equation Modeling (SEM).
[Source: adapted from Weiber & Mühlhaus, 2014, p. 37]

The interdependency between the measurement indicators can either reflect the characteristics of a latent variable as reflective indicators or influence its expression as formative indicators (Weiber & Mühlhaus, 2014). In this vein, "researchers need to apply the SEM technique that best suits their research objective, data characteristics, and model set-up" (Hair et al., 2012, p. 416). In addition to the research objectives, several factors influenced the decision to employ a variance-based PLS modeling algorithm in this thesis, such as a smaller sample size or non-normal data. Thus, PLS-SEM represents a suitable approach when any of the following situations occur.

PLS was originated in the mid-1960s by the econometrician Herman Wold (Chin, 1998). Essentially, it involves a sequence of regressions in terms of weight vectors to estimate the predictive power of the conceptual model (Henseler et al., 2009). For this study, PLS-SEM had certain advantages over covariance-based SEM, as it allows the use of formative and reflective indicators and is particularly appropriate for second-order measurement models. Due to its strict data

assumptions, a covariance-based SEM, or hard-modeling approach, is taken to confirm the existing theory. PLS-SEM, in contrast, uses prediction when correct model specification cannot be ensured (Hair et al., 2017; Weiber & Mühlhaus, 2014). These requirements together formed the basis of the underlying research work.

In this study, the conceptual model was not yet well-established, which made PLS-SEM the appropriate method for empirical investigation. Instead of the classic inferential framework in covariance-based SEM, the PLS-SEM approach uses several predictive non-parametric tests and resampling procedures for assessing the results' significance (Hair et al., 2017). Accordingly, PLS-SEM can also be used to suggest hidden or supposed relationships by providing propositions for further research. As such, PLS-SEM deals with large and complex structural models (i.e., many constructs and many indicators). It is very efficient for quasi-metric ordinal scales with skewed data distribution, especially when there are few participants (Matthews, Hair, & Matthews, 2018). The method supports modeling and analysis of moderators; in this case, the moderating effect of uncertainty in the work environment through the widely recommended two-stage approach, which exhibits higher levels of statistical power (Matthews et al., 2018). The construct definitions, including codes and items designed for the PLS data analysis, are depicted in Annex 5 (p. 245). All statistical analyses conducted for Quantitative Study 2 considered PLS-SEM using the SmartPLS 3.3.2 software package, a licensed application for the research community across the globe that provides a good platform for knowledge exchange through an online discussion forum for its users.

Assessing the design of the between-group subjects required statistical Mann-Whitney U-tests. It represents a non-parametric test for asymmetrical, skewed data distribution that compares two samples by their rank (Corder & Foreman, 2014). With similar statistical power to the Student's *t*-test, the Mann-Whitney U-test represented the more robust test for this research. In this case, the null hypothesis (H_0) stipulates that there is no difference in the magnitude of the potential differences between populations' averages (Nachar, 2008). As for the alternative hypothesis (H_a), it means that the medians of the two respective samples are significantly different, thus rejecting H_0. Both *U*-statistics can occur from two different populations, and therefore, provide a stronger indication of the

conceptual model. The software program used was XLSTAT version 2019.4.1 from Addinsoft to construct the statistical tests needed.

In addition to the structural modeling approach, the final step involved the analysis of cross-impact networks through the construction of scenarios. The basic concept of cross-impact analysis is a set of behaviors that mix qualitative and quantitative with subjective and objective methods at different levels. The aim is to estimate relationships and subjective probabilities that do not allow the use of theory-based computational models (Bañuls & Turoff, 2011). Two key outcomes originated from quantitative cross-impact analysis, such as listings according to the frequency and consistency, which is key to Porter's (1985) definition of scenarios. The focus here was placed on the latter to identify different images in the interrelationships among elements, while semiquantitative methods of final scenario development were also combined to analyze and present specific results.

The first methodologies developed originated in the 1960s in response to the shortcomings of Delphi surveys. The latter hardly deals with complex interrelations and potential synergetic effects in technology foresight, along with events of uncertainty in occurrence or non-occurrence (Weimer-Jehle, 2006). The distinct and newer form of interrelated cross-impacts is the Cross-Impact Balance Analysis (CIB), allowing greater methodological flexibility and better transparent analytical logic. The CIB method supports the transparent construction of consistent scenarios using a thoroughly tested combination of expert discourse (in this case, the specific CVF impact weights from Quantitative Study 2) and an analysis algorithm. A pairwise system approach was used, beginning with the identification of factors describing the system under investigation, hereafter called 'descriptors' (i.e., the CVF culture types and their different items), with their 'states' reflecting experts' judgments analogous to the 7-point Likert scale. This procedure results in a cross-impact matrix by calculating the impact balances of a scenario (Weimer-Jehle, 2006).

The ability to parse the indirect impacts helps to understand the behavior of the complex system. Extensive CIB studies in the field of policy decisions, business strategies, environmental, social, or technological changes have shown good validation of complex scenarios that comprise a large number of system elements, even in different subsystem levels (Vögele, Hansen, Poganietz, Prehofer, &

Weimer-Jehle, 2017; Weimer-Jehle et al., 2016). The CIB algorithm was also suitable for this research purpose in organizational culture research and was, therefore, applied through the software 'ScenarioWizard' version 4.31.

3.2.2.4 Research Quality Indicators

A meaningful interpretation of data needs high-quality instruments "that are reliable, valid, and that reflect the beliefs and attitudes of the target population" (Hinkin & Holtom, 2009, p. 451). Consequently, a wide range of research quality criteria has been proposed for research studies in recent decades. The most commonly cited system of quality criteria for quantitative research is rooted in the positivist traditions of the scientific method developed by Bryman, Becker, and Sempik (2008). Research quality for judging the rigor of quantitative academic studies is determined by four criteria, namely validity, reliability, replicability, and generalizability. Other researchers have also highlighted the issue of objectivity as a distinct criterion for quality evaluation (Frambach, van der Vleuten, & Durning, 2013; Yilmaz, 2013). The following parts, therefore, outline the various reliability and validity measures that have been checked and reported, especially in relation to the study's OCAI and PLS-SEM analyses.

The concept of validity follows a dualistic approach, as the quantitative paradigm distinguishes two perspectives: research design and measurement. Of all the definitions and explanations, validity represents the extent to which a construct's indicators jointly measure what they are supposed to measure (Hair et al., 2017). Besides the requirement to involve a sheer number of participants, validity refers to the accuracy of research data, its credibility, and trustworthiness through an internal and external valid measurement instrument. While internal validity establishes the truth value about inferences regarding cause-effect or causal relationships, the applicability of external validity relates to the extent to which results from a study are transferable to other populations (Yilmaz, 2013).

In this vein, there are three different ways to measure the validity of a questionnaire, namely content, criterion, and construct validity (Heale & Twycross, 2015). The highly subjective nature of content validity, which is closely connected to face validity, assesses whether the items in the questionnaire adequately represent the entire content domain of the intended knowledge measurement (Bell

et al., 2018). Typically, this assessment evolves by a distinct subject area or research expert. Criterion validity, in turn, examines the relationship between the questionnaire scores and some well-respected outside measures, often called the 'gold standard.'

The question of how well the study fares in the context of the quality criteria regarding internal and external validity, reliability, and replicability, is often referred to as an implicit discussion in the products of the research. Derived from the investigation of quality in qualitative research, some researchers have also shed light on conclusion validity, or the degree to which the conclusion drawn regarding the relationship in the data is credible or believable, especially in relation to socio-economic relationships. By developing these quality criteria, the reasonable assessment on the given data basis becomes crucial for transferring the research results into practice (Treharne & Riggs, 2014). The well-known and commonly agreed-upon criteria for judging construct validity demonstrate the degree to which a measurement instrument relates to underlying theoretical concepts or underlying hypotheses (Yilmaz, 2013). However, the neutrality and confirmability of quantitative research studies also depend on objectivity, which is the extent of removing personal biases and gathering value-free information (Yilmaz, 2013). Once the questionnaire is designed, the researcher should pre-test the questionnaire before starting the official data gathering process.

PLS-SEM data analysis estimates two indicators for validity model fit. The first criterion for evaluation is the Average Variance Extracted (AVE), which must show values greater than .50 to confirm convergent validity (Hair et al., 2017). Convergent validity represents a sub-type of construct validity, as it shows the extent to which a measure is positively correlated with other indicators of the same construct. To establish convergent validity, researchers should also consider the factor loadings of each indicator as well as the AVE. The second indicator identifies discriminant validity, as suggested by Fornell and Larcker (1981). In this sense, the square root of AVE in each latent variable is used to establish discriminant validity when this value is higher than other correlation values among the latent variables (Hair et al., 2017). Reaching this value indicates that discriminant validity is well established, and the construct is genuinely distinct from other constructs.

However, both methods have shortcomings, and thus, a more recent criterion to assess discriminant validity known as the Heterotrait-Monotrait Ratio (HTMT) was presented by Henseler, Ringle, & Sarstedt (2015). It represents an estimate of the factor correlation. This research work used a combination of AVE comparison and the HTMT method, with the HTMT threshold below .90. Furthermore, the presence of multicollinearity was examined by calculating the Variance Inflation Factor (VIF) of the items for formative constructs, which should be below the cut-off point of 3.3 (Hair et al., 2017; N. Kock, 2015).

The premise of reliability in this study was the evidence of replicability and internal consistency, applied to the extent to which the instruments provide reliable data, scores, or observations. From different perspectives and approaches, measures of reliability include coefficients of stability, coefficients of equivalence, and internal consistency (Heale & Twycross, 2015). First, the consistency and stability of the questionnaire were assessed by test-retest reliability, which measures the degree of stability of the instrument used over time. The obtained data sets should provide positively correlated results to claim that they are consistent (Yilmaz, 2013). In that regard, internal consistency reliability indicates whether the results of items within a test are highly positively correlated at a conceptual or theoretical level (Bell et al., 2018). To that end, inter-rater reliability defines the extent to which different observers are consistent in their estimates of the same phenomenon, regardless of the type of interviewer (Yilmaz, 2013). The result for Quantitative Study 1 represents an index of inter-rater reliability in Annex 4, p. 243.

A wide range of statistical tests measures different types of reliability. Regarding PLS-SEM analysis for Quantitative Study 2, two indicators were considered for fitting the reliability model. The first indicator to be examined was the most common indicator of internal consistency reliability or Cronbach's alpha (α) values, which should exceed the minimum threshold of .70 or .60 (Bell et al., 2018). Some researchers have also suggested the Composite Reliability (CR) as a more suitable criterion for reliability measurement, as it can lead to higher estimates of accurate reliability and has therefore been evaluated, too (Hair et al., 2017). Acceptable values of CR are generally considered to be .70 and above.

Secondly, item reliability was checked through the 'outer loadings' (reflective indicators) or 'outer weights' (formative indicators), which should be close to the preferred level of .70, as this number squared equals .50 (Hair et al., 2017). Values below .40 were eliminated from the model to increase the AVE value for an increased CR. Several researchers have adduced evidence for adequate reliability and validity measures of the OCAI in assessing organizational culture. In this sense, the internal consistency of the single culture types was determined in terms of Cronbach's α. In general, the scales achieved good values of Cronbach's α close to .80 in the specified reliability tests per research work, as listed in Table 10.

Table 10: Reliability values (Cronbach's alpha) of the OCAI cultural scales. [Source: own version; data: see column references]

Clan	**Adhocracy**	**Market**	**Hierarchy**	**References**
α = .74	α = .79	α = .71	α = .73	Quinn and Spreitzer (1991)
α = .90	α = .83	α = .83	α = .80	Kalliath et al. (1999)
α = .90	α = .86	α = .80	α = .70	Heritage et al. (2014)

Most studies used SEM to test the factor structure of the OCAI and reported: "excellent validity and reliability estimates" (Quinn & Spreitzer, 1991, p. 143). Strack (2012) also found moderate internal consistencies of the shortened subscales indicated by Cronbach's α, ranging from .42 (self-perception = .51), and even to α = .80 (self-perception = .90) after applying the Spearman-Brown formula. Importantly, the values were measured by a confirmatory analysis of axis reliability in circumplex models. It showed the meaningful comprehensibility of the two-dimensional organizational culture circle (Strack, 2012). In this vein, the two bipolar axes span a circle of values that yields the four culture quadrants according to the CVF. Furthermore, Quinn and Spreitzer (1991) demonstrated the discriminant and convergent validity of the OCAI using a multitrait-multimethod analysis with multi-dimensional scaling (Cameron et al., 2014). Consequently, it can be assumed that the OCAI measures what it purports to measure: the key dimensions of the four different organizational culture types.

For the WA construct, the reliability coefficient for the initial subscales proposed by Sherehiy, Karwowski, and Layer (2007; 2014) reached very satisfactory values. More precisely, values of about .85 (proactivity), .87 (adaptivity), and .71 (resilience) were achieved. Abridgments of scales by Alavi et al. (2014) even estimated highly acceptable Cronbach's α values greater than .70, and thus, were used for the measurement procedure in this study. Furthermore, research on the conceptualization of uncertainty in the work environment produced a three-factor solution that explained 60.5% of the total variance (Clampitt & Williams, 2005). The construct reached an overall Cronbach's α reliability value of about .73, suggesting reasonable internal consistency of the scales.

3.2.3 Ethical Considerations of the Study

Researchers must ensure that they abide by diverse ethical standards when designing, conducting, and publishing their research work. However, appropriate ethical practice is more an issue of the researcher's consciousness, multicultural competence, and collaboration commitment than a function of design features. This study, therefore, followed a strict ethical process that adheres to the code of conduct and best practice guidelines established by the Committee on Publication Ethics (COPE) and required by the Academic Committee and Institutional Review Board (IRB) of the Catholic University of Murcia. Against this backdrop, many university IRBs focus on ethical issues in positivism and post-positivism paradigms that favor quantitative research designs (Ponterotto, 2010).

The inherent difficulties in quantitative research can be alleviated through well-established ethical principles that emerged in long-standing publications since the 1960s. According to several researchers, discussions relating to ethical challenges within qualitative and quantitative studies can be divided into four main groups, namely harm to participants, lack of informed consent, invasion of privacy, and deception (Bell et al., 2018). As such, these ethical issues should not be an afterthought or a strain, but rather an intensive debate on ethical matters.

The first ethical principle closely associated with research is beneficence, which refers to the Hippocratic "be of benefit, do not harm" (Fouka & Mantzorou, 2011, p. 5). Addressing the issues of confidentiality and anonymity minimizes

potential stressors of a physiological, emotional, social, and economic nature for participants. This philosophy of usefulness adheres to the utilitarian theory, which posits happiness for the greatest number of people as a moral action (Fouka & Mantzorou, 2011). Researchers must decide on the type, degree, and several potential risks to be ranked as harmful within an individual's value system. Facing this quantitative non-experimental study, questions were not asked in a way that would tend to skew the results, force an answer, or allow identification of the participants in the future. Other ethical considerations also highlight the researcher's responsibility for 'not wasting' a respondent's time while collecting data that have a utility or real-world use (Drew, Hardman, & Hosp, 2008).

Academic studies attempt to use full disclosure and informed consent as a means of determining the degree of harm. All participants reported their written acceptance regarding their voluntary participation in the research through the form-filling 'tick-box' approach at the beginning of the questionnaire (Bell et al., 2018). The full explication of informed consent was adequately covered by a signed briefing letter. By explaining the purpose and nature of the study, as well as the intended use of data collection for project work, participation was encouraged through a summary of the results. Thus, all participants were given the option of not answering questions or withdrawing from the study simultaneously. This sequence provides the guarantee that all data are anonymous.

The value attached to individual privacy and legal data protection has been of growing interest in recent years. Addressing several factors leads to the reflection on the prominence of seclusion and confidentiality. First and foremost, the researcher cannot know in advance what questions might be situationally sensitive for an individual. Even so, researchers must be receptive to the various needs of the participants, regardless of their cultural, social, or involving language (Fouka & Mantzorou, 2011). This demand, however, is highly dependent on the research setting. As such, consent or a possible withdrawal, as mentioned earlier, should always be obtained (Bell et al., 2018). For this study, completed questionnaires and information were kept confidential, stored securely, and were treated for genuine research purposes by one person. These measures are crucial to protect respondents from possible physical or psychological damage.

Another example of an ethical challenge in scholarly work is deception, or an intentional misrepresentation of the research scope, aims, or methods of a research project. The precise nature of deception can be divided into either an omission (no full information) or a commission (false information) part of interaction with participants (Drew et al., 2008). Research deception has become a very renowned issue for investigators in the last decades of the 21st Century. Reasons include aspects like the use of a hidden agenda for participants who have become 'test-wise' or suspicious and, therefore, respond in an atypical manner or sabotage the study. Similarly, pragmatics in terms of limited finances, time, and data sources represent some reasons for the use of deception. When investigating the extent of group control on individual actions, researchers might intentionally deceive the participant to control for factors such as resistance to peer pressure (Drew et al., 2008). Otherwise, the exact nature of the investigation reveals the outcome with a displaced perspective. Nonetheless, the participant's suspicion of deception creates problems in controlling for these individual influences.

However, deception is generally considered unfavorably because the prerequisite of informed consent is unlikely to be met (Bell et al., 2018). The COPE and the university's IRB, therefore, require that preliminary quasi-content cover procedures, risks, and levels of confidentiality. When a study is terminated, one post-study debriefing is often sufficient for many research designs (Ponterotto, 2010). For this research purpose, the quantitative approach obtained a dualistic perspective with minimal direct contact to the relationship between the research and study participants so as not to bias or influence the research findings. In the end, all ideas, contributions, and contributors were acknowledged and referenced while permission was obtained to use the intellectual property of others. Room for comments, or queries, was also left for the participants and ultimately concluded with a post-study debriefing.

3.2.4 Problems and Limitations

Study quality in terms of objective and non-biased data is a crucial element of the research process. This research project implies several limitations that affected the results of the survey. In addition to the influence of potential areas of researcher bias and subjectivity, inability to gain access to the target population, or

the strains of the chosen research method, Table 11 provides an overview of the study's limitations and approaches to mitigate these challenges. Alternate opinions that shed light on the sampling procedure techniques help present study findings in a more non-biased way.

Table 11: Issues, mitigation approach, and research impact. [Source: own version]

Issues	Mitigation Approach	Impact
It may be complicated to acquire an appropriate target population.	Based on networks within the industry as well as the help of the professional research service provider 'AMT,' there was confidence that enough participants would complete the study.	According to Quantitative Studies 1 & 2, the study goal was to reach more than 700 participants. In total, 1,056 people participated. Efforts included a representative sample composed of different companies and industries.
Participants may have different responsibilities within the organization.	This issue is not problematic as all participants are requested from staff members that are expert, senior expert level, and above, ensuring a direct connection to the topic.	Experts, senior experts, and levels above were included. These people represented appropriate classes to conduct *U*-tests and MGA within PLS-SEM.
In some cases, participants may refuse to speak out against their organizations due to cultural biases or personal sensitivities.	Both surveys are confidential, which should minimize any concerns. Moreover, indirect questioning can be used for socially sensitive questions to provide honest and representative answers.	Many respondents did openly express their opinion. This issue is detailed in Chapter 3.2.3 on Ethical Considerations. Additionally, the open-ended question was answered by 83.5% of Study 1 respondents.
Cultural studies are constrained by the time available to study a research problem and to measure change over time.	Cultural changes are hard to forecast. When changes occur to cultural aspects, the main issue of both studies remains constant.	Both studies provided a snapshot of structural corporate culture on workforce agility. Strategies for addressing these requirements were developed through path modeling.

In this case, the research project aimed to understand the impact of different organizational culture types in relation to an agile workforce within uncertainty in the work environment. Although this study attempted to minimize any researcher

bias through the methods outlined here, human nature implies that research findings contain their personal views that prevent academic research from being conclusive. Considering each of these issues when evaluating the findings and discussions in Chapters 4 and 5 resulted in minimizing the potential impact of bias on quantitative research. However, there were several methodological limitations of the random probability sampling techniques and testing procedures related to company size and age (i.e., global organizations with a long history vs. small corporations with newer cultural history). The stratified sampling approach in this study likely resulted in volunteer bias that affected the MGA. Testing this assumption was conducted by measuring the influence of each stakeholder group.

3.3 CHAPTER SUMMARY AND CONCLUSIONS OF THE RESEARCH METHODOLOGY

This chapter presents a detailed account of the research strategy, philosophical stance, and methodology of the empirical study. The research has been placed in both the post-positivist and critical realism paradigm, utilizing two types of quantitative research surveys to explain the influence of different organizational culture types on workforce agility. Although many research methodologies have been identified in academic studies, the hypothetico-deductive research process was chosen for hypothesis testing (Carrier, 2011). This procedure encompasses a substantial literature review, refinement of previous research models, and development of the underlying research instrument. Following the pre-study design of Quantitative Study 1, the study used 5-point Likert scale scores across all CVF quadrants for assessing current and preferred culture types (Cameron & Quinn, 2011). As such, an open-ended question was included in the last part of the questionnaire to adept corporate value statements from staff members.

The chapter on data analysis techniques outlined the use of descriptive statistics and cluster formation through an LCA and PCP. In addition, PLS-SEM, its measurement issues, and elementary research quality indicators were highlighted as the central data analysis technique. For Quantitative Study 2, the PLS-SEM approach was demonstrated with path modeling of the hypotheses derived from the conceptual framework using a survey questionnaire with a 7-

point Likert scale. Mean value comparisons suggest the detection of multi-group differences through Mann-Whitney U-tests. The combination of both studies resulted in an action plan for enhancing cultural development through workforce agility that adds value to large-scale organizations.

In the last part of this chapter, the nature of all data was explained in terms of existing knowledge about the sampling procedure for stratified probability sampling with quotas. The importance of always being subjected to ethical scrutiny was emphasized. On this basis and after extensive explanations, the preliminary details regarding the target population, study participants, data collection techniques, and questionnaire design were reported. In the end, all considerations were supported by the researcher's declarations of potential areas for bias and perceived study limitations.

CHAPTER 4. RESULTS AND FINDINGS

"The most distinctive characteristic which differentiates mathematics from the various branches of empirical science, and which accounts for its fame as the queen of the sciences, is no doubt the peculiar certainty and necessity of its results."

Carl Gustav Hempel (1905 – 1997)
in Geometry and Empirical Science (1945)

4 RESULTS AND FINDINGS

The previous chapter provided an overview of current quantitative empirical studies, the process of data collection, indicators of study quality, and ethical considerations. Consequently, the data obtained must be analyzed to examine the impact of the organizational culture types on workforce agility through the moderating role of the construct of environmental uncertainty. In this regard, specific research methods for analyzing the empirical data were proposed in Chapter 3.2.2.3. After adjusting the data set and investigating the characteristics of study participants, Chapter 4 presents, descriptively describes, and interprets the results of the two surveys using diagrams and path modeling techniques. Finally, the findings are presented for the research process to test the theoretical framework and develop the workforce agility algorithm to assess the hypotheses (H_1 to H_8) of the study. This chapter concludes with a brief summary of the results obtained from the empirical studies.

4.1 QUANTITATIVE STUDY 1

The first quantitative study presented here in Chapter 4 utilizes the quantitative, numerical scores from the CVF proposed by Cameron and Quinn (1999; 2011). Predictor variables determine the types of organizational culture that are closely linked to the current and preferred status of cultural development. The main objective of this pre-study was to identify the underlying principles of human interaction through their unified nature. As such, the pre-study provides a cohesive measurement basis for Quantitative Study 2 of this research project. The analysis of these relationships led to several propositions and open-ended questions that will be combined with the findings from the extant literature.

4.1.1 Data Selection and Sample Characteristics

As outlined in Chapter 3.2.2.1, the sample selected for Quantitative Study 1 should provide a normal distribution of different industry types to support the research questions. The population for this study included participants with active

working status based on industry type, firm size, and job position. The composite sample used a combination of stratified probability sampling with quotas over two months, directed at all company sizes, independent of geographic location (see Table 9, p. 105). Following the IRB guidelines of the Catholic University of Murcia, no individuals or institutions could be identified from the data. More than 660 people were contacted via personal e-mail correspondence as well as volunteer opt-in panels as potential participants for the survey. Connections transpired through professional relationships with the researcher and participation in social networking sites. In total, 115 respondents completed the survey, resulting in a 17.4% response rate. However, the occurrence of missing values with more than 50% at the individual observation level decreased the number of valid questionnaires from 115 to 103 for further analyses. Statistical outliers, though, were not recognizable in this study. Table 12 illustrates the final sample composition divided by industry type, firm size, and job tenure of all respondents.

Table 12: Final sample composition of Quantitative Study 1. [Source: own research data]

Control Variable	Items per Type	Proportion (in %)
Industry Type	**Production Sector** *(e.g., Automotive Industry, Chemical, Pharmaceutical and Life Science, Energy and Water)*	53 (51.5)
	Trade, Service, and IT Communication Sector *(e.g., Tourism, Commerce, Consulting, Accounting, Banking, Insurance, Transport and Logistics, Public authorities, Fairs and Events)*	50 (48.5)
Firm Size (Number of Employees)	0 – 49 employees	16 (15.5)
	50 – 249 employees	11 (10.7)
	≥ 250 employees	76 (73.8)
Job Position	**Executive** (disciplinary and/or professional level)	14 (13.6)
	Employee (expert level/senior level)	89 (86.4)

The target plan for Quantitative Study 1 was to reach 98 participants, which constitutes an appropriate number for a pre-study. The period of observation exceeded the desired participation rate. As illustrated here, it represents a good proportion of the expected ratio as a pre-study to Quantitative Study 2, ensuring reliability. The primary chosen language was German, with 13% of the total questionnaires answered in English. Nonetheless, some specific sample characteristics became apparent. The survey showed a significantly higher proportion of medium-sized and large corporations. At the same time, larger corporations also had a disproportionately high number of participants compared to medium-sized firms, which was particularly true for respondents with an automotive background. The underlying reason for these circumstances was the personal contacts and direct communication. However, the sample included an equal division of participants working in the production industry and the service and IT sectors.

Furthermore, 96 answers were received to the open-ended question contributing to the formation of categorical corporate value statements for organizational culture circles. In this context, the core values were structured into main clusters as part of the deductive content analysis and illustrated using PCP analysis. Both the clustering of value factors and the selection of the core values for each set were not done in academic isolation, but in combination with available secondary data from different corporations. The procedure is particularly relevant for Chapter 5, the discussion part of this thesis.

4.1.2 Analysis of Empirical Results

Following the literature review of Chapter 2, the CVF provided the theoretical basis for the OCAI to diagnose and modify organizational cultures. For this intention, the data present the current and preferred organizational culture for different types of industries. The gap between these two profiles shows the direction of change across departments, levels, or professions. In undertaking this research, the OCAI afforded a validated, visual, and quantitative examination of the competing demands. Looking at worldviews within an organization, between its internal and external environment, and between control and flexibility helps explain the nature of management.

The diagrams, exemplary depicted in Figure 16, relating to the descriptive arithmetic calculations of OCAI analyses, map the results obtained. The letters assigned to the items represent the respective culture in each quadrant of the CVF, A = clan culture, B = adhocracy culture, C = market culture, and D = hierarchy culture (see Annex 1, p. 225). The Likert scale ratings for the 4 x 4 statements of the OCAI were inter-correlated to reflect the four cultures of the CVF (Strack, 2012). In this vein, the overall Cronbach's α reliability was .86, indicating satisfactory internal consistency for the measurement of the CVF. All reported values were summed for each of the four main clusters A, B, C, and D, and afterward divided by four. As a result, an average score was formed for each possible cultural alternative, which was tied to the two dimensions of focus and structure preference (Cameron & Quinn, 2011). All categories were reviewed twice in order to identify the outcomes of cultural development.

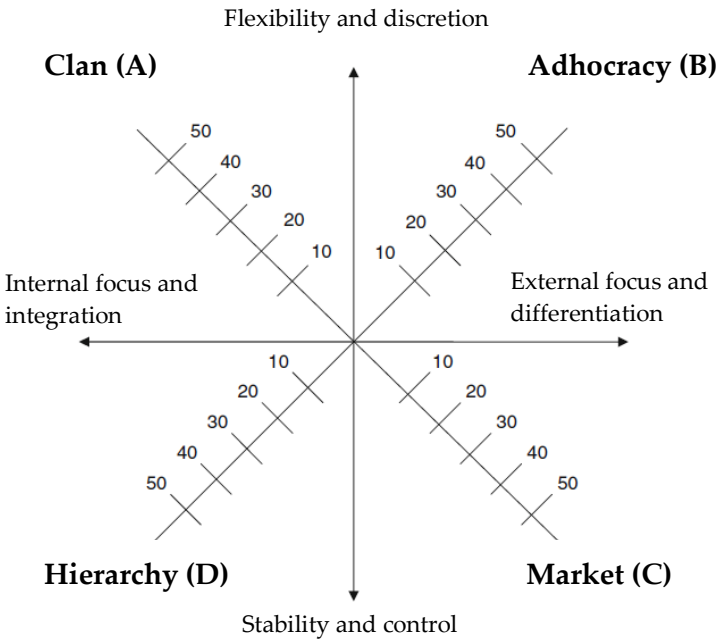


Figure 16: Factor structure of the OCAI reflective of the CVF.
[Source: Cameron & Quinn, 2011, p. 67 – 68]

4.1.2.1 Cross-Industry Specific OCAI Analysis

The comparison between the current and preferred organizational culture traits provided an initial indication of the cultural development of an industry. The solid line represents the current culture, while the dotted line indicates the preferred culture type. The strength of culture is determined by the number of points awarded to the respective culture type. The higher the score, the more dominant the culture type. In Figure 17, the current versus preferred organizational culture for the production industry shows a shift in emphasis from a hierarchy culture toward greater adhocracy and clan culture characteristic traits.

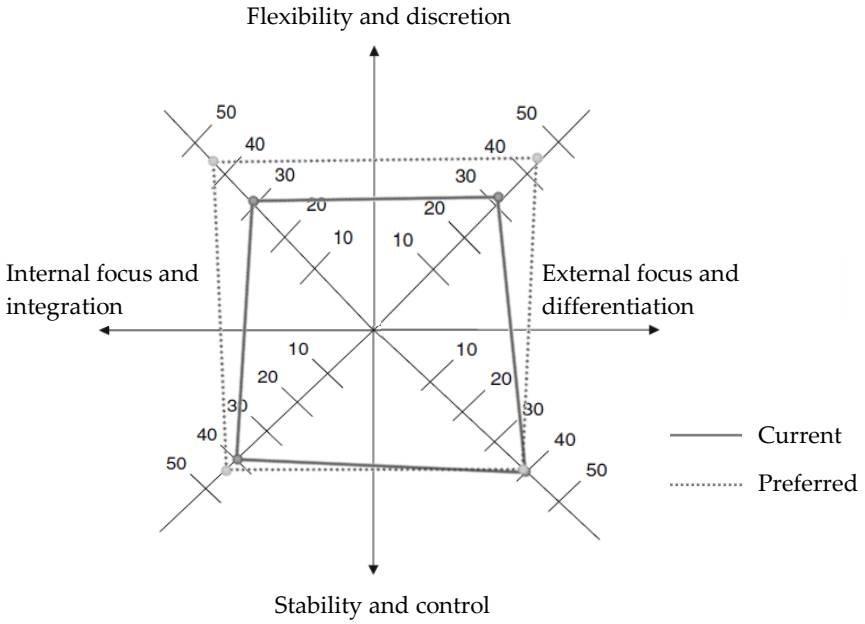


Figure 17: The current and preferred organizational culture profile for the production industry.
[Source: own research data]

In addition to the cultural patterns highlighting one dominant culture, mixed cultures also appeared. Even though assuming that the cultural paragons were equally distributed, the profiles revealed slight tendencies toward one or more cultures. The contextual culture patterns showed either two approximately equally strong dominant cultures or those in which the second compelling culture was subordinate to the first but distinct from the other two cultures. Especially

manufacturing corporations, such as automotive manufacturers, engineering, or pharmaceutical companies, are steadily and sometimes episodically exposed to economic and technological change. In this case, the combinations of market orientation and innovations have emerged in the preferred culture type. Thus, the nature of tasks and technology has become a central determinant for organizational innovativeness in shaping the values and culture in the large organizations studied (Ahl, 2020; Lindquist & Marcy, 2016). The cultural shift from hierarchy to clan cultures helps strengthen social cohesion by addressing challenging issues facing the automotive industry, e.g., scandals like the 'dieselgate' environmental scrutiny or field failures. These events indicate a significant impact on the cultural leadership profile of the respective organization.

Interestingly, the significance in sharing similar expression on the single dimensions of the CVF (focus vs. structural preference of the organization) revealed the existence of mixed cultures. Here, the degree of cultural integration and differentiation varied across departments within the organization, leading to the occurrence of subcultures (Morente et al., 2018). Schein (2004) found three overarching types of subcultures, namely operations (drivers of daily activities), engineering (focused on technology), and executive versions (concerned with financial matters). Nonetheless, consensus about the cultural shift among subcultures is hard to achieve. It, therefore, becomes decisive to deepen the understanding related to power stratification and the plurality of discursive cultures (Morente et al., 2018).

In contrast to the OCAI analysis for the 'old' economy, Figure 18 (p. 133) depicts the current and preferred organizational culture for the organization and management of the service, IT, and communication sectors. In the sample, trading companies, transport and logistics services, facility management, and mobility service providers were equally represented in small and medium-sized enterprises and large corporations. A similar shift in emphasis along the tension between collaboration and competition resulted in a stronger clan and adhocracy orientation. However, corporations within this type of industry were more likely to exhibit clan culture characteristics. The service industry, whether as a whole or in its single entities, must deal with a constant stream and great diversity of tendencies and actions from a mix of customers while also responding to shrinking

markets through competitive mergers and alliances. Perhaps the main differences between both sectors under observation are the shifting economic regulations and changes in the speed of competition, which account for a higher developmental difference toward market orientation in the preferred culture type.

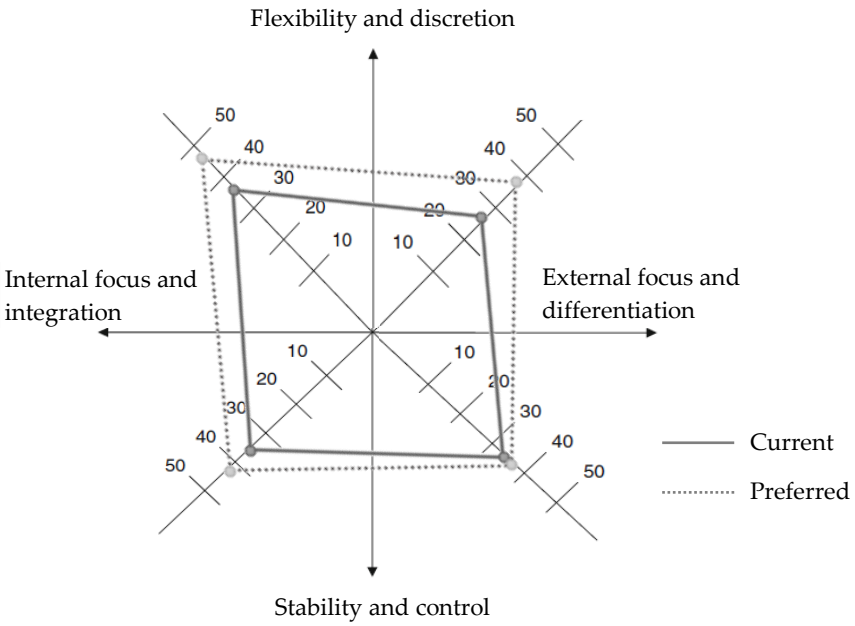


Figure 18: The current and preferred organizational culture profile for the service industry.
[Source: own research data]

The next step was to review the results, highlighting specific calls to action. Translating the cultural profiles into daily behaviors and actions becomes an inevitable prerequisite for assessing cultural congruence, as cultural incongruence often raises awareness of the need for change. To this end, the following sub-chapter outlines corresponding profiles of the two industry types, sorted by culture types, by conducting an LCA.

4.1.2.2 Results on the Four Orthogonal Cultural Dimensions

The OCAI method, however, did not determine mixed cultures that may occur. In this respect, a more elaborate procedure was needed in the evaluation that used not only the categorization of dominant cultures but also the classification of different cultural patterns. For this purpose, an evaluation method was carried out

in an LCA that developed and empirically tested culture typologies in which the entire response profile is of interest, as methodologically described in Chapter 3.2.2.3.

In order to reduce the complexity of the model and increase its interpretability, the number of classes is usually specified in advance in the theory. Consequently, a possible number of four classes was assumed, which retains the interpretation of the data. Analytically, the LCA created culture profiles that assigned the predominant or current industry cultures to a class while responses to all four efficiency criteria were distributed separately.

Initially, the XLSTAT program calculated five models per industry type, each with a different number of classes, resulting in 1- to 5-class models. The choice fell on the 2-class solution per industry type because the information criteria of the model fit values were not significantly better for larger class solutions. Production sector BIC adapted to the sample size for 2-class solution = 2324.4; and for 3-class solution = 2326.9. Service and IT sector BIC adjusted to the sample size for 2-class solution = 2451.3; and for 3-class solution = 2452.4. Thus, the analysis found only parallel differentiation of the existing classes without new cultural profiles. Consequently, the 2-by-2-class solution provided the maximum content interpretation for both industry types and revealed predominantly mixed cultures. Moreover, 2-class models contain a relatively large number of boundary estimates at the limits of their possible value range between 0 and 1 (Berlin et al., 2013). Thus, the CVF response profiles, rather than the pure total values of the individual cultures, dominated. For better illustration, Figure 19 (production sector – the 'old' economy, p. 135) and Figure 20 (service and IT sector – the 'new' economy, p. 137) show the corresponding current culture pattern of the respective industry class.

Both figures contain the information from left to right with items 1–4, exhibiting the estimated likelihoods of culture type A (Clan), culture type B (Adhocracy), culture type C (Market), and culture type D (Hierarchy), related to category expression 'strongly agree.' Items 1–4 each represent the corresponding effectiveness criteria of organizations, related to the four blocks of the questionnaire (see Annex 1, p. 225): A-D 1) Dominant Characteristics, A-D 2) Management of Employees and Leadership, A-D 3) Organization Glue, and A-D 4) Criteria of Success.

The differences between the industry classes were evident in the profiles of the following non-parallel courses. The analysis found a class of competitive control culture (Cluster 1), a class of family hierarchy culture (Cluster 2), a class of innovative clan culture (Cluster 3), and a class of resilient market culture (Cluster 4). All groups are described in greater detail below in their overall course and distribution in the sample. The descriptions are based on the pre-defined cultures by Cameron et al. (2014) and the contents of the single items (see Chapter 2.4.1, p. 50 on Theoretical Lenses of the CVF).

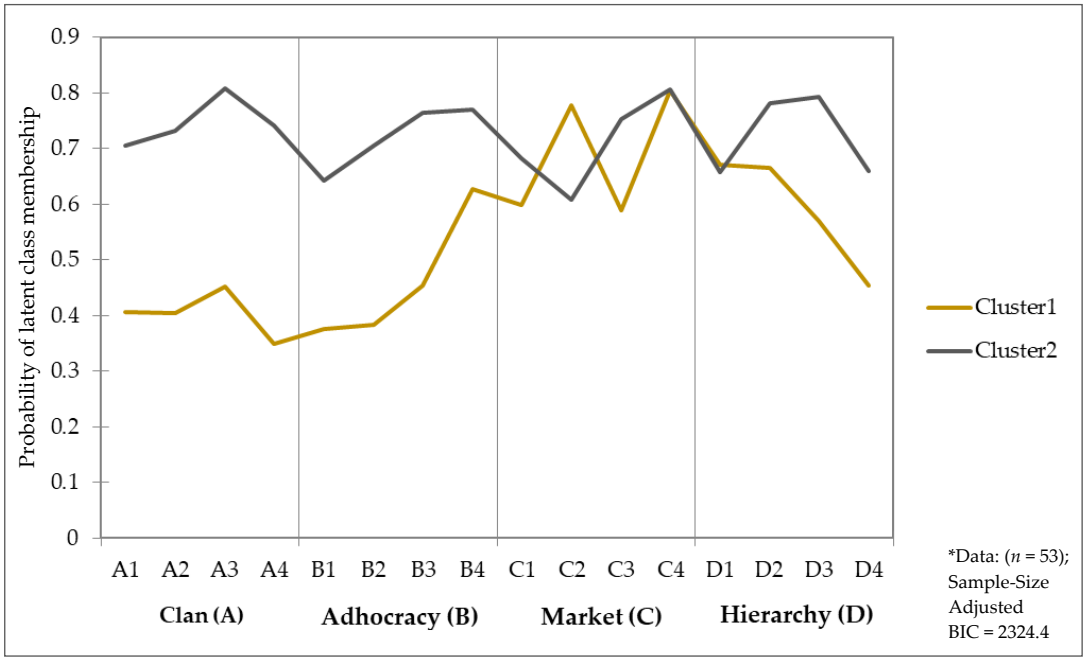


Figure 19: The current culture profile plot for the Latent-Class-Analysis of the production sector.
[Source: own research data]

With respect to Figure 19, the estimated class sizes in the 2-class model for the 53 people in absolute and relative frequencies are 34 people or 64% (Cluster 1) and 19 people or 36% (Cluster 2). Cluster 1, thus, manifests as the largest latent class for the production industry (the 'old' economy). However, when looking at the attitudes and perceptions of the culture types, there was a significant split between the two classes.

Cluster 1 – The competitive control culture

The first cluster of the model initially shows a tendency toward hierarchy-based cultural characteristics (D1), with a clear focus on market-oriented success criteria (C2; C4). It, thus, becomes clear that organizations in this cultural class have a structural orientation defined by control, competitiveness, and goal achievement. Essentially, organizations in this cluster are highly regulated and structured entities supported by formal rules and results-orientation. Employee management and leadership act as authority based on goals, hard-driving rules, and processes while being good at organizing and coordinating. The strong emphasis on winning market leadership supports stability and control mechanisms that are not completely frozen but maintain competitiveness and high performance in the markets. Strategic alignment is evident in the internal processes and well-being of the organization, which is competitive in the marketplace. Above all, the success of the organizations is defined by external parameters, such as the high and changing demands of the immediate environment. Striking in this cluster are the characteristic traits of competitiveness and control, which influenced the culture naming.

Cluster 2 – The family hierarchy culture

The profile of the second cluster shows a combination of hierarchy (D2; D3) and clan (A3) cultural characteristics. First and foremost, organizations operating in this cluster have a strong internal focus on the well-being, integration, and development of their members in a family atmosphere. In this sense, organizations are highly regulated and structured places where security, reliability, and stability in relationships are of particular importance for smooth operations. Nevertheless, members experience these types of corporations as individual places where much emphasis is placed on teamwork, consensus, and participation, with a high commitment to loyalty and mutual trust. Although the management style exemplifies coordinating and organizing day-to-day activities, personal interaction predominates within the formal provisions. Here, individual knowledge-sharing and collegial cohesion can lead to sub-cultures that result in the development of intra-organizational grassroots movements and higher levels of openness and willingness to seek opportunities among the workforce. Leaving space for new

challenges and ideas is just as valued as achieving efficiency criteria and sustaining the marketplace. Organizations in this cluster are hierarchical cultures, but within the fundamental structures and rules, there is a place for personal identification and overall commitment to the organizational goals.

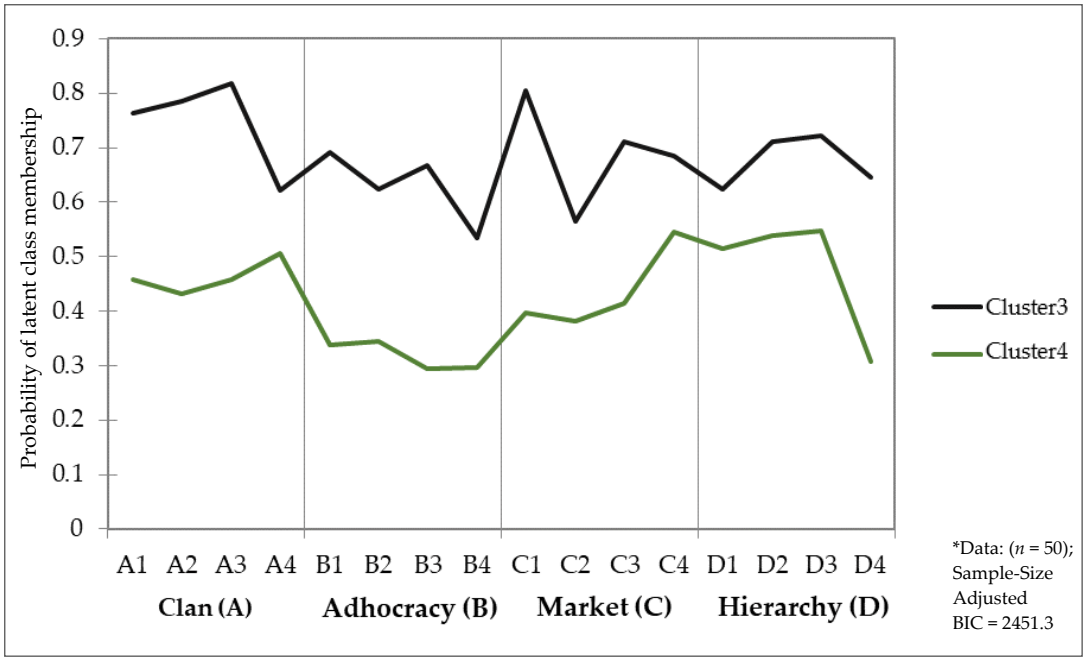


Figure 20: The current culture profile plot for the Latent-Class-Analysis of the service and IT sector.
[Source: own research data]

Cluster 3 – The innovative clan culture

As depicted in Figure 20, the estimated class sizes in the 2-class model for the 50 people in absolute and relative frequencies are 32 people or 64% (Cluster 3) and 18 people or 36% (Cluster 4). As a result, Cluster 3 emerges as the largest latent class for the service and IT sector (the 'new' economy).

The third cluster shows a complex combination of the clan (A2; A3) and adhocracy (B1; B3) cultural characteristics with some aspects of the market culture (C1). Organizations in this class have a structural focus on goal achievement, flexibility, and competitive lead. They appear as dynamic and exploratory organizations with a clear orientation toward clan cultures. For this reason, the

organization identifies itself as a jointly innovative team that seeks new opportunities and collective success in a participatory way by winning in the marketplace. Innovation and the adaptation of new resources are regarded as effective, but with a clear focus on the organizational member commitment. Organizations demonstrating these character traits are often referred to as 'fast followers' when it comes to business innovation. Innovative progress does not happen at any cost but always against the background of existing teamwork and organizational family consensus. Therefore, loyalty and mutual trust as shared values are crucial to leadership alignment, with management also playing the role of mentor and facilitating advisor. This emphasis supports the pioneering focus and allows freedom but is not primarily characterized by high-risk tolerance and preference for turbulence. Consequently, the term 'innovative clan culture' was chosen for this largest class within the service and IT sector.

Cluster 4 – The resilient market culture

The cluster of the fourth culture class is dominated by the hierarchy culture (D1; D2; D3) but also combines strategic focal points from the market (C4) and clan (A3; A4) cultures. All three items of hierarchy culture were rated highly in terms of formal structure, conformity, and stability in market relationships. There is a strong focus on permanence, efficiency, and control to outpace the competition. In this regard, leadership style differs in coordination and organization to build an effective, trusting, and smooth-running workforce. Effectiveness is defined based on strategic human development, integration, and persistence with a certain degree of concern for people. In addition to the strength of hierarchy-specific leadership behaviors, there is a slight approach to clan leadership qualities, which can be assessed by market goals as a supportive and nurturing management style. Effective adaptation policies should aim to build resilience and ensure the ability to handle evolving blended threats from the environment. However, exact external alignment with market needs through stretched efficiency targets in organizational structures impedes the growth of innovation. As a result, organizations respond to market demands rather than taking risks or trying new things. Conversely, they are in danger of product marginalization.

Taking all considerations together, the current working culture in both industry types is diverse and, contrary to the basic culture types of Cameron et al. (2014), of mixed-nature. However, the combinations of clan and market as well as hierarchy and adhocracy cultures, which cannot be combined according to the literature, were not included in the empirical data. All four culture quadrants of the CVF appeared within the data in different combinations, but each cluster contained either the clan or the hierarchy culture. This fact was not necessarily surprising given the cultures of large organizations. Although there was no evidence of conflicting combinations within the CVF, market and adhocracy culture characteristics could be identified as additional properties in many cases. As a further step, it is important to draw an in-depth comparison between the current and preferred cultural imprint. Therefore, a 2-class analysis was also performed for the preferred culture data while maintaining identical settings from the first LCA, as depicted in Figure 21 and Figure 22 (p. 141).

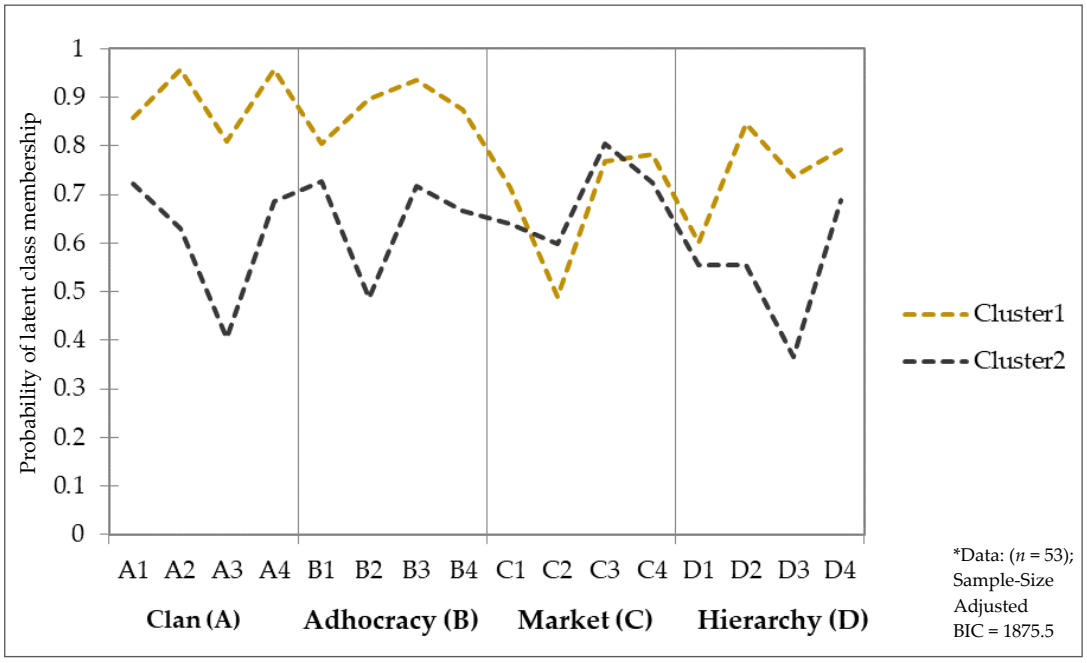


Figure 21: The preferred culture profile plot for the Latent-Class-Analysis of the production sector.
[Source: own research data]

In both industry types, a relatively clear picture of the desired characteristics emerges with small shifts in the cultural profiles from the initial analysis. For Cluster 1 and Cluster 2, the estimated class sizes returned for the production sector are nearly similar, 27 people or 51% for Cluster 1, and 26 people or 49% for Cluster 2. Compared to the current culture LCA from Figure 19, Cluster 1 is almost mirrored on the horizontal axis for the preferred culture. Specifically, this means the highest scores for the clan (A2; A4) and adhocracy (B3) components. Managing employees and leadership qualities are no longer considered as no-nonsense or with a hard-driving focus, but rather as a mentoring and coordinating facilitator function. The tendency toward market success still emphasizes goal achievement, conformity, and stability, but in a less extreme distribution of control and with greater attention to the acquisition of new resources and openness to innovation. There is a strategic focus on being on the cutting edge, despite collaboration activities with other market players. The competitive control culture from Cluster 1 (see Figure 19, p. 135) is, thus, changing in the direction of an innovative clan culture (Cluster 1; see Figure 21, p. 139).

The culture characteristic traits from the preferred analysis of Cluster 2 follow the same course compared to the initial measurement with a special focus on market goals (C3) and innovativeness (B1; B3). Typical hierarchical elements of formal rules and policies decrease in favor of achieving goals through product leadership or innovation. The leadership style is demanding but still focused on teamwork and participation. Nonetheless, organizational members experience lower levels of mutual trust and commitment to organizational uniqueness. As a result, the family hierarchy culture from Cluster 2 (see Figure 19, p. 135) is evolving into an innovative market culture (Cluster 2; see Figure 21, p. 139).

In contrast, by shedding light on the estimated class sizes for the service and IT sector, Cluster 3 predominates with 40 people (79%) over Cluster 4 with ten people (21%). However, both profiles have load characteristics that principally follow the same course with different estimated likelihoods. Compared to the current culture LCA from Figure 20 (p. 137), Cluster 3 and Cluster 4 show clan cultures (A2; A4) in combination with adhocracy culture elements (B3) in the preferred analysis. The strong results and market-oriented management style is shrinking in favor of individual risk-taking, innovation, and freedom in a more

coordinating type of organization. Thus, the strategic emphases of innovativeness in the preferred culture analysis (Cluster 3; Figure 22) strengthen the innovative clan culture depicted by Cluster 3 (Figure 20, p. 137). Security of employment, resilience, and stability in relationships as main characteristics of the hierarchy culture (D2) remain important within this culture type (Cluster 4; Figure 20 vs. Cluster 4; Figure 22).

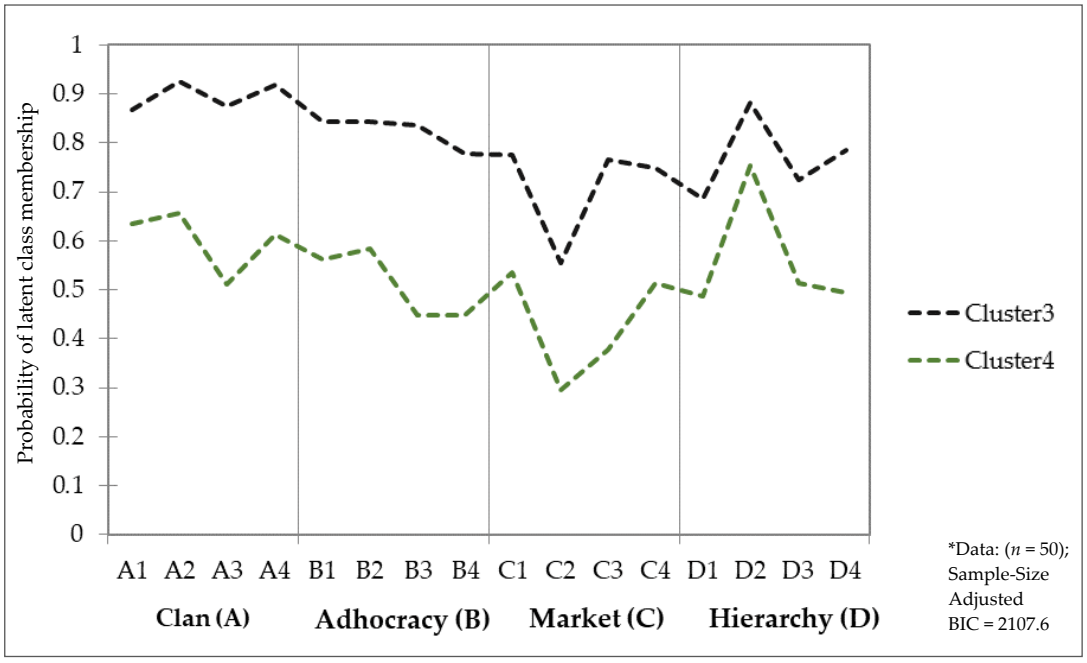


Figure 22: The preferred culture profile plot for the Latent-Class-Analysis of the service and IT sector.
[Source: own research data]

For this reason, it is recommended to translate the culture profile to the daily behaviors in organizations. Once the current artifacts, values, and beliefs are understood, the invisible, desired future appears. Interestingly, this insight raised the question of how organizational members personally fit into the current and preferred culture typologies. Therefore, the study included an open-ended question for assessing the relationships between culture type and personal values. The remainder of this subchapter implements the results.

4.1.3 Comparing Empirical Findings with Extant Literature

Finally, the results from Quantitative Study 1 are extrapolated to correlations and causal relationships concerning Schwartz's (2012) Theory of Basic Human Values and the four psychological types discovered by Jung (1971). For this purpose, the open-ended question asked the study participants' value statements relating to workforce culture. This analysis is consistent with the relationship between values and principles behind different culture types described in Section 2.4.2. It serves to explore the intrinsic value space of employees from various industry types. Due to its qualitative nature, it is not primarily suitable for testing hypotheses in the context of significance tests. However, a profound interpretation of the results and their comparability with other research was possible. Simultaneously, the analysis is designed as a further discourse to promote the development of the concept of values. To a certain extent, this conceptualization highlights the possibilities of creating a set of educated values instead of conveying new values into the minds.

4.1.3.1 Deductive Content Analysis of Individual Values

The analysis of values and corporate value statements forms the root of multidimensional value research, which has a high conceptual, theoretical, and methodological impact. Since it is probably not possible to exhaustively describe the value space of a single group, the existence of values was understood here as the assumption that people judge values differently. Concerning the underlying scientific paradigm, the developmental model approached constructivism through the concept of contingency. It states that an individual set of values presupposes social interaction with the environment from which an individual is stimulated or perturbed. In this vein, a refined theory of basic personal values based on Schwartz's circle of values in conjunction with the CVF should provide greater heuristic power for the study.

As described in the methodology part of Chapter 3.2.2.3, the statements of the respondents (n = 96) were categorized in two steps using structured content analysis. Typical for qualitative-deductive procedures, the primary goal was to gain knowledge through subjective data evaluation, with evaluation and interpretation objectivity remaining secondary (Mayring, 2014). The theory-based

codebook (see Annex 4, p. 243) includes four main categories derived from Schwartz's (2012) Theory of Basic Human Values, defined and extended by super-categories from the threefold cluster of ethical (being), behavioral (doing), and aspirational (becoming) values. This approach ensured that each value category was distinct from the others. Moreover, it determined the assignments for recurring answers, which should guarantee the highest possible reliability and validity in terms of content and construct validity. Schwartz's circular structure of basic human values focuses on achieving personal or social outcomes, promoting growth and self-expansion or anxiety avoidance and self-protection (Schwartz, 2012). In this regard, the value statements and underlying personality traits of all respondents from the text material were classified into subcategories using structuring content analysis. The additional condensation thus supported the theory while exhibiting different correlation patterns and significances, reflecting a system of priorities between individual and societal value statements.

Cohen's kappa Coefficient (κ), which represents the degree of accuracy and reliability in statistical classification (J. Cohen, 1960; Srnka & Koeszegi, 2007), was used to calculate the created quality criteria for the value categories. The assignment of subjects and values by the codebook was undertaken independently by two coders at a certain point in time to evaluate the degree of agreement between the choices, also called inter-rater reliability. The subsequent intercoder consistency check yielded a very satisfactory interpretative reliability coefficient of $\kappa = .83$ for all value categories, ranging from $\kappa = .73$ to $\kappa = .94$ for the main categories (see Annex 4, p. 243). For a variety of main and subcategories in the study, the different values represented a very substantial indication that the distinction within the main category was relatively clear-cut for the 'Being' and 'Becoming' categories (e.g., self-transcendence and openness to change). However, it was more difficult to distinguish several less explicit 'Being' and 'Doing' categories, namely self-enhancement and conservation. Applying the developed super-categories, the results outline that the vast majority of the 32 values account for about 51.6% of ethical-specific behavior (i.e., 'Being'-focused). 'Doing' (25.8%) and 'Becoming' (22.6%) values were considerably lower. Nonetheless, all main categories exhibited an almost similar distribution of individual values derived from the text material.

In the next step, the results developed from the text material seem appropriate for mapping correlation patterns between Schwartz's (2012) main categories and the competing dimensions of the CVF. The theory would suggest that the individual values identified in the subcategories tend to reflect a continuum based on their compatible and conflicting motivations (Schwartz et al., 2012; Strack, 2012). For this purpose, frequencies per individual participant were calculated for each main and subcategory and passed through an exploratory correlation analysis. The results for the diagonal axes of the value circle are relevant for the location in the CVF. Figure 23 shows the correlations of the two axes of Schwartz's value system with the ideal values of the cultural workforce in this study.

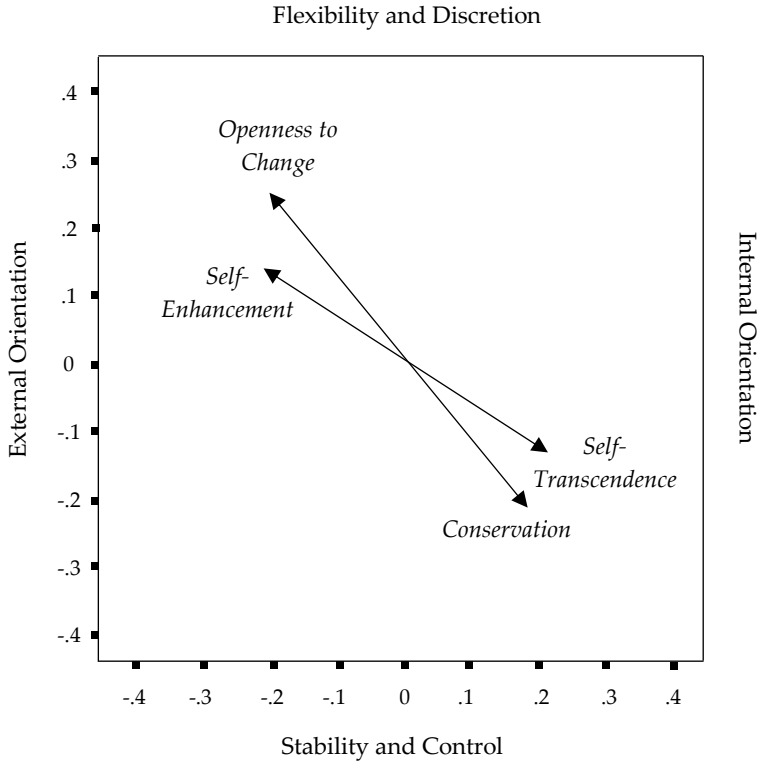


Figure 23: The influence of individual values on the organizational culture types.
[Source: own version]

The individual values of the 96 participants (executives and employees) contributed significantly to the current organizational culture research of the workforce. The more self-enhanced the single values (e.g., preference for achievement, wealth, and social power), the more likely individuals desired an externally oriented market culture (coefficients = .13; -.20). The more important self-direction and stimulating values were to respondents (e.g., creativity, choosing one's own goals, and freedom), the more they were to prefer a culture of innovation, flexibility, and openness (coefficients = .26; -.16). Furthermore, the more they favored self-transcending values (e.g., equality, social justice, and honesty), the more they desired an inward focus on clan culture characteristics (coefficients = .21; -.16). And finally, the more conservative the individual values (e.g., social order, tradition, and security), the more bureaucratic and formal the organizational workforce culture (coefficients = .20; -.21). This empirical evidence perfectly captures the conflict between competing values that emphasize the independence of thought, action, feeling, and readiness for change against values that attribute to self-restraint, order, conformity, and tradition. The findings of Figure 23 (p. 144), in which individual values are negatively correlated with competing culture types for one's company, as stated in the CVF, show only minor differences to the theoretical argument (Cameron & Quinn, 2011).

Consequently, the assignment of the individual average values in the organizational culture framework clearly demonstrated the suitability of the OCAI as a survey instrument. As such, it is used again in the second research part of this thesis. At first glance, the results reflect the preferred culture LCAs from the previous chapter, indicating a preference for the assumed clan culture with self-transcendent values combined with committed and more adhocratic characteristics. However, this assumption did not consider the fact that the culture assessment involved different value-sets held by the participants. Here, a series of differential or role-differentiated studies should follow to identify psychological barriers in the cultural mindset. Next, the development of a categorical value system refers to the Schwartz classification of the 62 personal values to the existing CVF. It captures the value space of organizational members from diverse groups by highlighting specific participant observations and noting common themes about the meaning and reflection of values.

4.1.3.2 Formation of Categorical Value Development

The definition of values used here differs from sociological value concepts in the sense that an intrinsic value is not a social one but a phenomenon. It is not about what is socially desirable, but about what is personally considered decisive in organizational work routines. Values are distinguished by the similarities of individual attitudes (Illes & Vogell, 2018). This approach classifies the inner psychological disposition or cognitive tendency to represent social meaningful values. However, many value definitions contain similar value concept limitations relating to specific actions, objects, or situations. Schwartz (2012, p.3), by definition, ascribes values a perceptual and action-guiding function that is inextricable to affect actions interspersed with feelings. Combined with empirical analyses of value statements from previous research work (Ahl, 2020; Talwar, 2009; Thomson & Emmens, 2018), a large variety of value spaces emerged for this study from which organizational members could select. For this purpose, respondents ranked the five most important values for their daily preferred working routine. In this vein, the next paragraphs demonstrate the theoretically implicit and empirically explicit relation between values and cognitive styles.

Again, the 62 different personal values found in the text material analyzed the direction of psychological functions as cognitive styles. One rule states that values are individual, referring to one's person or the immediate environment. In this context, the socio-organizational characteristics were elaborated by counting the frequency of the mentioned values and calculating significant frequency differences. In light of Jung's (1971) Personality Traits Theory, it is necessary to mirror the differences in the organizational workforce's preference for mental capacities of attitudes, functions, and thinking styles. These attributes are valuable in seeing a match between the current and preferred organization culture requirements and individual personality characteristics related to introversion vs. extraversion and thinking vs. feeling with preferences for either sensing or intuiting. These cognitive style parameters offer a compelling base to explain individual characteristics as human value systems. In summary, the results show a wide range of values, which are presented in Table 13 below. The findings provide a thematic classification to Jung's (1971) research in analytic psychology and enable a first-time organization-specific order for value systems.

Table 13: Characteristics of the major personality types of Quantitative Study 1. [Source: own research]

Basic Values	***F***	**Weighted Response Rate among Value Groups 1 – 5** (*in %*)	**Psychological Typology** *Jung, (1971)*
Acceptance	1	1.0	Feeling
Appreciation	73	15.2	Feeling
Atmosphere	1	1.0	Extravert
Autonomy	7	1.8	Introvert
Cohesion	15	3.9	Extravert
Collaboration	18	4.7	Extravert
Commitment	3	1.0	Extravert
Communication	5	1.3	Extravert
Community	1	1.0	Extravert
Consciousness	2	1.0	Introvert
Constancy	1	1.0	Thinking
Cooperation	1	1.0	Feeling
Courage	1	1.0	Thinking
Creativity	5	1.7	Intuiting
Curiosity	3	1.6	Intuiting
Development	6	3.1	Intuiting
Efficiency	3	1.6	Sensing
Empathy	2	1.0	Feeling
Equality	2	1.0	Thinking
Fairness	5	2.6	Thinking
Family	1	1.0	Extravert
Feedback	2	1.0	Sensing
Flexibility	4	2.1	Feeling
Focus	3	1.6	Introvert
Freedom	4	1.0	Introvert
Goodness	3	1.0	Feeling
Honesty	16	3.3	Feeling
Humor	1	1.0	Feeling
Innovativeness	2	1.0	Intuiting
Integrity	1	1.0	Thinking
Interest	2	1.0	Intuiting
Joy	4	1.7	Extravert
Kindness	2	1.0	Feeling
Leadership	1	1.0	Extravert
Loyalty	11	2.9	Feeling
Management	1	1.0	Sensing
Motivation	7	1.8	Intuiting
Openness	27	5.6	Intuiting
Participation	3	1.6	Extravert

Basic Values	***F***	**Weighted Response Rate among Value Groups 1 – 5** (*in %*)	**Psychological Typology** *Jung, (1971)*
Performance	1	1.0	Thinking
Predictability	1	1.0	Intuiting
Proudness	1	1.0	Extravert
Punctuality	1	1.0	Sensing
Realization	1	1.0	Sensing
Regulation	1	1.0	Sensing
Reliability	11	3.8	Thinking
Remuneration	4	1.4	Thinking
Resiliency	1	1.0	Thinking
Respect	17	4.4	Feeling
Responsibility	24	5.0	Feeling
Satisfaction	1	1.0	Feeling
Security	6	1.6	Introvert
Self-Propulsion	1	1.0	Introvert
Success	2	1.0	Thinking
Support	6	2.1	Extravert
Team	12	3.1	Extravert
Thoroughness	1	1.0	Sensing
Tolerance	2	1.0	Thinking
Transparency	22	4.6	Sensing
Trust	82	17.1	Sensing
Vision	1	1.0	Intuiting
Work-Life-Balance	2	2.1	Feeling

A differentiated analysis of the frequencies as a function of the respondents' professional position revealed significant differences for some values. Using a PCP analysis, the number of coordinates was mapped onto the horizontal axis, while the vertical axis represented the rate. Both were then linearly interpolated. As a coding rule, intuitive values were superordinate to Jung's category of feeling, whereas the class of thinking clustered the sensing values. Across all psychological traits, each sensing or intuiting capability was related to either introversion or extraversion (Blutner & Hochnadel, 2010). In this vein, the extraversion vs. introversion preference set the direction of the dominant function. This rule provided an overarching control for characterizing the existing CVF culture types within Quantitative Study 1 and Jung's (1971) Theory of Psychological Types.

Figure 24 illustrates the PCP for the production industry, with the five most important values scattered for different organizational member groups, i.e., executives at the strategic level and employees at the operational level. Based on this analysis, executives from this group could be classified into the main market culture characteristics of extraverted (i.e., collaboration, openness) and thinking (i.e., trust, transparency) psychological modes. Through an outward and active focus, executives pursue a logical order by building structures in the organization and making decisions considering expressed values with sensory experiences. Hierarchical elements were, thus, found in this class as well. Predictability and goodness were other important values in this member group. Notably, employees from the production sector (the 'old' economy) emphasized clan culture traits of feeling (i.e., appreciation, responsibility) with an intra-company focus on openness, collaboration, and trust. They openly evaluate phenomena in the subjective world of their own and deeply felt values throughout an understanding of logical principles in the harmony of personal behavior. Integrity and motivation reinforce the effect of introversion.

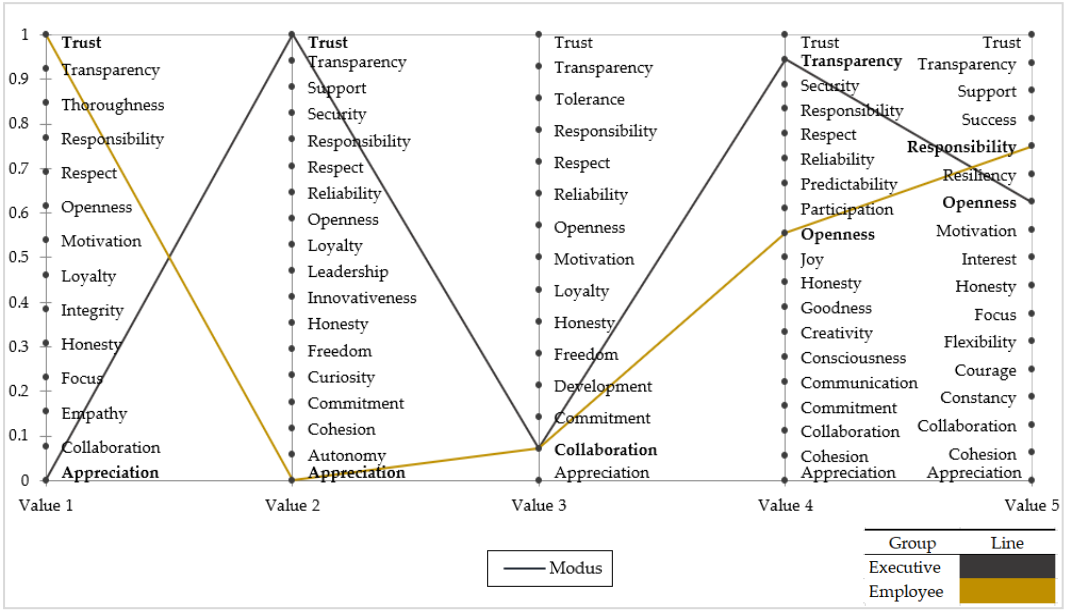


Figure 24: The Parallel Coordinates Plot for values of the production sector per job position.
[Source: own research]

These main psychological traits from both groups are closely related to the first analysis from Chapter 4.1.2.2 (see Figure 21, p. 139), emphasizing the need to enhance the preferred culture type, as market and clan culture characteristics do not bring the best alliance. As further evidence, the latest empirical work relating to corporate value statements presented an overarching value cluster of six elements from the automotive industry, which strongly corresponds to the results of this Quantitative Study 1 (Ahl, 2020). Against this background, organizational members identified well with the values of (1) Trust, (2) Responsibility, (3) Openness, and (4) Appreciation.

Many more differences in psychological value traits could be deduced from the group analysis within the service and IT sector, or the 'new' economy. For a better comparison of the most important values for the two organizational member groups under consideration, Figure 25 illustrates the PCP for the service and IT branch of the industry.

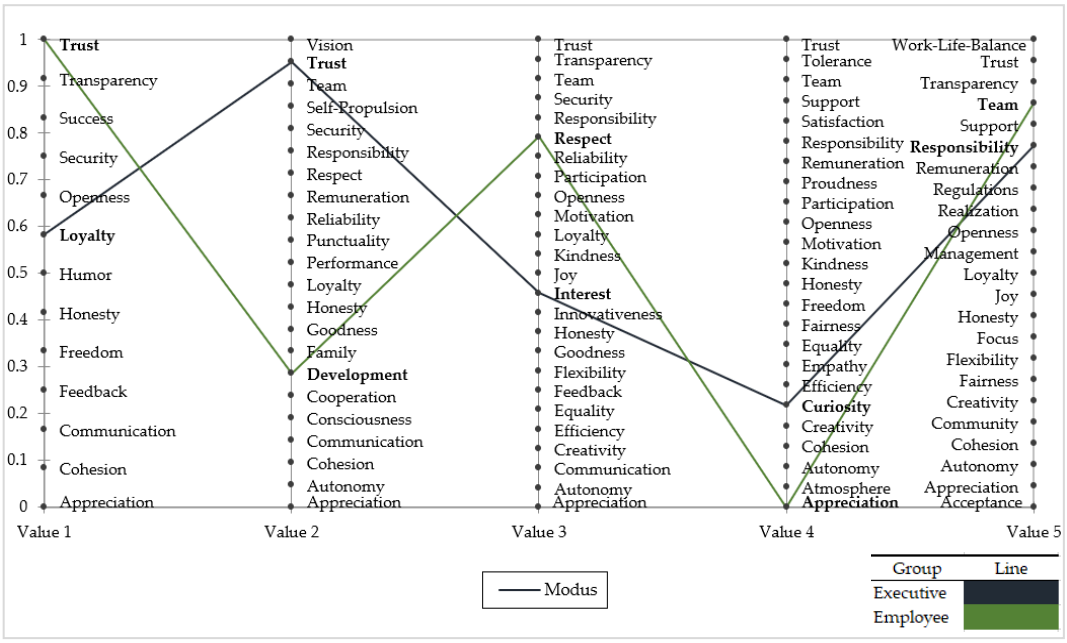


Figure 25: The Parallel Coordinates Plot for values of the service and IT sector per job position.
[Source: own research]

Here, the general attitude of executives and employee's behavior can be classified as extraversion. The more open but thoughtful experimental focus of executives could be attributed to the adhocracy culture. This group exhibited extraverted behavior (e.g., loyalty, responsibility) with strong intuitive attitudes (e.g., interest, curiosity). Organizational executive members seek new patterns in the objective world in harmony with others by aligning themselves with resilient values of trust. Employees, in contrast, showed an active focus on extraversion (i.e., team, development) with characteristics of feeling (i.e., respect, appreciation). Therefore, clan culture traits were prevalent in this member group. The developmental value trait attempts to bring order to the objective world through sensory experiences and trustful values reinforced by cohesion and honesty. Compared to the first analysis from Chapter 4.1.2.2 (see Figure 22, p. 141), a similarity between preferred culture type and individual psychological traits emerged in the workforce. Individuals, but also teams and entire organizations, possess several value systems. These different value systems have led not only to distinct capabilities but also to daily work routines and the sharing of knowledge among teams and individuals (Wiewiora, Trigunarsyah, Murphy, & Coffey, 2013).

Both analyses also revealed common values of the Deming Prize excellence model from Japan by eliminating numerical quota, goals, and targets for workers. Nevertheless, many other business excellence models from organizations in this case (e.g., MBNQA (U.S.), EFQM (Europe)) have focused on results and value creation, thus resulting in imbalances of power (Talwar, 2009). In practice, it seems that role perceptions have shifted within the new economy (the service and IT sector), especially between executives and employees. In the old economy of the production industry, a more solid understanding of leadership behavior has emerged. For employees, these circumstances may not represent the best conditions to thrive in the workplace. Arguably, the organizational culture of organizations should possess several core values through which leaders can encourage and stimulate these characteristic traits. Studies have shown that core value statements become more effective when they emanate from personal values with individual purpose and role perception, leading to exponential growth in business and prosperity for the entire organization (Talwar, 2009). Therefore, it was essential to find out which value systems are part of the cultural development of the organization. In the next paragraphs, analyses were conducted on how to build

the organizational environment that promotes the place of employees' natural needs with the fulfillment of overall strategic targets.

4.1.3.3 Cross-Validation of Cultural Assessment using the OCAI Tool

The preceding analyses revealed the value of using the OCAI with its competing dimensions by Cameron and Quinn (1999; 2011) as a diagnostic tool for understanding and developing organizational culture. In this regard, the dimensions of Schwartz's (2012) basic human values circle did not correlate orthogonally with the axes of the CVF. This phenomenon indicates biopsychological dynamics in cultural development. Thus, the OCAI is suitable for making cultures measurable and classifying them in an organizational value system. Concerning the results of the LCA and PCP, the identified value systems show ways of thinking, beliefs, inner mindsets as well as underlying organizational principles. It was, therefore, crucial to determine how to continue cultural development that directly relates to the organic value systems of the workforce.

In this case, employees' perceptions or beliefs about their level of empowerment provided an overriding conceptualization. The perceived culture of empowerment yielded a comprehensive motivational process at the individual level that included the four cognitions of meaning, competence, self-determination, and impact by Spreitzer (1995). The results of this study indicate an absence of the impact dimension, which refers to the personal belief of influencing organizational outcomes. This sense of purpose was accentuated by individual goal orientation and role perception, implying facilitative situations in the form of fundamental psychological empowerment.

In evaluating the application of the CVF, further study should include a construct of motivational traits that focuses on the competing values of the head-and-heart dimension, as proposed by recent empirical research (Grabowski et al., 2014). Motivation is expected to determine the extent to which employees engage in ambidextrous behavior, thus directly affecting their attitudes and behaviors. In the context of this study, this attribute acts as a transmitter between different culture types and job-related attitudes of organizational members. Consequently, there was a clear need to assess the role of psychological empowerment through workforce agility moderated by organic contexts and environmental uncertainty.

Scales of workforce agility provide invaluable support, and thus, were used for the subsequent measurement procedure. Uncertainty in the work environment addresses the influence of how existing processes and structures of decision-making support or reduce employee engagement. In their responses to environmental changes, the four organizational culture types may differ while also leaving gaps of cognition and perception in the workforce. To this end, Quantitative Study 2 further developed these adaptive functions with a greater managerial focus on workforce agility outcomes.

4.2 QUANTITATIVE STUDY 2

In further pursuing the ultimate objective of this research project, Quantitative Study 2 assessed the impact of different corporate culture typologies on the behavioral determinants of workforce agility. To this end, the following process was initiated: After adjusting the data set, the results of the survey are depicted through path modeling and then described and interpreted. In that regard, the proposed PLS-SEM research methodology in Chapter 3.2.2.3 analyzes the empirical data. Additionally, a detailed comparison exhibits the multi-group differences through the results of the Mann-Whitney U-test in the last section. The complete research process answers and discusses hypotheses H_1 to H_8. This sequence aims at recording the assessment of what transpired as a result of dimensionality from the conceptual framework.

4.2.1 Characteristics of Study Participants and Data Selection

The sample used in this Quantitative Study 2 was composed of different data collection techniques, i.e., direct contacts, professional networks, and MTurks via AMT. All returns were treated equally after three months of data collection. A total of 1,250 full-time and part-time employees participated directly via the study link. Of the targeted group anticipated in Chapter 3.2.2.2, 941 participants completed the survey questions, for an average response rate of 11.3%. After recording the data, all questionnaires were visually inspected for missing or non-useable, haphazard answers. The investigation of extreme values in the data set was done by shedding light on the two-attention check question in the last part of the survey. The first

step eliminated four extraordinary observations, where respondents gave the same answer for all variables. In combination with this procedure, 82 cases were removed from the sample because respondents did not pass the quality check questions.

In addition, the calculation of variance-based SEM methods, especially when running PLS-SEM, requires distinct research quality criteria of the data used for this analysis. First and foremost, the investigation of missing values and extreme values was performed at the level of single cases. As a rule of thumb, observations with a total of more than 15% of missing values across all indicators should be eliminated from the data set (Hair et al., 2017). Some studies have recommended that the researcher's logical reasoning should be based on both empirical and theoretical considerations of the research topic, as too many cases could lead to distortions. In this vein, the examination of missing values took place at the single construct level. Hair, Black, Babin, & Anderson (2018) recommend the deletion of cases and variables with missing values greater than 50%. The underlying reason for this approach is the strategic consideration that constructs with a small number of items, where four items to measure a construct are equivalent to the smallest number of items in the present model, will lead to a single-item measurement by eliminating variables. However, this fact is explicitly not represented by multivariate scales. In the present Quantitative Study 2, 34 observations were found with more than 50% missing values per construct. According to this rule of thumb, the number of valid questionnaires decreased from 855 to 821 cases, which thus remained for further analysis.

As suggested by Hair et al. (2017; 2018), outlier values from ordinary data must be recognized in terms of their source of uniqueness. Omitting statistical outliers is an extensive issue when examining data, as statistical inferential tests may be sensitive to them. Deleting outliers risks improving the multivariate analysis but limits its generalizability to indicative characteristics of the entire population. The Mahalanobis *D2* measure addresses this issue for each case by multivariate assessment divided by the number of variables involved (*df*). To identify outliers when a sample size exceeds 80, a standardized threshold score calculated from D^2/df is displayed up to four as a possible outlier. Based on this procedure, data were converted by the standard score, which has a mean of 0 and

a standard deviation of 1, to allow comparisons across variables. As a result of the diagnostic tests, no observations had the characteristics of outliers that should be considered unrepresentative of the population.

In determining the extent of complete case removal, the next step was to ascertain the imputation of missing values at single indicators. Consequently, in this survey, all indicators with missing values below the 5% threshold were used for further analysis. Some researchers have found that when the number of missing values in the data set per indicator is relatively small (i.e., < 5%), the 'Mean Value Replacement' prevails over case deletion (Hair et al., 2017). For 52 observations, missing values, representing .80% of all measures used in the subsequent analyses, were replaced with the mean value across all available values of the respective indicator. This step was realized in the statistical software program prior to the main analysis using the PLS algorithm 'Missing Values – Settings.' Thus, the 'Mean Value Replacement' reduced the variability of the total sample. The preferred multiple-member clustering combination of the 'Mean Value Replacement' in this study built on the relevant subsample and the 'Nearest-Neighbor Method,' which defines the similarity between items from the same construct as the shortest distance (Hair et al., 2017; 2018).

Finally, non-response bias was one of the challenges in generalizing the results of the study. In statistical surveys, non-response bias can be attributed to unusable answers in terms of demographic or attitudinal variables, thus influencing validity in the evaluation of the questionnaire. In general, the first 75% of the sample are identified as early-responders, while taking 25% of them as late respondents surrogate for non-respondents (Weiss & Heide, 1993). Using independent samples *t*-test ($t < .05$) and Chi-squared tests X^2, i.e., using Levene's test for homogeneity of variances ($p > .05$), there were no significant differences between early and late respondents to the survey questionnaire.

Table 14 (p. 156) provides the descriptive statistics of valid cases and percentages for the respondent characteristics. Participant characteristics show a total of 821 employees with a diverse industry background, including automotive, chemical and industrial products, telecommunication, management and IT consulting, retail, and non-profit organizations. Survey respondents were primarily based in Germany (77.7%), with the two main geographic locations

equally split between 7.9% (U.S.) and 4.5% (UK). 20.6% of all respondents decided to complete the survey questionnaire in English.

Table 14: Final sample composition of Quantitative Study 2. [Source: own research data]

Control Variable	Items per Type	Proportion (in %)
Industry Type	**Production Sector** *(e.g. Automotive industry, Chemical, Pharmaceutical and Life Science, Energy and Water)*	383 (46.7)
	Trade, Service, and IT Communication Sector *(e.g. Tourism, Commerce, Consulting, Accounting, Banking, Insurance, Transport and Logistics, Public authorities, Fairs and Events)*	438 (53.3)
Firm Location (Geographical Affiliation)	Country: Germany	638 (77.7)
	Country: U.S.	65 (7.9)
	Country: UK	37 (4.5)
	Other: Austria, Switzerland, Denmark, Spain, India	81 (9.9)
Firm Size (Number of Employees)	0 – 49 employees	86 (10.5)
	50 – 249 employees	110 (13.4)
	≥ 250 employees	625 (76.1)
Firm Age (Years of Establishment)	< 5 years	61 (7.4)
	5 – 49 years	267 (32.5)
	≥ 50 years	493 (60.1)
Job Tenure (Working Experience in the current organization)	< 1 year	180 (21.9)
	1 – 10 years	504 (61.4)
	> 10 years	137 (16.7)
Job Position	**Executive** (disciplinary and/or professional level)	170 (20.7)
	Employee (expert level)	651 (79.3)

To simplify the panel, the size of the firm was differentiated into small, medium, and large-sized levels regarding broad firm age groups. Again, the mixture was satisfactory, as participating companies ranged from as little as < 249 employees (23.9%) to as many as ≥ 250 employees (76.1%). In terms of firm age groups, the share of employment in young and large firms, i.e., those less than five years old and with more than 250 employees, was low (1.6%). In comparison, more than half of the participants (56.9%) were employed in older firms (≥ 50 years), having more than 250 people. Moreover, respondents have been contracted at their current companies for varying lengths of time. For example, most participants reported having between one and ten years of job tenure at their current organization (61.4%). The breakdown of the respondents' job positions was as follows: 20.7% were executives at the senior or middle manager level, while the remaining 79.3% of the respondents held job positions at the expert level.

4.2.2 Conceptualization of Variables

Following the literature review, the conceptual framework of this research was presented in Chapter 2.6 (see Figure 8, p. 70). The properties of the observable constructs indicated to measure them as composites using PLS path modeling, applying the two-stage approach (Becker, Ringle & Sarstedt, 2018). The estimation method for all the culture variables used Mode B (formative variables with regression weights) because no correlated items were presumed. Given the CVF instrument used, all culture variables were summarized as first-order formative constructs, which are common in economics and sociology.

Because it is difficult to measure the construct of WA directly, it emerges in the research model as a higher-order construct with three reflective sub-constructs. In this way, Mode A (reflective variables with correlation weights that dominate in psychological and management sciences) was chosen for the endogenous WA variable for both the single dimension and the second-order latent construct of Type I (Hair et al., 2017). Annex 5 (p. 245) shows the construct definition with codes and definitions used for the PLS data analysis. It should be noted that the influence of the moderator variable WEU on the respective construct WA was operationalized in the most versatile two-stage procedure, which is also supported by the SmartPLS software application. With regard to previous analyses of this

scope, the two-stage approach of the Latent Variable Score (LVS) outperformed all the other methods in terms of parameter recovery and should generally be preferred (Becker et al., 2018). The moderator variable was explained by its indicators rather than causing them. It was modeled in the formative mode by reflective measurement of each item. Therefore, Figure 26 represents the PLS path diagram supported by SmartPLS version 3.3.2, including the outer and inner measurement models designed, analyzed, and reported using the software package. The path diagram depicts a solid basis for further statistical analyses to evaluate the psychometric properties of the measurement scales and to examine indicator reliability.

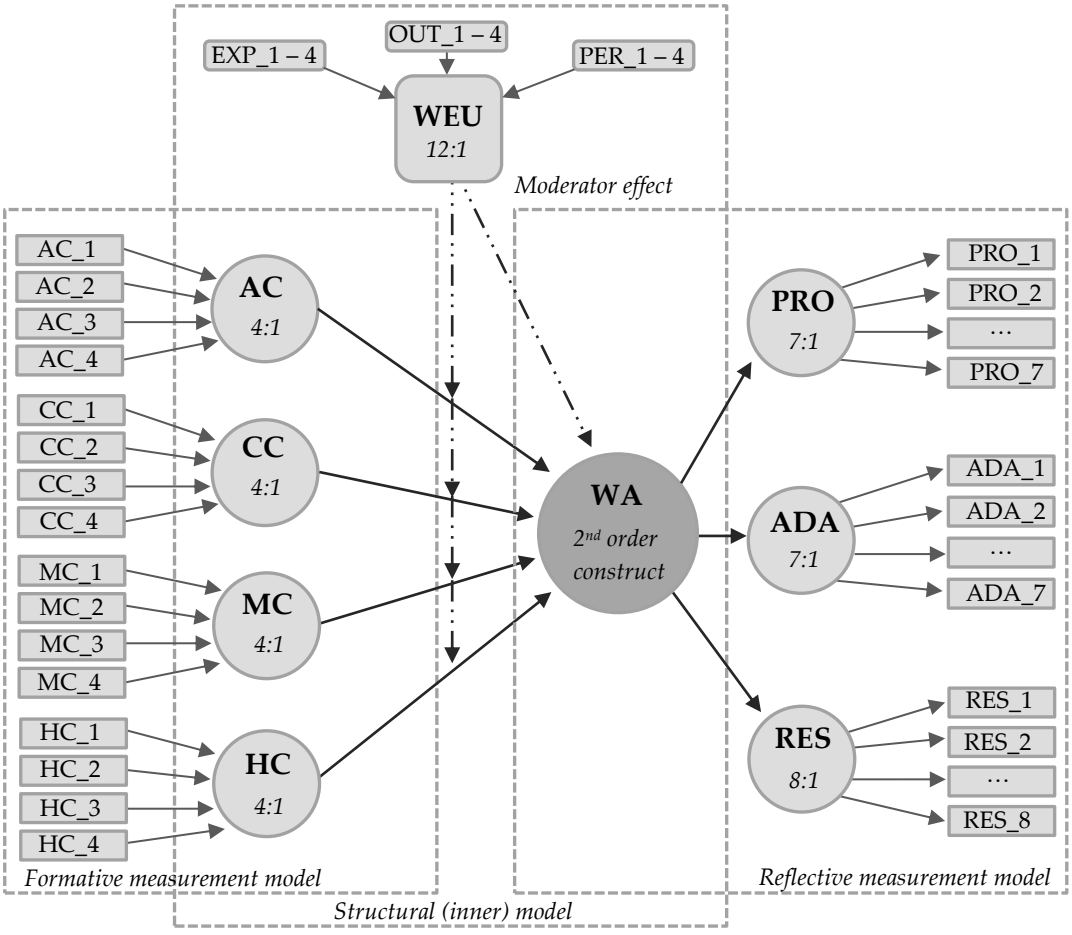


Figure 26: The path diagram of PLS-SEM investigation.
[Source: own version]

4.2.3 PLS-SEM Results and Presentation of Findings

In two distinct stages, each type of construct was tested to corroborate the measurement model in Figure 26 (p. 158); (1) the outer models with relationships between the manifest indicators as well as the latent variables, and (2) the inner model with relationships between the latent variables. To evaluate the results of the estimated path coefficients between different industry types, the MGA-PLS was conducted in a third step. This sequence ensured that measurement scales were valid, reliable, and potentially predictive of how well the theory fit the data.

Table 15 provides an overview of the technical specifications used to estimate both models using different PLS calculation settings. All default settings were applied, with the value entered under 'Cases' being the number of valid observations.

Table 15: Selected parameter settings of the analysis software SmartPLS 3.3.2. [Source: own version]

PLS Algorithm	
Weighting	Path Weighting Scheme
Data Metric	Mean 0, Var 1
Maximum Iterations	300
Abort Criterion	$1x10^{-7}$
Initial Weights	1.0
Missing Value Algorithm	Mean Replacement
Bootstrapping	
Sign Changes	No Sign Changes
Cases	821
Samples	5,000
Amount of Results	Complete Bootstrapping
Blindfolding	
Omission Distance	7

The 'Path Weighting Scheme' chosen for the PLS algorithm respects the direction of the hypotheses and provides the overall best parameter recovery for higher-order constructs (Becker, Klein, & Wetzels, 2012; Sarstedt, Hair, Cheah, Becker, & Ringle, 2019). Ensuring the measurement model's goodness-of-fit criteria discussed in Chapter 3.2.2.4, the PLS algorithm computed the CR, AVE, the Fornell-Larcker criterion, and the HTMT applicable to the multi-dimensional constructs in Mode A. The assessed composites used Mode B at the construct (discriminant validity) and absolute indicator level (i.e., indicator's weights and their significances). In order to detect potential Common Method Bias (CMB) in the latent variables, a full collinearity test based on VIFs was undertaken (N. Kock, 2015).

When estimating the significance of path coefficients and testing the hypotheses of the structural model, SmartPLS performed a bootstrapping method using 5,000 subsamples. The non-parametric bootstrapping-method describes the strength and significance of the estimated path coefficients of the structural model. Infinite large sample sizes would theoretically lead to the most consistent *t*-value. In that regard, the recommended number of bootstrap samples is 5,000 and should contain at least the number of observations in the data set (Hair et al., 2017; 2018).

Furthermore, the Standardized Root Mean Square Residual (SRMR), the variance explained by the Coefficient of Determination (R^2), and the Effect Size (f^2) expressed the framework model-of-fit. As a final quality criterion, the 'Stone–Geisser–Criterion' was used in the present empirical study to check the Cross-validated Redundancy Index (Q^2) or predictive relevance of the PLS path model. The use of blindfolding in PLS is necessary to search for the redundancy values of the constructs by gradually suppressing a part of the data matrix while reconstructing the data with the re-estimated parameters (Hair et al., 2017). When running the blindfolding procedure, the suggested values of the omission distance range between 5 and 12. For the studies' case, it was seven, so the number of observations in the data set divided by the omission distance was not an integer.

4.2.3.1 Measurement Model Evaluation

In the first stage, the measurement models of the formative constructs (all cultural variables) in Mode B and the reflective constructs (WA and WEU variable) in Mode A were evaluated in terms of reliability and validity. As discussed in the previous section, the validation of formative measurement models requires a different approach, with validity testing becoming critical at the indicator and construct levels. First and foremost, nomological validity was approved based on a set of hypotheses from prior literature that were found to be strong and significant for the respective cultural variables (Urbach & Ahlemann, 2010). With this in mind, the study examined the statistical significance and the relevance between the indicator weights to the respective composite latent construct. Table 16 shows the results of the formative measurement model evaluation.

Table 16: Evaluation of the formative measurement model. [Source: own research data]

Construct	**Indicator**	**Relative Ind. Contribution**			**Sign. of Weight**	**Absolute Ind. Contribution**	**Multi-collinearity**
		Outer Weight	Mean	Std Dev	*t*-value	Path Loading	VIF
Adhocracy Culture **AC**	AC_1	.632	.622	.152	4.162***	.926***	2.033
	AC_2	.447	.431	.159	2.815**	.851***	1.758
	AC_3	-.099	-.093	.184	.540^{ns}	.627***	2.116
	AC_4	.192	.186	.147	1.306*	.499***	1.481
Clan Culture **CC**	CC_1	.422	.417	.118	3.581***	.799***	1.413
	CC_2	.357	.349	.124	2.872**	.781***	1.749
	CC_3	.439	.435	.130	3.377***	.845***	1.683
	CC_4	.020	.019	.125	.161^{ns}	.640***	1.738
Market Culture **MC**	MC_1	.221	.214	.187	1.182^{ns}	.735***	1.792
	MC_2	-.260	-.254	.157	1.650**	.347**	1.418
	MC_3	.726	.703	.179	4.065***	.920***	2.175
	MC_4	.363	.354	.169	2.146**	.714***	1.393
Hierarchy Culture **HC**	HC_1	-.518	-.500	.165	3.137***	.073^{ns}	1.491
	HC_2	.390	.369	.175	2.229**	.471***	1.276
	HC_3	.379	.374	.174	2.173**	.539***	1.616
	HC_4	.794	.767	.112	7.060***	.818***	1.159

Note: ns = non-significant; *p < .10, **p < .05, ***p < .001 (1-tailed test).

A value of .10 or ideally above .20 is recommended for the path coefficients (Chin, 1998; Lohmöller, 1989). The weights of most indicators demonstrated an acceptable level of validity, with a significance level of at least .10. Certain items showed non-significant loadings. However, removing formative indicators from the measurement model should be treated with caution, as it may have adverse

consequences for the validity and meaning of the construct as a whole (Urbach & Ahlemann, 2010). Consequently, all formative indicators were decided to be kept in the model.

Next, a reliability assessment confirmed the statistical relevance of the overall organizational culture constructs for the subsequent analyses. The analysis of the individual culture variable, consisting of the four-factor constructs AC, CC, MC, and HC, yielded above-average scores (α = .826) compared to previous studies and achieved 98.8% of the explained variance. In addition, a full collinearity test was performed to detect a possible CMB situation. VIFs greater than five in general or greater than the threshold of 3.3 warn that a model may be contaminated by CMB. The formative measurement model strictly satisfied the requirements of multicollinearity with a maximum VIF of 2.175 (MC_3). Thus, it is free of pathological collinearity.

Furthermore, an evaluation of the reflective indicators of the first-order constructs of WA in Mode A was required. Table 17 (p. 163) includes measures of indicator reliability, internal consistency reliability, and convergent validity. Except for the removed four items (RES_6; RES_7; PRO_6; PRO_7), the model was re-estimated. The reliability of the individual items, as assessed by the single factor loadings, was mostly acceptable, with minimum values between .60 and .70 suggested in exploratory research.

In order to improve the quality of the measurement model, the deletion of the items could be justified from a conceptual point of view. The WA scales apply to different contexts, and thus, provide insufficient dispersion for a higher loading on the respective construct for that specific context. This procedure raised the convergent validity (AVE) of the first-order construct above the acceptable minimum value between .36 to .50 (Hair et al., 2017), which was accompanied by slight changes in the loadings. Specifically, for the second-order constructs, the convergent validity of the construct is still adequate when AVE is less than .50, but CR is greater than .60 (Fornell & Larcker, 1981). For the internal consistency reliability, Cronbach's α values greater than .70 are required, whereas CR values of .60 to .70 are satisfactory. All selected reflective indicators satisfied this criterion, and thus, represent good convergent validity.

Table 17: Evaluation of the reflective measurement model. [Source: own research data]

Construct	Indicator	Indicator Reliability		Internal Consistency Reliability		Convergent Validity
		Loading	*t*-value	Cronbach's α	CR	AVE
WA				**.849**	**.876**	**.293**
Resilience RES	RES_1	.427	8.500***	.683	.787	.403
	RES_2	.383	8.288***			
	RES_3	.728	33.549***			
	RES_4	.828	47.779***			
	RES_5	.440	9.069***			
	RES_8	.826	61.308***			
Proactivity PRO	PRO_1	.486	11.235***	.747	.832	.505
	PRO_2	.651	21.751***			
	PRO_3	.832	66.775***			
	PRO_4	.781	39.772***			
	PRO_5	.752	33.832***			
Adaptability ADA	ADA_1	.624	22.627***	.765	.833	.418
	ADA_2	.686	26.615***			
	ADA_3	.692	27.345***			
	ADA_4	.624	19.587***			
	ADA_5	.705	32.028***			
	ADA_6	.523	14.817***			
	ADA_7	.651	22.653***			
WEU				**.777**	**.821**	**.320**
Expressed EXP	EXP_1	.881	85.802***	.904	.933	.776
	EXP_2	.902	118.442***			
	EXP_3	.862	73.852***			
	EXP_4	.879	89.605***			
Outcome OUT	OUT_1	.887	52.969***	.732	.804	.543
	OUT_2	.916	68.792***			
	OUT_3	.699	10.229***			
	OUT_4	.234	2.111**			
Perceptual PER	PER_1	.774	34.636***	.816	.879	.645
	PER_2	.820	51.686***			
	PER_3	.867	84.329***			
	PER_4	.745	31.167***			

Note: ns = non-significant; *p < .10, **p < .05, ***p < .001 (1-tailed test).

Finally, discriminant validity was evaluated by their cross-loadings following both the Fornell-Larcker criterion and the HTMT approach. The results indicate high support for discriminant validity for the lower-order components. As such, the square roots of the AVEs for the latent variables were higher than the correlations between them, including HTMT values, which were significantly less than one. However, discriminant validity for the higher-order construct of WA and the moderator variable of WEU were not considered in this case because they represent interchangeable, reflective measures of the same construct (Sarstedt et al.,

2019). Urbach and Ahlemann (2010) propose to assess inter-construct correlations also for formative constructs through discriminant validity using the Fornell-Larcker criterion. This procedure shows qualifying values of less than .70 (see Table 18).

Table 18: Discriminant validity analysis (Fornell-Larcker vs. HTMT criterion). [Source: own research data]

Latent Variable	**ADA**	**AC**	**CC**	**EXP**	**HC**	**MC**	**OUT**	**PER**	**PRO**	**RES**	**WEU**	**WA**
Fornell-Larcker criterion												
ADA	**.646***											
AC	.206	n.a.										
CC	.276	.593	n.a.									
EXP	.107	.253	.393	**.881***								
HC	.240	.155	.247	.097	n.a.							
MC	.220	.504	.295	.056	.238	n.a.						
OUT	-.024	.185	.153	.276	-.162	-.039	**.737***					
PER	.222	.558	.423	.268	.196	.438	.015	**.803***				
PRO	.514	.290	.357	.190	.157	.194	.041	.222	**.711***			
RES	.501	.207	.248	.248	.178	.182	.097	.211	.502	**.635***		
WEU	.170	.467	.500	.888	.123	.227	.409	.638	.243	.291	**.565***	
WA	.843	.285	.359	.216	.237	.245	.042	.267	.815	.796	.282	**.541***
Heterotrait-Monotrait Ratio												
ADA												
EXP	.130											
OUT	.124			.329								
PER	.280			.308			.137					
PRO	.666			.239			.154	.275				
RES	.652			.375			.274	.278	.678			
WEU	.259			.903			.827	.820	.331	.459		
WA	1.044			.272			.205	.318	.999	1.039	.391	

Note: *The square root of AVE; n.a. formative indicators' AVE value not available.

4.2.3.2 Structural Model Evaluation

The second part of the PLS-SEM analysis assessed the structural model using 5,000 bootstrap-resamples. This procedure estimates the magnitude and statistical significance of the structural path coefficients, the f^2 (magnitude of the experimental effect), the Q^2 (predictive relevance), the R^2 values (variance explained), and the SRMR as approximate model fit. Firstly, each set of predictors was examined for possible collinearity. Because all inner VIF values were below the threshold of five, collinearity among the endogenous variables was not a critical issue. Therefore, the subsequent analyses were performed. Table 19 presents the results for the structural model evaluation.

Table 19: Structural model evaluation and key criteria. [Source: own research data]

Path	Path Coefficient			The Sign. of Path Coefficient	Coefficient of Determination		Cross-Validated Redundancy
	β	Mean	Std Dev.	t-value	R^2	f^2	Q^2
AC→WA	.023	.033	.047	.501^{ns}		.000^{ns}	
CC→WA	.219	.221	.042	5.196***	.178	.033**	.054
MC→WA	.108	.115	.043	2.511**	(.988)	.010^{ns}	
HC→WA	.139	.145	.036	3.894***		.021**	
WA→PRO	.815	.815	.016	50.359***	.664	1.976***	.331
WA→ADA	.843	.844	.013	65.828***	.711	2.460***	.291
WA→RES	.796	.797	.016	49.087***	.634	1.734***	.249
EXP→WEU	.712	.711	.025	28.242***		12317.807**	
OUT→WEU	.206	.206	.039	5.273***	1.000	1112.276^{ns}	.316
PER→WEU	.444	.441	.031	14.299***		5185.450**	
WEU→WA	.120	.116	.041	2.918**	.178	.012*	.054

Note: ns = non-significant; *p < .10, **p < .05, ***p < .001 (1-tailed test).

As a rule of thumb, the higher the β-coefficient, the stronger the effect of an exogenous latent construct on the endogenous latent construct (Hair et al., 2012). As Table 19 shows, three out of four path coefficients from the culture typologies were significant with t-values larger than 1.65 (p < .05; 1-tailed test). The CC variable had the highest value of variance and a strong effect toward WA (β = .219; p < .001) compared to other β-values in the model. In contrast, the MC variable had the smallest effect on WA with β = .108 (p < .05). Hence, the non-significant influence of the AC variable related to WA endorsed the existence of external moderating factors. All the remaining path coefficients were highly significant (p < .001).

According to Henseler et al. (2009) and Hair et al. (2017), R^2 results for the endogenous constructs are classified as substantial (≥ .75), moderate (≥ .50), and weak (≥ .25). Depending on model complexity and research discipline, especially for cross-sectional designs in the area of social science with exploratory research, acceptable minimum values of .10 to .30 are common for real-world data. This is due to the incomplete interpretability of human behavior. Given the nature of this study, the R^2 values of all organizational culture types estimated 17.8% of the variance of the WA construct. In this sense, the WA construct's influence on the threefold structure of psychological empowerment increased to an average variance resolution of 66.96%. The R^2 values of the four culture typologies measured as single constructs as well as the WEU construct were close to one, as they represent higher-order constructs, and conversely, could be neglected.

Furthermore, the f^2 value measures the extent of a latent exogenous construct on a given endogenous construct regarding R^2, referring to ≥ .02 (weak), ≥ .15 (moderate), and ≥ .35 (strong) classification (Chin et al., 2003; J. Cohen, 1988; 1992). As the results show, the f^2 values of the exogenous culture constructs for CC and HC participated in the dependent variable with a weak effect on R^2 (.178). MC, AC, and OUT had negligible and non-significant f^2 effects on WA and WEU, respectively (see Table 19, p. 165), thus contributed relatively low to the R^2 value.

Finally, the blindfolding technique was used to analyze the quality and predictive relevance of the PLS path model. The results support the conclusion that the proposed conceptual model has satisfactory predictive validity for this exploratory study, as Q^2 was greater than zero for all endogenous latent constructs (see Table 19, p. 165), which fits the criteria described by Stone and Geisser (Chin, 1998). More precisely, WA exhibited .054 and WEU .316 as Q^2 values, confirming the satisfactory predictive relevance of the endogenous constructs.

Thus, the goodness-of-fit index for this study model yielded a value of .295, which was calculated from the geometric mean of the average communality (all AVE values in the model) and the average R^2 value of WA. The values obtained, ranging from .10 (small), .25 (medium), and .36 (large), show that the model adequately explains the empirical data and thus, indicate the global validation and substantial predictive power of this path model. Furthermore, to mimic covariance-based SEM that avoids model misspecification, the SRMR was calculated as an absolute measure of the model fit criterion by the difference between the observed and hypothesized covariance matrices (Henseler et al., 2015). Based on the usual SRMR cutoff-point at < .10, a good fit for the composite factor model was achieved through a confirmatory analysis. Using the consistent PLS algorithm, the study's model SRMR excluding the moderating variable was measured about .108, which relates to an adequate adjustment in the threshold limit.

4.2.3.3 Assessment of the Moderating Work Environment Uncertainty Effect

After examining the relationships in the structural model, this study used the procedure of Henseler and Fassott (2010) to apply the two-stage approach for the investigation of the moderator variable. The additional construct included can influence the strength or even the direction of the relationship between the

constructs in the path model. It, thus, had to be reevaluated in terms of measurement properties by running the PLS-SEM algorithm. H_8 states the positive moderating effect of WEU on the path between different organizational culture types (AC, HC, MC, CC) and WA. As part of Stage 1, all factors created LVSs in the model. As in the multiple regression analysis, the LVS of the predictor (different culture types) and the moderator variable (WEU) were multiplied as an element-wise product to obtain the interaction term as the independent variable. The moderation is significant if the interaction path to the exogeneous variable is significant in the Stage 2-run.

First and foremost, the evaluation of the moderator's measurement model supported the reliability and validity of the construct. By initiating the bootstrapping procedure reiteratively, the next step was to test the interaction term for significance. According to Table 20, the 95% bias-corrected bootstrap confidence intervals for three of the four interaction terms contain non-zero values, indicating that the path coefficients for these moderating effects were significant (at least $p <$ .05).

Table 20: Assessment of the moderation effect in the structural model. [Source: own research data]

Hypothesis/ Relationships	**Path Coefficient** (*t*-value)	**Confidence Intervals (Bias Corrected)**	**Coefficient of Determination**	
			R^2 (R^2excl.)	f^2
AC x WEU→WA	.117*** (3.291)	(.062; .176)	.196 (.178)	.022**
CC x WEU→WA	.084** (2.324)	(.027; .145)	.187 (.178)	.011^{ns}
MC x WEU→WA	.068** (1.765)	(.009; .133)	.184 (.178)	.007^{ns}
HC x WEU→WA	.026^{ns} (.730)	(-.030; .089)	.179 (.178)	.001^{ns}

Note: ns = non-significant; *p < .10, **p < .05, ***p < .001 (1-tailed test).

Based on those achievements, the R^2 value for each interaction model was compared to the R^2 value for the baseline model (R^2 excl.), indicating f^2 values for the total interaction effect. The f^2 value of the interaction term had the highest amount of .022 for the AC x WEU → WA relationship. This finding indicates a weak but significant moderating effect (Chin et al., 2003). The other relationships revealed non-significant f^2 values, and thus, were neglected in the subsequent analysis. To determine the direction of moderation, Figure 27 (p. 168) depicts the final adjusted model. It includes the weight and load of each formative and

reflective indicator, as well as the variance of the dependent constructs explained by the predicting and significant moderating variable AC x WEU.

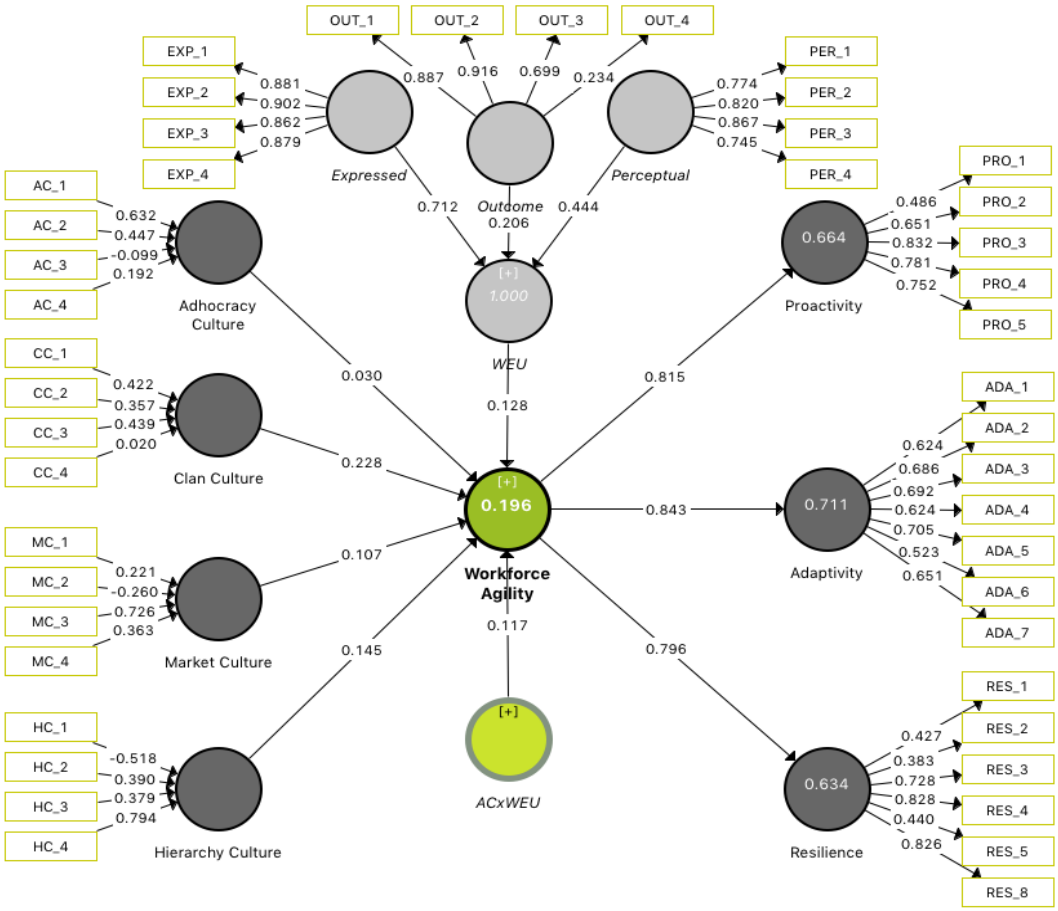


Figure 27: Testing results of the final research model.
[Source: own research data]

The moderating effect size revealed a significant ordinal two-way interaction effect of AC on WA (β = .117; p < .001). The relationship between AC and WA was statistically different according to its rise, with the simple effect of AC being β = .030. Jointly, these results are visualized in Figure 28 (p. 169) by the simple slope plot to provide a better understanding of moderation. The upper green line, indicating a high level of the moderator construct WEU, reinforces the relationship between AC and WA through the magnitude of the interaction term (i.e., .030 + .117 = .147), which has a positive slope. With respect to the lower line in red, which

represents the lower level of the moderator construct WEU (e.g., WEU decreased by one standard deviation point), the relationship between AC and WA becomes negative (i.e., .030 – .117 = -.087).

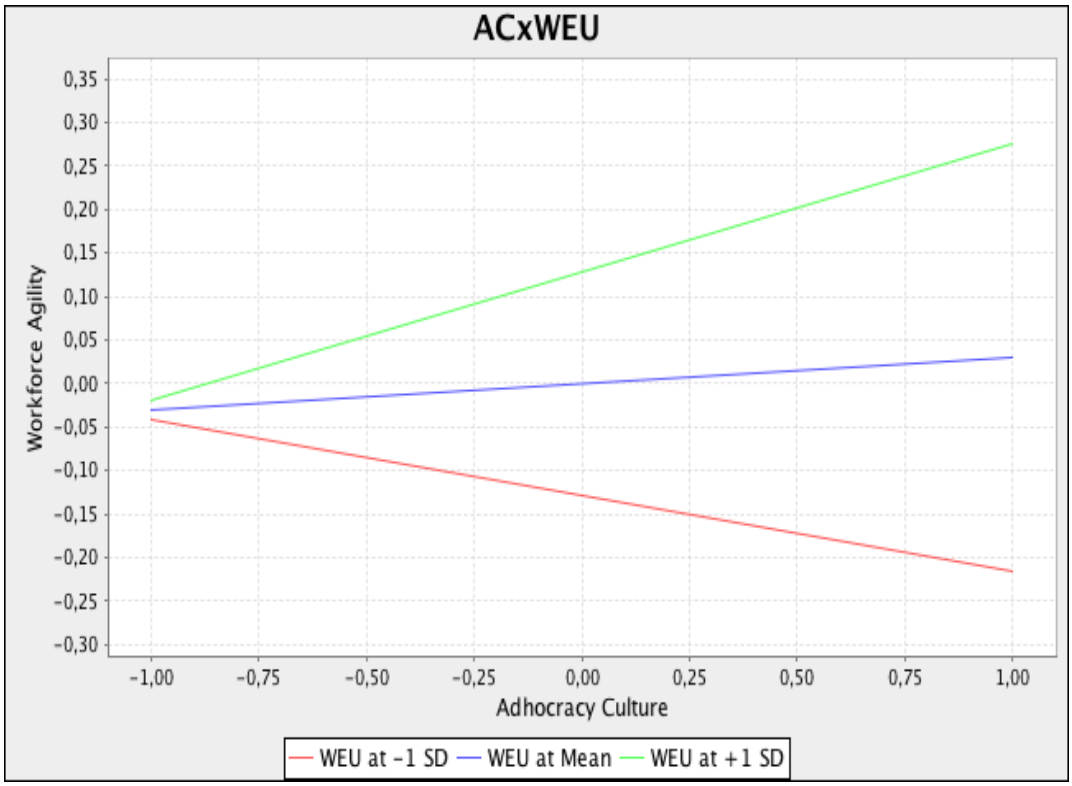


Figure 28: The slope plot analysis for the moderating effect of AC x WEU.
[Source: own research data]

Consequently, WA aspirations are vigorous for a higher emphasis on WEU and AC characteristics. In the case of low attention on WEU, higher levels of AC characteristics are unable to mitigate the negative impact of WEU on WA aspirations. Moreover, the moderating effect of WEU increased the influence of organizational culture on the WA, explaining 19.6% of the variance. This finding implies additional support for the moderating role of WEU in the relationship between AC and WA. However, potential cross-cultural differences were recognized in the cultural influence on WA through adaptive decision-making in uncertain environments. Because other factors may also affect these relationships, the study included various control variables. The following MGA-PLS analysis

examined the differences in five clusters. As an intermediate step, a hypothesis summary is provided that relates to the overall model.

4.2.3.4 Validation of Research Hypotheses

Finally, the hypothesized relationships were validated based on the β-values of each path in the model. Thus, four out of eight hypotheses are found to be confirmed with a 95% confidence interval, as there is no risk of rejecting a null hypothesis. Table 21 provides a summary of the previous analyses regarding hypothesis tests, including the following results:

Table 21: Summary of hypothesis tests. [Source: own research data]

Path	**Hypothesis (Expected Sign)**	**Construct Order**	**Result/Support**
AC→WA	H_1(+)	1→2	Not supported
CC→WA	H_2(+)	1→2	Supported
MC→WA	H_3(-)	1→2	Not supported
HC→WA	H_4(-)	1→2	Not supported
WA→PRO	H_5(+)	2→1	Supported
WA→ADA	H_6(+)	2→1	Supported
WA→RES	H_7(+)	2→1	Supported
AC x WEU→WA CC x WEU→WA MC x WEU→WA HC x WEU→WA	H_8(+)	2→2	Partially supported; sign. for AC, CC, and MC ($p < .05$), but f^2 only sign. for AC

The structural model evaluation of the AC indicators reported a non-qualified loading value. Therefore, H_1 is not supported. Table 19 (p. 165) shows that the hypothesis H_2 related to CC is positively supported WA ($\beta = .219$, $p < .001$). However, the β-coefficients for the relationships of H_3 ($\beta = .108$, $p < .05$) and H_4 ($\beta = .139$, $p < .001$) were positive and significant, so neither can be supported. The reflective sub-constructs of WA and their hypotheses, namely H_5: PRO ($\beta = .815$, $p < .001$, $R^2 = .664$), H_6: ADA ($\beta = .843$, $p < .001$, $R^2 = .711$), and H_7: RES ($\beta = .796$, $p < .001$, $R^2 = .634$) are positively associated with the higher-order construct of WA. In this sense, the analysis of the moderating effect of WEU indicated different results among the variables. Even though three of the four moderating relationships (i.e.,

AC; CC; MC x WEU) revealed significant path coefficients, only one moderated relationship (AC x WEU) had a corresponding significant f^2 on WA. Hence, H_8 is partially supported, as higher levels of WEU positively moderate the relationship between AC characteristics and WA aspirations.

4.2.3.5 Results from Multi-Group Analysis

In the last step, an MGA-PLS was undertaken to test the potential effects of the different control variables (i.e., industry type, firm location, firm size and age, job tenure, and job position) on the relationships included in the research model. The basic idea was to divide the sample for each cluster into two groups, e.g., SMEs vs. large corporations. Before performing Henseler's MGA (2009) with the permutation-based procedure developed by Chin and Dibbern (2010) to check any significant differences between the groups, the following three-step approach was applied to test the Measurement Invariance of Composites (MICOM): (1) assessing configurational invariance, (2) detecting compositional invariance, and (3a) evaluating equal variances with (3b) equal means. According to the MICOM procedure, the establishment of partial measurement invariance for all groups is restricted to the path coefficients of the structural model for each variable, which represents a requirement for comparing and interpreting the MGA's group-specific differences (Henseler, Ringle, & Sarstedt, 2016). In the case of constructs failing to fulfill Step 2 (compositional invariance), group differences cannot be interpreted for effects in which the construct is involved (as a predictor or dependent variable). However, if Step 3 does not fully attain the equality of means and equality of variance, it is still possible to compare the standardized coefficients of the structural model across groups (Henseler et al., 2016).

The results of the MGA-PLS, using both non-parametric methods, show significant differences between the clusters under examination. Annex 6 (p. 247 ff.) details the PLS-SEM results obtained from both measurements, related to firm size differences. As Step 2 in Annex 6a illustrates, the group-specific bootstrap samples yielded significant differences in the direct effects with a *p*-value higher than .95 and less than .05, except for the WEU construct, which was consequently not interpreted for this cluster group. Steps 3a and 3b achieved at least partial measurement invariance for the following construct analyses. Both Henseler's

MGA (see Table 22) and the permutation test (see Annex 6b, p. 249) with a *p*-value of .05 revealed significant differences for the MC relationship to WA and the construct of WA concerning the element proactivity. Non-significant differences were detected between the two groups for the other path coefficients due to the exclusion of WEU. The procedure was repeated for each control variable. The subsequent annexes (from Annex 7, 8, 9, 10, and 11; p. 251 ff.) display the results for the invariance tests for each cluster.

Consequently, both methods within MGA-PLS confirmed the significance or non-significance of the results, thus leading to multi-method confirmation and an increase in the credibility of meaningful statistical findings. The MGA-PLS analysis was able to complement the permutation outcomes by presenting the coefficients and *p*-values for each cluster. Table 22 outlines the totality of the MGA-PLS findings, including the bolded areas of overlap between the two methods (for Henseler's MGA and the permutation test).

Table 22: Results overview of MGA-PLS across single types. [Source: own research data]

Relationships	**Diff Industry & Location**[i] GER: PI vs. SI | GER vs. U.S.	**Diff Firm Size** ≥250 vs. <250 Employees	**Diff Firm Age** <5y vs. ≥50y | 5–49y vs. ≥50y	**Diff Job Tenure** <1y vs. ≥10y | 1–10y vs. ≥10y	**Diff Job Position** Employees vs. Executives
AC→WA	-.007^{ns} | .012^{ns}	.050^{ns}	-.042^{ns} | -.108^{ns}	-.006^{ns} | -.062^{ns}	.113^{ns}
CC→WA	**.174*** | .088^{ns}	-.101^{ns}	.127^{ns} | .134^{ns}	-.151^{ns} | -.142^{ns}	-.036^{ns}
MC→WA	.033^{ns} | **-.340****	**-.173****	**.324**** | **.159****	-.022^{ns} | .005^{ns}	.037^{ns}
HC→WA	-.065^{ns} | **-.364****	-.108^{ns}	.253** | .003^{ns}	-.053^{ns} | -.022^{ns}	.035^{ns}
WA→RES	**-.077*** | **-.106****	-.059*	.081** | .047^{ns}	.001^{ns} | .017^{ns}	**-.100****
WA→PRO	-.019^{ns} | -.059^{ns}	**-.077****	.100** | .054^{ns}	.016^{ns} | .022^{ns}	-.040^{ns}
WA→ADA	-.000^{ns} | **-.142***	-.033^{ns}	**.093**** | **.053****	.051^{ns} | .018^{ns}	.019^{ns}
EXP→WEU	**.153**** | .172^{ns}	-.012^{ns}	-.121** | -.077^{ns}	-.030^{ns} | -.053^{ns}	**.135****
OUT→WEU	.026^{ns} | **-.207***	-.135*	.202** | -.049^{ns}	-.008^{ns} | .014^{ns}	-.113*
PER→WEU	-.066^{ns} | .043^{ns}	.228**	**-.329**** | .002^{ns}	.005^{ns} | .006^{ns}	.058^{ns}
WEU→WA	**-.184*** | .084^{ns}	-.008^{ns}	.052^{ns} | .109^{ns}	.067^{ns} | .050^{ns}	**-.190***
AC x WEU→WA	-.122^{ns} | .014^{ns}	-.017^{ns}	-.118^{ns} | .061^{ns}	.030^{ns} | .009^{ns}	-.113^{ns}
CC x WEU→WA	.091^{ns} | -.132^{ns}	-.100^{ns}	.021^{ns} | .044^{ns}	-.061^{ns} | .006^{ns}	.160^{ns}
MC x WEU→WA	.048^{ns} | .202^{ns}	**.335*****	-.263* | **-.206****	-.074^{ns} | -.089^{ns}	.134^{ns}
HC x WEU→WA	-.063^{ns} | .094^{ns}	.009^{ns}	-.033^{ns} | .045^{ns}	-.065^{ns} | -.086^{ns}	-.115^{ns}

Note: Path Coefficients-diff are bold-marked when compositional invariance (at least partial measurement invariance) has been satisfied and permutation test is significant; ns = non-significant; *p < .10, **p < .05, ***p < .001 (2-tailed test; Bootstrapping based on n = 5,000 subsamples; Multi-group test based on 5,000 permutations); [i]Further firm location differences (i.e., GER vs. UK) are listed in Annex 7.

In conclusion, the greatest differences in the relationship between different cultural typologies and WA related to firm size, location, and the management of

WEU were prevalent in organizations of different ages, industries, and in diverse job positions. Within the three forms of psychological empowerment characterized by WA, differences in resilient, proactive, and adaptive behavior emerged across clusters of firm location, size, age, and intra-company positions. Although there were no significant differences in the direct effects for job tenure, the path coefficients showed different strengths for managing WEU among different cultural typologies in combination with job positions (see Annex 11, p. 269 ff.).

Following the divergence of each cluster, a test for the difference was performed using the non-parametric Mann-Whitney U-test, which allows for a more detailed examination of the data. Results from the use of the Mann-Whitney U-test (*U*) are presented below in three subtle combinations, highlighting statistically significant differences under H_0 with a confidence level of at least 95% (Corder & Foreman, 2014).

H*$_0$: There is no difference between a dependent ordinal variable (i.e., organizational culture types, WA, and WEU) and two levels of the independent variable (in this case, organizational demographics).*

Since it was of interest to identify if the groups were significantly different, rather than specifying directionality, a two-tailed test was conducted (Nachar, 2008). According to the responses, the hypothesis of no differences could not be rejected for the entire conceptual framework, as there were similar above- and below-average values on each item between groups. Even though there is no separate effect size measure for the Mann-Whitney U-test, Pearson's Correlation Coefficient, *r*, could be used for analysis here.

In recapitulating the alternative hypothesis with the highest differences, the three main dimensions of the industry type, job position, and firm age with job tenure were each affirmed by their sub-dimensions' rank. Table 23 (p. 174) shows the analysis of the Mann-Whitney U-test and indicates a significant difference in the mean ranks of the two types of industry, namely the 'old' economy (n = 383) and the 'new' economy (n = 438) relating to the different organizational culture typologies. The level of organizational glue mainly reflects the dominant characteristics. Organizations from the 'new' economy showed higher mean ranks (451.55) than organizations from the 'old' economy (364.62) regarding dominant clan characteristics (CC_1), U = 66,114 (p < .001), r = -.182, which is a small to

medium effect size according to J. Cohen (1988). Contrarily, the 'old' economy exhibited significantly higher values in the mean ranks on organizational market glue (i.e., MC_3; U = 108,311 (p < .001), r = .286) and dominant hierarchical culture characteristics (i.e., HC_1; U = 98,314 (p < .001), r = .170).

Table 23: Mann-Whitney U-test summary table comparing industry types on organizational culture types and uncertainty in the work environment. [Source: own research data]

Dimension	Variable	Mean Rank Old Economy ǀ New Economy n = 383 ǀ n = 438		Mann-Whitney U	z	p	r $\left(\frac{z}{\sqrt{n}}\right)$
Adhocracy Culture **AC**	AC_1	408.69	413.02	82,992.000	-.109	.791^{ns}	-.004
	AC_2	382.09	435.40	73,001.500	-3.145	.001***	-.110
	AC_3	455.39	368.26	101,813.500	5.822	.001***	.203
	AC_4	514.49	320.50	123,514.000	12.500	.001***	.436
Clan Culture **CC**	CC_1	364.62	451.55	66,114.000	-5.216	.001***	-.182
	CC_2	372.14	442.23	69,497.000	-3.568	.001***	-.125
	CC_3	394.28	422.83	78,029.500	-1.161	.075*	-.041
	CC_4	367.14	449.36	67,077.500	-4.715	.001***	-.165
Market Culture **MC**	MC_1	462.89	365.62	103,742.500	6.385	.001***	.223
	MC_2	481.16	347.49	111,295.000	8.714	.001***	.304
	MC_3	472.01	352.60	108,311.000	8.184	.001***	.286
	MC_4	488.96	342.83	113,735.000	10.119	.001***	.353
Hierarchy Culture **HC**	HC_1	448.69	378.04	98,314.000	4.869	.001***	.170
	HC_2	431.27	392.30	91,881.000	3.027	.015**	.106
	HC_3	416.22	399.91	87,227.500	1.762	.309^{ns}	.061
	HC_4	441.03	384.74	95,378.500	3.815	.001***	.133
Expressed Uncertainty **EXP**	EXP_1	368.55	448.12	67,619.000	-4.723	.001***	-.165
	EXP_2	374.43	442.98	69,870.500	-3.785	.001***	-.132
	EXP_3	378.45	439.47	71,408.500	-3.569	.001***	-.125
	EXP_4	361.20	453.50	64,997.500	-5.556	.001***	-.194
Outcome Uncertainty **OUT**	OUT_1	361.75	454.06	65,015.000	-6.226	.001***	-.217
	OUT_2	365.66	449.61	66,756.500	-5.261	.001***	-.184
	OUT_3	377.75	438.33	71,483.000	-4.225	.001***	-.147
	OUT_4	382.26	435.13	73,115.000	-3.064	.001***	-.107

Note: Non-significance for group differences of PRO, ADA, RES, and PER will not be listed; *p < .10, **p < .05, ***p < .001; ns = non-significant (2-tailed test).

In short, both types of industries are held together through different organizational glues, which in turn reflect the decision-making behavior in uncertain business environments. The dominant clan culture characteristics in 'new' economies, based on mutual trust, loyalty, and a familiar place, lead to more confident handling of uncertainty in terms of expressing doubts and misgivings. Organizations operating in this 'new' economy (453.5) viewed uncertainty as a part of the learning environment with a moderate effect size (i.e., EXP_4; U = 64,997.5 (p < .001), r = -.194; reverse coded), rather than a sign of weakness in relation to the

'old' economy (361.2). Furthermore, the results-oriented and hard-driving competitive glue of organizations from the 'old' economy (361.75) was directly related to a strong focus on project outcomes (i.e., OUT_1; $U = 65{,}015$ ($p < .001$), $r = -.217$). This finding attenuates the emphasis on change initiatives with a moderate effect size. However, the three dimensions of WA, including the perceptual view of the uncertainty in the work environment, differed in both industry types. As such, all cultural variables and two of the three factors from WEU reject the null hypothesis of equality. H_0 fails for rejection of the three dimensions of WA and perceptual WEU.

Next, a Mann-Whitney U-test was undertaken to understand whether organizational culture types diverge in their WA patterns according to different organizational levels (see Annex 12, p. 273). When it comes to differences in job positions, a boxplot analysis of the results reveals the existence of competing values in organizations across different levels (see Figure 29). The boxes represent the lower and upper quartiles of the Likert scale values per measure recorded in the questionnaire. Executives perceived the nature of leadership as adhocratic (i.e., AC_2: 441.56; $U = 60{,}641$ ($p < .05$), $r = .065$) with market-oriented values (i.e., MC_2: 443.88; $U = 61{,}126.5$ ($p < .05$), $r = .071$) and a very small effect size, while employees observed predominant hierarchical systems behavior (i.e., HC_2: 421.61; $U = 48{,}113$ ($p < .05$), $r = -.079$).

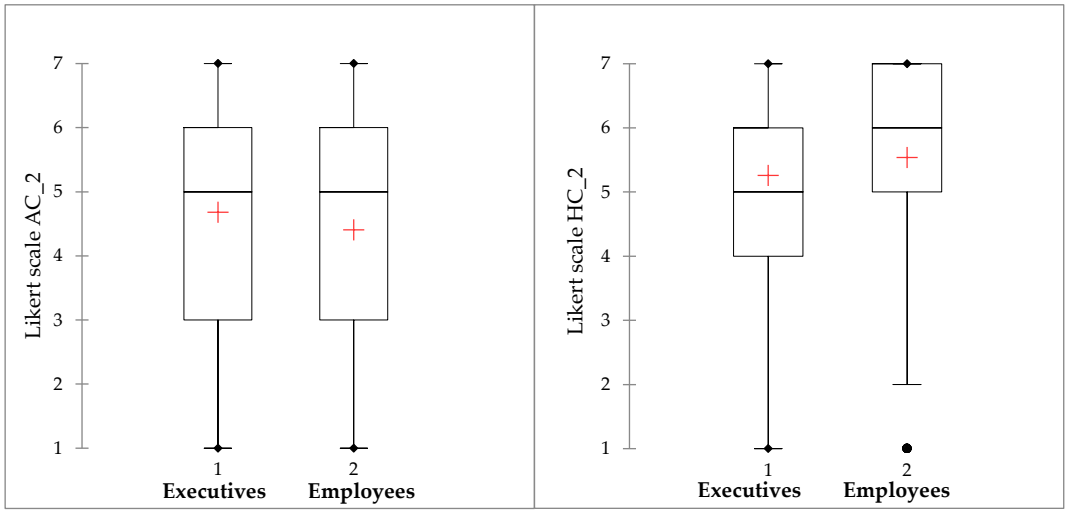


Figure 29: Boxplot analysis – Likert scale-based ratings of cultural employee engagement and job position. [Source: own research data]

These different perceptions of leadership and employee engagement expose a direct cohesion to WA. More specifically, the existence of adhocratic values on innovativeness as well as the focus on competitive market leadership resulted in higher levels of executive's WA dimensions of proactivity and resiliency. The highest differences with the largest effect size prevailed in the areas of finding solutions to change-related problems and coping with stress, with a mean rank of PRO_3: 483.41 and RES_4: 470.94 for executives and PRO_3: 391.43 and RES_4: 394.69 for employees at the expert level (see Figure 30). The significant results from Mann-Whitney U-test between both dimensions of WA, empirically stated by PRO_3; $U = 67{,}788.5$ ($p < .001$), $r = .141$, and RES_4; $U = 65{,}642$ ($p < .001$) with $r = .144$, lead to the rejection of H_0. Accordingly, executives perceived their organization as more proactive and courageous in terms of new ideas in uncertain situations than employees, with a small but significant effect size. The mean ranks for PER_3 were 469.1 and 391.9, respectively, $U = 65{,}770$, $p < .001$, $r = .119$. However, no significant difference appeared on the individual modifying behavior to better fit the environment, which means that H_0 fails to be rejected for adaptive WA.

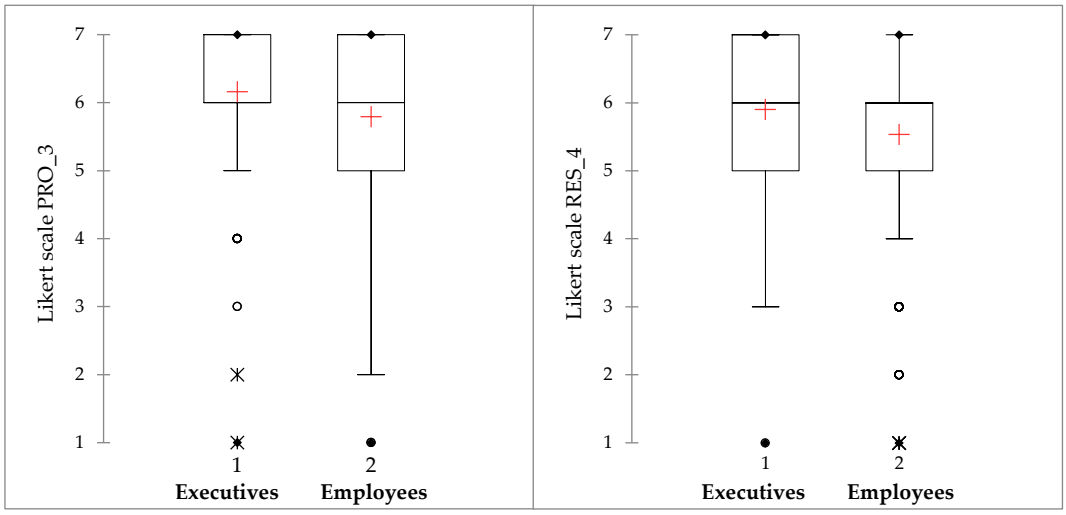


Figure 30: Boxplot analysis – Likert scale-based ratings of workforce agility dimensions and job position.
[Source: own research data]

Finally, cultural development and its influence on WA was analyzed in terms of firm age, measured as middle-aged (5 – 49 years) and older corporations (≥ 50

years). Table 24 indicates statistically significant differences regarding the main dimensions of the underlying research framework.

Table 24: Mann-Whitney U-test summary table comparing firm age on organizational culture types, workforce agility, and work environment uncertainty. [Source: own research data]

Dimension	Variable	Mean Rank 5 – 49 years | ≥ 50 years n = 267 | n = 493		Mann-Whitney U	z	p	$r\left(\frac{z}{\sqrt{n}}\right)$
Adhocracy Culture **AC**	AC_1	449.70	343.02	84,292.000	6.823	.001***	.247
	AC_2	442.63	346.21	82,487.000	6.058	.001***	.220
	AC_3	400.18	366.73	71,661.500	2.222	.039**	.081
	AC_4	352.74	395.53	58,404.500	-1.799	.009**	-.065
Clan Culture **CC**	CC_1	430.84	353.24	79,255.000	4.744	.001***	.172
	CC_2	433.02	349.91	80,254.500	4.869	.001***	.177
	CC_3	396.34	369.61	70,459.500	1.367	.097*	.050
	CC_4	429.06	354.20	78,780.000	4.305	.001***	.156
Market Culture **MC**	MC_1	394.50	372.92	69,552.500	1.698	.185^{ns}	.062
	MC_2	357.96	391.15	60,044.000	-2.060	.042**	-.075
	MC_3	374.39	379.96	64,824.000	-.462	.726^{ns}	-.017
	MC_4	349.80	397.13	57,618.000	-2.284	.003**	-.083
Hierarchy Culture **HC**	HC_1	312.00	412.72	49,930.000	-5.461	.001***	-.198
	HC_2	316.49	414.26	48,838.500	-5.790	.001***	-.210
	HC_3	332.51	402.02	53,691.500	-4.403	.001***	-.160
	HC_4	367.40	387.60	62,317.500	-.715	.214^{ns}	-.026
Workforce Agility ***Resilience*** **RES**	RES_1	356.13	393.70	59,308.500	-2.590	.021**	-.094
	RES_2	407.96	363.22	73,747.000	2.858	.005**	.104
	RES_3	388.89	374.40	68,345.000	.874	.363^{ns}	.032
	RES_4	387.46	375.97	67,745.500	1.061	.481^{ns}	.038
	RES_5	357.70	392.85	59,727.500	-2.252	.032**	-.082
	RES_8	385.90	376.80	67,426.000	.199	.557^{ns}	.007
Workforce Agility ***Adaptability*** **ADA**	ADA_1	380.49	378.96	66,138.500	-.767	.905^{ns}	-.028
	ADA_2	378.44	380.84	65,324.000	-1.013	.858^{ns}	-.037
	ADA_3	384.24	377.70	66,976.000	.050	.675^{ns}	.002
	ADA_4	358.64	392.34	59,978.000	-2.521	.032**	-.091
	ADA_5	389.09	375.10	68,157.000	.827	.394^{ns}	.030
	ADA_6	402.43	367.90	71,777.500	2.513	.035**	.091
	ADA_7	392.19	373.39	69,107.500	.851	.234^{ns}	.031
Expressed Uncertainty **EXP**	EXP_1	408.06	365.57	73,175.000	2.302	.010**	.083
	EXP_2	415.34	361.63	75,119.000	2.684	.001***	.097
	EXP_3	405.36	367.03	72,454.000	2.260	.020**	.082
	EXP_4	414.38	361.34	75,019.500	3.226	.001***	.117
Outcome Uncertainty **OUT**	OUT_1	435.06	350.95	80,384.000	5.267	.001***	.191
	OUT_2	423.38	356.46	77,398.000	4.128	.001***	.150
	OUT_3	402.38	367.20	71,887.000	2.012	.031**	.073
	OUT_4	423.92	356.16	77,541.500	4.014	.001***	.146
Perceptual Uncertainty **PER**	PER_1	413.60	354.80	76,116.500	3.928	.001***	.142
	PER_2	408.71	360.68	74,052.500	3.278	.004**	.119
	PER_3	425.75	352.18	78,621.500	3.974	.001***	.144
	PER_4	411.80	359.72	74,867.000	3.200	.001***	.116

Note: Non-significance for group differences of PRO will not be listed; *p < .10, **p < .05, ***p < .001; ns = non-significant (2-tailed test).

For methodological reasons, this partial investigation excluded corporations in the start-up phase. The test table shows that organizations older than 50 years (353.24) are characterized by decreasing levels in their mean ranks of dominant CC_1 than mid-age organizations (430.84), U = 79,255, p < .001, r = .172. In this context, the effects on WA through WEU become apparent. Indeed, organizations ≥ 50 years of age exhibited a lower readiness to change old patterns (i.e., RES_2; U = 73,747 (p < .05), r = .104), and less adaptability in switching projects (i.e., ADA_6; U = 71,777.500 (p < .05), r = .091) than younger corporations, with a small to medium effect size. However, no significant difference was found between firm age relating to the proactive initiation of activities, which H_0 fails for rejecting WA's proactivity dimension. Moreover, there were significant differences between the two groups on expressed, perceived, and outcome management of uncertainty with a small to medium effect size. The 493 respondents from organizations older than 50 years had lower mean ranks (352.18) than the 267 respondents from organizations aged 5 – 49 years (425.75) on perceptual WEU (i.e., PER_3; U = 78,621.5, p < .001, r = .144), indicating the strong influence of clan cultures.

By direct comparison, the data revealed a supplementary picture for employees' seniority. Figure 31 presents a boxplot analysis of the significant differences for job tenures of more than ten years. As such, the adhocratic criteria of success positively affect the proactivity dimension.

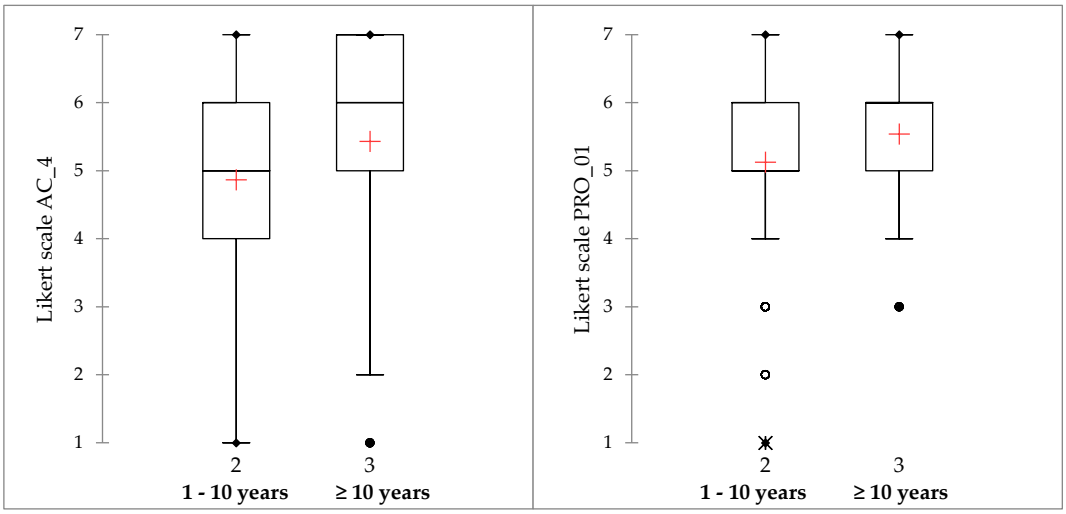


Figure 31: Boxplot analysis – Likert scale-based ratings of adhocracy culture and proactivity per job tenure. [Source: own research data]

Whereas in the case of anticipation of problems related to change (PRO_1), the mean ranks of 1 – 10 years of job tenure (308.19) and more than ten years of job tenure (363.69) were statistically significant (see Annex 13, p. 275, for results of the Mann-Whitney U-test). In this context, H_0 is refused for certain items of AC, MC, HC, and ADA, PRO, and RES. When investigating whether these findings were related to organizational culture types, the analytical process found a similar structure to the dependent variable of AC_4, $U = 27{,}357$ ($p < .001$), and $r = -.142$, with a small to medium effect size. This is further evidence that cultural development in organizations is dependent on job tenure, similar to firm age. As an opposing development, the dominant MC characteristics (MC_1: 349.53; $U = 30{,}615.5$ ($p < .05$), $r = -.075$), with their rigid structures (HC_1: 355.01; $U = 29{,}864$ ($p < .05$), $r = -.124$), were identified as an obstructive factor for tolerance in dealing with unexpected situations at more than 10 years of job tenure (i.e., RES_5; $U = 28{,}968$ ($p < .05$), $r = -.133$). However, H_0 fails for rejection of all dimensions of WEU. In terms of overall perceptions of managing uncertainty in the work environment, differences between the two groups for job tenure were not statistically significant. For example, the mean ranks were 317.86 (1 – 10 years) and 320.83 (≥ 10 years), respectively for PER_3, $U = 34{,}262$, $p = .889$, $r = -.012$.

4.2.4 Scenario Modeling through Cross-Impact Balance Analysis

In the current setting, the scenario technique for quantitative cross-impact analysis demonstrates that the data collected are most consistent while presenting fewer biased descriptor tendencies that were not in the focus of former research. By determining the extent to which each variable influences every other variable, different and new strengths in the interrelation patterns between the referencing organizational culture types are assumed. The procedure follows a typical step of semiquantitative thematic analysis to form an epistemological perspective with the previous findings. The hybrid CIB procedure automatically ensures that, in addition to the direct impacts analyzed in Chapter 4.2.3, all indirect strengths are also considered in a complex construct.

The model describing the CIB approach used four descriptors (the four organizational culture types according to the CVF) with overall 16 states. Evidence for the several states was established within each item used for measurement in

Quantitative Study 2 according to the Likert scale from -3 to +3; with -3 stating that there is strong restricting influence, 0 revealing no impact, and +3 for having a strong promoting influence. The resulting cross-impact judgment sections in the submatrices are of direct heuristic nature, with the diagonal of the CIB matrix left empty because of the meaningless cross-impact question for diagonal elements (Weimer-Jehle, 2006). The interdependencies depicted in Figure 32 constitute a net of impact relationships based on expert judgments expressed by the cross-impact matrix.

Cross-Impact Matrix	**A.**				**B.**				**C.**				**D.**			
'Competing Values Framework'	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
A. Clan Culture																
A1 Dominant Characteristics					0	2	3	2	0	2	3	1	0	2	3	0
A2 Management of Employees - Leadership					0	2	2	3	0	3	3	0	1	0	2	0
A3 Organization Glue					0	1	0	-1	1	0	1	1	0	-1	2	0
A4 Criteria of Success					0	1	0	0	0	1	0	-2	0	3	-2	0
B. Adhocracy Culture																
B1 Dominant Characteristics	3	3	3	3					3	1	2	1	0	3	2	0
B2 Management of Employees - Leadership	-3	2	0	1					0	1	3	-1	0	0	0	0
B3 Organization Glue	2	2	1	2					0	1	2	1	0	0	1	0
B4 Criteria of Success	1	2	2	-1					0	2	2	1	0	1	1	0
C. Market Culture																
C1 Dominant Characteristics	1	1	0	-1	0	1	-1	1					0	1	0	0
C2 Management of Employees - Leadership	3	3	3	1	0	2	2	3					0	-1	2	0
C3 Organization Glue	1	0	1	1	0	1	1	1					0	0	1	0
C4 Criteria of Success	1	2	1	-2	1	-3	-3	2					1	-1	-1	0
D. Hierarchy Culture																
D1 Dominant Characteristics	1	1	0	0	0	1	1	2	0	1	2	1				
D2 Management of Employees - Leadership	2	3	2	3	0	1	0	2	1	-1	-2	1				
D3 Organization Glue	2	3	0	2	0	2	1	1	0	1	2	-1				
D4 Criteria of Success	-1	-2	-1	-1	1	-2	1	0	0	-1	-1	2				
Assumptions for scenario No. 4:		v					v			v					v	
Balances:	4	5	3	2	0	5	4	5	0	6	7	0	1	1	4	0
Maximum:		∧					∧			∧					∧	

Figure 32: The cross-impact matrix with impact balance of the consistent scenario No. 4.
[Source: own research data depicted by ScenarioWizard]

First and foremost, inconsistencies in the rules of the system are made visible by calculating the impact balances of a scenario in which the marked rows are summed up. The internal consistency of a synopsis means that the arrows in the scenario line for all descriptors whose impact sum is the highest in the impact balance should point to variants to ensure that no other variant of the same descriptor is supported (Weimer-Jehle, 2006). In the end, the arrows above the balance sheet row marking the variants that apply to the scenario each point to the highest impact sum of the total impact balance. In CIB scenarios, this denotes the principle of consistency. As a result, the CIB method enables the formalization of knowledge about the organizational culture system in dealing with different complexities.

In this case, there were 4*4*4*4 = 256 possible scenarios with four plots that passed the consistency test. These four plots suggest quite different pictures and possibility space related to the CVF's interrelationships (see Figure 33, p. 182). Each scenario was assigned a theme that interpreted and succinctly summarized the guiding principle in that group. Together all scenarios cover a wide range of possible futures for corporate culture development. However, the CIB algorithm revealed that three scenarios (No. 1 – 3) were partially consistent, and only one scenario (No. 4) was completely free of internal inconsistency.

Basically, the assumptions of scenario No. 1 – 3 did not work for each descriptor (i.e., for scenario No. 1 'A. Clan Culture: A4 Criteria of Success' impact score +2) because the state arrows did not point to the maximum impact score +5 of 'A. Clan Culture: A2 Management of Employees – Leadership.' In the case under examination, these scenarios are conflicting. However, converting inconsistent descriptors does not automatically result in a consistent situation due to its changing impact on other structures. In the academic sphere of game theory, this phenomenon is referred to as 'Nash equilibrium,' where consistent states of CIB matrices approach quasi-stationary equilibrium states of the systems under investigation (Weimer-Jehle, 2006). In the following paragraphs, the descriptors are discussed based on the cross-impact judgments through the analysts' focus on consistent scenario No. 4, entitled 'Group boundaries and identity.' The consistency of the fourth scenario is demonstrated in the cross-impact matrix in Figure 32 (p. 180).

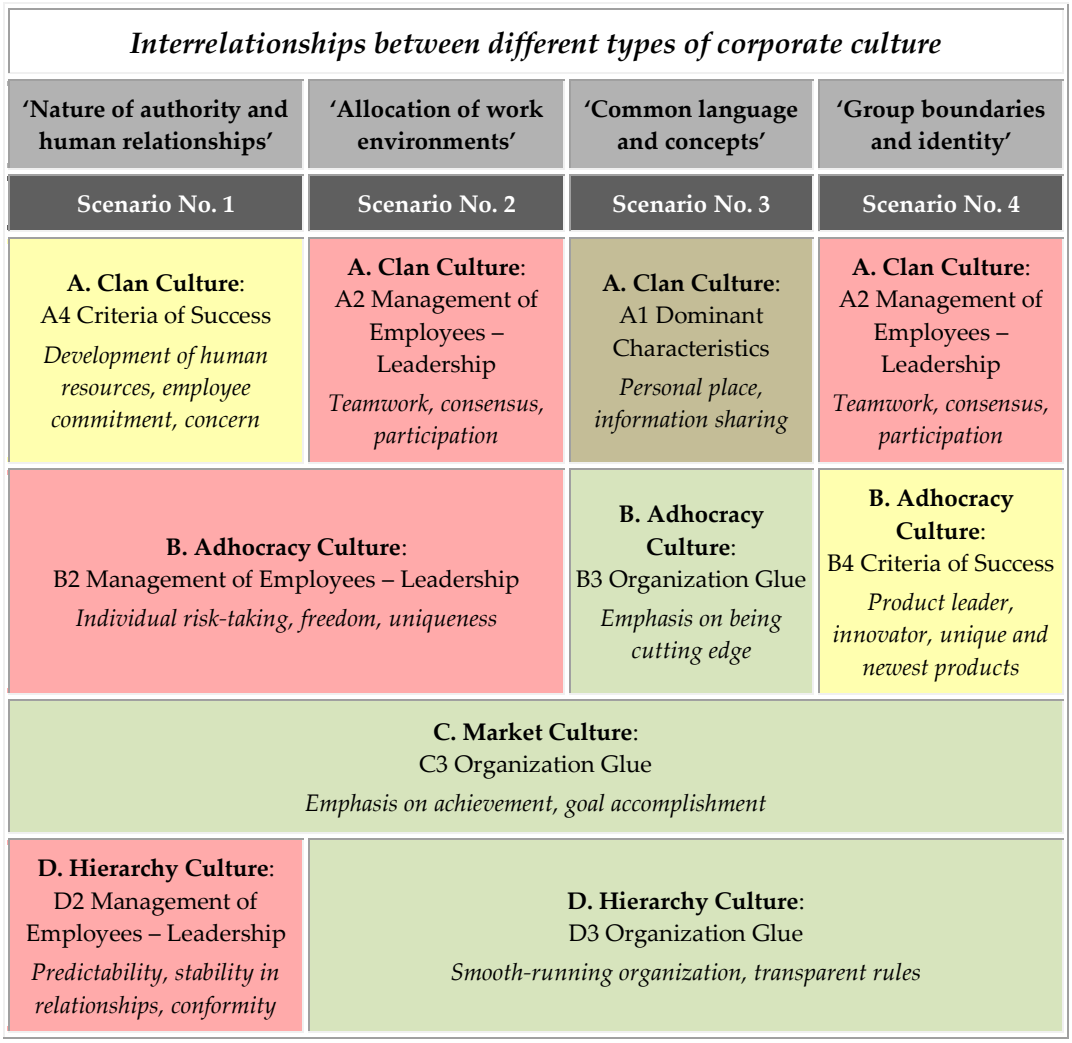


Figure 33: The consistent scenarios of the cross-impact matrix.
[Source: own research data depicted by ScenarioWizard]

Scenarios with higher consistency thus tend to withstand changes in decisions with logical robustness, which in this case yielded an acceptable overall impact score of +21. Concerning the descriptor 'A. Clan Culture,' the field of 'A2 Management of Employees – Leadership' was selected. This assumption supports the following scenario elements: 'B. Adhocracy Culture: B4 Criteria of Success' (weight 2), and 'D. Hierarchy Culture: D3 Organization Glue' (weight 3) (see Figure 34 below).

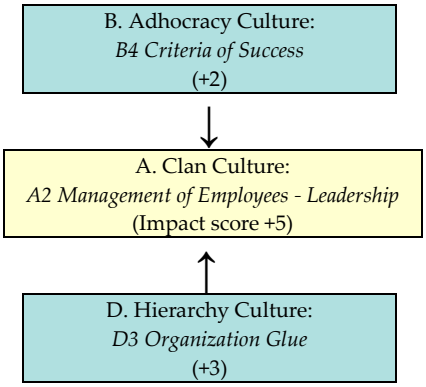


Figure 34: Influences on the scenario element 'A. Clan Culture: A2 Management of Employees - Leadership.'
[Source: own research data depicted by ScenarioWizard]

None of the other scenario elements contradict this assumption. In summary, the premise reveals an impact score of +5. Consequently, the arguments in favor of this assumption are predominant, as none of the alternative presumptions showed a better balance of results (i.e., 'A1 Dominant Characteristics' (impact score +4); 'A3 Organization Glue' (impact score +3); 'A4 Criteria of Success' (impact score +2)).

For the descriptor 'B. Adhocracy Culture,' the field 'B4 Criteria of Success' was selected based on the following scenario elements: 'A. Clan Culture: A2 Management of Employees – Leadership' (weight 3), 'C. Market Culture: C3 Organization Glue' (weight 1), and 'D. Hierarchy Culture: D3 Organization Glue' (weight 1). None of the other scenario elements contradict this assumption. In conclusion, the premise demonstrates the impact score +5 compared to: 'B1 Dominant Characteristics' (impact score 0), 'B2 Management of Employees – Leadership' (impact score +5), and 'B3 Organization Glue' (impact score +4).

In the case of the descriptor 'C. Market Culture,' the assumption 'C3 Organization Glue' was chosen, thus supporting the following scenario elements according to Figure 35 (p. 184): 'A. Clan Culture: A2 Management of Employees – Leadership' (weight 3), 'B. Adhocracy Culture: B4 Criteria of Success' (weight 2), 'D. Hierarchy Culture: D3 Organization Glue' (weight 2). None of the other scenario elements contradict this adoption, as the impact score reaches values of up to +7; (other possible presumptions: 'C1 Dominant Characteristics' (impact score 0), 'C2 Management of Employees – Leadership' (impact score +6), and 'C4 Criteria of Success' (impact score 0) showed no better balance).

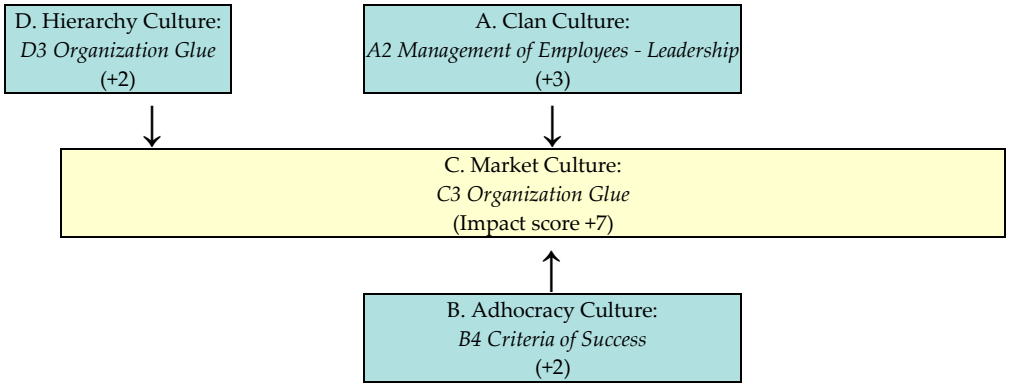


Figure 35: Influences on the scenario element 'C. Market Culture: C3 Organization Glue.'
[Source: own research data depicted by ScenarioWizard]

Concerning the descriptor 'D. Hierarchy Culture,' the element 'D3 Organization Glue' was selected for further argumentation due to its impact score +4: 'A. Clan Culture: A2 Management of Employees – Leadership' (weight 2), 'B. Adhocracy Culture: B4 Criteria of Success' (weight 1), and 'C. Market Culture: C3 Organization Glue' (weight 1). In conclusion, none of the alternative assumptions is more credible than the selected combination of premises (i.e., 'D1 Dominant Characteristics' (impact score +1); 'D2 Management of Employees – Leadership' (impact score +1); 'D4 Criteria of Success' (impact score 0)).

From a practical point of view, unequal firmness supports the assumptions of a scenario. The degree of firmness is expressed by the 'consistency value' (see Table 25, p. 185). The measure captures the difference between the impact score of the assumption and the impact score of the best alternative presumption. Thus, the elements of the pertained scenario represent a perfect set of mutual supportive adoptions. This scenario under examination, therefore, appears as being internally consistent. It should be noted, however, that support for the premise of descriptor 'B. Adhocracy Culture' is comparatively weak and presumably more difficult to achieve and stabilize. Unexpected interferences in this descriptor could destabilize the scenario. The following summary table ranks the descriptors of descending firmness.

Table 25: Firmness of descriptors according to the CVF. [Source: own research data, evaluation by ScenarioWizard]

Descriptor	Assumption	Subject Matter/Items	Consistency Value
D. Hierarchy Culture	C3 Organization Glue	Transparent rules, smooth-running organization	3
A. Clan Culture	A2 Management of Employees – Leadership	Teamwork, consensus and participation	1
C. Market Culture	C3 Organization Glue	Emphasis on achievement and goal accomplishment	1
B. Adhocracy Culture	B4 Criteria of Success	Product leader and innovator with most unique or newest products	0

However, the CIB algorithm showed an interweaving of the influences of different items on the mixed organizational culture types according to the CVF. Interestingly, some of the competing values (i.e., Clan Culture vs. Market Culture; Hierarchy Culture vs. Adhocracy Culture) influenced each other in certain aspects. Nonetheless, there was no overlap of the same assumptions in competing values, which determines the reliability of the CVF and provides further evidence for the existence of the proposed mixed-cultures. Consequently, at this stage, the findings from both studies offer room for cultural development. Chapter 5 thereupon discusses in more detail the role of utilizing the expertise gathered from these studies.

4.3 CHAPTER SUMMARY AND CONCLUSIONS OF THE EMPIRICAL STUDIES

This chapter contains the results of the analyses for Quantitative Studies 1 & 2. First and foremost, the OCAI tool linked the measurement back to the research questions to demonstrate the consistency of results through a descriptive research methodology. In essence, the LCA revealed four distinct detailed clusters of mixed cultures within corporations of the 'old' and the 'new' economy. Through a phenomenological view and the development of a classification of psychological values in the workplace, current and preferred cross-cultural mindsets of organizational members were examined for diverse industry types.

All analyses were based on well-established theories from the field of personality research. In turbulent environments, employees in different corporations experience varying levels of psychological empowerment and are thus left on their own to deal with individual challenges stemming from the organization's purpose and its value system. The outcomes are perceived uncertainty and resistance to change in organizations with different cultural understandings between employees and executives.

Consequently, the motivational trait of WA as a head-and-heart dimension of change experience was assessed by Quantitative Study 2 in the conceptual framework. The results of the PLS-SEM data analysis procedure in Chapter 4 consistently indicate statistically significant relationships among most of the latent variables under examination. It is worth noting that the measurement model estimates were found to be accurate and precise within the complete analysis.

In summary, four out of eight hypotheses were statistically significant and accepted, hence confirming the structural model in its validity. Since the sampling method was purposive and included people who fit the target group, PLS path modeling offered a suitable way to indicate unobservable variables while estimating relationships between them. The results of both studies support a better and more accurate picture of the factors affecting competing values in organizational culture, especially the strong promoting influence of CC characteristics on WA. The expected moderating effect of WEU on the relationship between AC and WA was confirmed by the PLS-SEM analysis, leading to partial support for the hypothesis. In addition, the MGA-PLS analysis provided statistically significant differences between groups, which are of great importance for answering the research questions in greater detail.

Finally, the CIB approach presented in the last part of the chapter acted as an integrative analysis platform in which mathematically comprehensible, credible meta-level connections emerged. In this way, the researcher observed interrelationships within different organizational culture typologies. The process accounted for indirect effects, providing an understanding of the complex system behavior by estimating cross-impact weights. Therefore, it serves as a sound basis for the composition of mixed-cultures through consistent scenario clusters.

This set of approaches has created a new angle with surprising outcomes while leaving space to propose a framework for culture development in organizations at a glance. In the next step, Chapter 5 draws conclusions from the two empirical studies in relation to the theoretical framework stated in the literature review, discusses the implications for corporate practice, and gives recommendations for further research work in this area.

CHAPTER 5. DISCUSSION AND IMPLICATIONS

"The aim of argument, or of discussion, should not be victory, but progress."

Joseph Joubert (1754 – 1824)
in The Notebooks of Joseph Joubert by Paul Auster (2005)

5 DISCUSSION AND IMPLICATIONS

Chapter 5 discusses the proposed research questions with the empirical results of the two quantitative studies. Although the first subchapter reflects the survey results of the different research questions, other scientific conclusions in the field of organizational theory and decision-making are also compared, thus leading to the suggestion of superordinate judgments. Finally, as an outcome of all the reflected findings from the cross-industry analysis, a new organizational approach to culture development is formulated. The second subchapter provides an overview of the implications for corporate practice in applying the new organization approach to cultural measures while suggesting recommendations for internal corporate use.

5.1 DISCUSSION OF THE RESEARCH RESULTS

Organizations need dynamic capabilities to survive in extremely turbulent environments. Examining workforce agility through the influence of organizational culture is central to understanding psychological empowerment and behavioral science. By highlighting specific participant observations and establishing common themes, a broad consensus was reached to identify the suitable research methodology for Quantitative Studies 1 & 2 using a range of data analysis techniques.

The goals of this research project were as follows: (1) to explore distinctive behavioral precedents and values for achieving higher levels of workforce agility at a practical level, (2) to identify the suitable type of organizational culture that encourages an agile workforce, and (3) to investigate the organizational work climate and its impact on capability-building processes in different organizational contexts as a result of how employees perceive their organization in managing uncertainty. In the end, the findings would seem to propose a conceptual model as a useful roadmap for long-established organizations to create cultural change through an agile workforce in different dimensions of uncertainty.

5.1.1 Revision of the Research Questions

The objective of this thesis was to identify the most distinctive antecedents and practices related to the promotion of workforce agility at diverse organizational levels. Thus, the phenomenological view allowed to pre-empt the dynamics of the environment, also referred to as uncertainty in the work environment. Encouraging the characterization of an agile workforce serves to understand the significance of cultural development from the internal perspective of organization members based on Schein's (2004; 2010) model of culture. This chapter focuses on the three research questions collated from the surveys in the Quantitative Studies 1 & 2 described in Chapter 3. The following sections summarize the results and conclusions for each of the research questions stated in Chapter 1.

5.1.1.1 Reflections on Research Question 1

***RQ. 1.* What are typical behavioral determinants for creating workforce agility?**

The first research question was related to the internal antecedents that cause enhanced levels of workforce agility within organizations. To cope with dynamic environments, it is a must to have an agile workforce that quickly reacts to contextual changes, either in terms of work, product, or the business environment. Consequently, it is worthwhile to focus more on the internal factors that affect organizational culture. Each context has its values and requirements for adaptation that cause much stress and turbulence in the workplace. Here, Schein's (2004; 2010) three-level model of organizational culture, consisting of artifacts, values, and basic assumptions, represents an accurate visualization when moving toward the invisible area of underlying assumptions.

Again, as demonstrated by the survey respondents and the literature review, there is no single group of ordinary, identifiable answers for the third level of organizational culture, which refers to the hard-deciphered behavioral determinants. However, the data gathered from Quantitative Study 1 revealed common behavioral determinants for higher levels of WA that can be classified into two broad categories, namely individual and organizational characteristics. The two groups emerged from statistical differences in the data, with personal

characteristics of 'knowledge workers' or experts and organizational characteristics deriving from managerial and executive data.

The results show that individual characteristics include personal motivators, such as altruistic and shared values, which need priority. This key factor relates to the individual capabilities of psychological empowerment manifested in the four cognitions of meaningfulness, self-efficacy, self-determination, and impact (Spreitzer, 1995; Thomas & Velthouse, 1990). The threefold cluster of shared values stated in Chapter 4.1.3.1 refers directly to the intrinsic motivators of empowerment. When individuals feel empowered, they reveal distinct values in different super-categories. First is 'Being' (51.6%), which is initiated by self-determination and collective intelligence through means of environmental responsiveness. 'Doing' (25.8%) leads to the meaningful involvement of workers through active task goals or purposes, and 'Becoming' (22.6%) is strongly associated with self-efficacy in knowledge-sharing networks and the impact of intended effects through cross-functional collaboration. Survey respondents cited a clan-oriented feeling as a motivator, which emerged as a sense of personal responsibility combined with strong internal collaboration networks based on trust. Shared values become drivers that concatenate shared experiences and consequently result in a greater power of change affinity. Especially for long-established corporations, it is reasonable to adopt organic core values to overcome mechanistic managerial beliefs. As a result, the threefold combination of altruistic motivators usually creates an intrinsic condition for reaching increasing levels of WA.

When surveyed, the greatest differences in value systems and capabilities prevailed between leaders and employees, further exacerbating the disadvantage of espoused values. Following the use of the CVF by Cameron and Quinn (2011), there were large differences in the organizational culture types of the 'old' economies, which included high-scaled production and mature businesses from the 20th Century. Within these companies, the analyses from Quantitative Study 1 showed competing values between the leader (market-oriented cultural values) and the employees (clan-oriented cultural values). In contrast, companies from the 'new' economy, representing the growth potential around technological revolution services in the 21st Century, exhibited differently but not competing values in the corporate mind-set.

At first glance, executives valued adhocratic cultural norms, while employees were clan-oriented. Within the 'new' economies, statistical *U*-tests from Quantitative Study 2 indicated a higher emphasis on the decision-making field of expressed uncertainty in this type of organizational glue (i.e., EXP_1: 448.12; U = 67,619, $p < .001$, r = -.165).

In answering the research question, the following organizational characteristics were derived from impulses in the Upper Echelons Theory (Hambrick, 2007), originating more precisely from the meta-construct of behavioral integration. When it comes to management actions to influence WA, three key factors create a cultural balance in values: focus, the humility of leaders, and rewards. Encouraging employees to focus on the true core of the business can help ascertain idealistic motivations for doing the work. Purpose, described by Collins and Porras (1996) as the soul or heartbeat of an organization, cannot be created by a pretty statement; it is hailed with enthusiasm and commitment from the entire workforce, including more efficient use of limited resources to the core.

The results from Quantitative Study 1 indicate the existence of mixed-cultures within organizations. As such, the profiles of the following non-parallel classes were found per industry type, divided in the 'old' economy; class of competitive control culture (Cluster 1), class of family hierarchy culture (Cluster 2), and in the 'new' economy; class of innovative clan culture (Cluster 3), and a class of resilient market culture (Cluster 4). These types of subcultures emerged from people's similar affiliations and preferences to form in-groups with high-solidarity (e.g., by gender, position, department, or seniority). Having a fragmented organizational culture with competing values that can lead to cultural clashes, the understanding of specific characteristic effects of leaders becomes relevant.

In prior literature related to upper echelons research, job tenure and age have been found to affect the willingness and ability to engage in post-succession of strategic change. Since Upper Echelons Theory has previously assumed that job tenure is negatively related to strategic transition, the findings from both surveys underpin new suggestions for practitioners to the theory. Hence, strategic change was positively influenced by selecting a candidate with high internal knowledge and a strong network of trust across sub-cultures. There is evidence to suggest that the high cost of lost trust is critical in this case. Research has shown that higher

levels of trust in behavioral integrity among the leaders result in a high overall increase in profitability of 2.5% (Simons, 2002).

A collectivistic orientation, induced by the humility of leaders, is thus closely linked to an emphasis on cooperation and sharing for more effective decision-making. Intending to enhance higher levels of WA, it is more challenging to employ an outsider who exhibits stronger intrinsic motivation for change but lacks internal knowledge and intra-company acceptance in clan cultures.

As demonstrated in the data from respondents, the compensation of agility-promoting behavior also becomes an important aspect. In this sense, the anticipated rewards had a more long-term perspective, including strong interpersonal relationships and professional training and development, rather than just financial benefits. Sometimes pure performance and incentive systems prevent successful collaboration. It is vital to transparently communicate career impacts and incentives for innovation and continuous improvements. This egalitarian environment defines the amount of lower power practices the leader must use to direct the group. To further promote WA, leaders should consider incentive programs that focus on team-based performance in addition to individual work performance, through power-sharing instead of traditional fixed pay systems that stress seniority (Muduli, 2017). In turn, employees' resistance to change is minimized by requiring wage compensation in favor of team accountability, flexibility, and openness to change in the work environment.

However, with all these behavioral determinants supported by the research findings, the general norms of reciprocity should be kept in mind. When theorizing the direction of intra-company relationships between leaders and employees, psychological empowerment evolves through a reciprocal or cyclical process of enhanced commitment and job performance (Flohrer, 2014). Of all the parameters mentioned here, the three variables studied, proactivity (H_5: +), adaptivity (H_6: +), and resilience (H_7: +), explain the outcomes of an agile workforce, facilitated through the interaction of the preceding behavioral capabilities. This research question has helped to improve the understanding of behavioral determinants for WA. Another requirement was to logically connect the interaction effects between the different enablers, which is answered by the second research question.

5.1.1.2 Reflections on Research Question 2

***RQ. 2.* What type of organizational culture helps to reinforce the value of an agile workforce?**

The goal of the first part of Quantitative Study 2 relating to the second research question was to understand the interrelationships of the four organizational culture types and their impact on the construct of WA. The literature review covered some underlying effects of the distinct CVF culture types on different areas of organizational agility (Felipe et al., 2017). However, the results of this study provide an accurate picture for a more exhaustive assessment of an agile workforce based on a large primary data set (n = 821).

The first important finding deals with the strongest positive effect found between clan culture and WA (H_2: +; β = .219; p < .001; f^2 = .033). This significant relationship explains the organization's deep focus on internal parameters, which is consistent with prior related findings from Research Question 1. Underpinning the causality of strategic effects on job tenure within Upper Echelons Theory, it seems favorable to search for leaders who, like their predecessors, have a high intra-industry knowledge or even intra-company network. Radical transparency and communication awareness lead to higher levels of loyalty, trust, and employee responsibility within cross-functional teamwork. The dynamic linkage of shared goals and values strengthens employee devotion toward the identification with the organization's purpose. A good agreement between work orientation and commitment can reduce negative aspects of dissatisfaction, lack of motivation, and stress. This type of work coordination results in a more relaxed vigilance of environmental dynamism, even though the effect of WEU found a significant path coefficient (β = .084; p < .05), but with non-significant f^2. The predominant clan culture type helps lever the cultural pluralism within organizations for achieving higher levels of WA.

The following results are contrary to those expectations in the literature. First and foremost, this study found a positive and significant effect between hierarchy culture and WA (β = .139; p < .001) with an acceptable f^2 value of about .021. Hypothesis H_4 (-), in turn, could not be supported. This finding was unexpected and indicates that an agile workforce also benefits from fundamental features such

as stability, formalization, and control that attribute supportively to the influence of crisis and uncertainty. Precisely, a strong influence on resilient behavior was found ($\beta = .111$; $p < .001$), making it easier for the workforce to cope with work pressure and short-term changes in success. However, a harmonically organized group of people includes the threat of stagnation and hinders the long-term capability development of individuals. Under these circumstances, a loss of identification with the evolving company's purpose cannot be prevented.

Additionally, and contradictory to prior research work, market culture characteristics were found to have a positive influence on WA ($\beta = .108$; $p < .05$). As a result, H_3 (-) could not be supported. The strong market-oriented focus on capturing external information from competitors and customers in order to seize emerging opportunities in the short-term becomes notably crucial for SMEs. Nonetheless, this cultural typology measures a lower level of loyalty and autonomy with a stronger focus on individualism, which would limit the positive effect of leveraging information within market cultures.

Finally, the most important finding deals with the moderating effect found between adhocracy culture and WA across the WEU ($\beta = .117$; $p < .001$). Unlike other research carried out in this area, no significant direct effect was found between adhocracy culture type and WA, leading to the rejection of hypothesis H_1 (+). On occasions, the strongest effect on adaptivity ($\beta = .098$; $p < .001$) was examined under these moderation conditions, followed by proactivity ($\beta = .095$; $p < .001$) and resilience ($\beta = .093$; $p < .001$) through the flexible and rapid reconfiguration of resources.

Regarding the nature of subcultures co-existing within corporations, the degree of cultural integration was considered through interrelationships between distinct cultures in different scenarios. After conducting the CIB scenario based on the data set from Quantitative Study 2, the hypermatrix of cultural assimilation specified in Chapter 4.2.4 helps in understanding cross-cultural substance and symbolism. Although there were several interdependencies between the different cultural typologies, only one scenario was consistent. In this scenario No. 4, the element 'C. Market Culture: C3 – Organization Glue' was rated as highly credible (impact score +7), while the other assumptions in this scenario had the least influence on the scenario element 'D. Hierarchy Culture: D3 – Organization Glue'

(impact score +4). Consistent with the findings outlined, the strength of the arrows illustrates the strong promoting influence of the clan culture characteristics. The causal network of influenced relationships, including the single impact sums, is depicted in Figure 36.

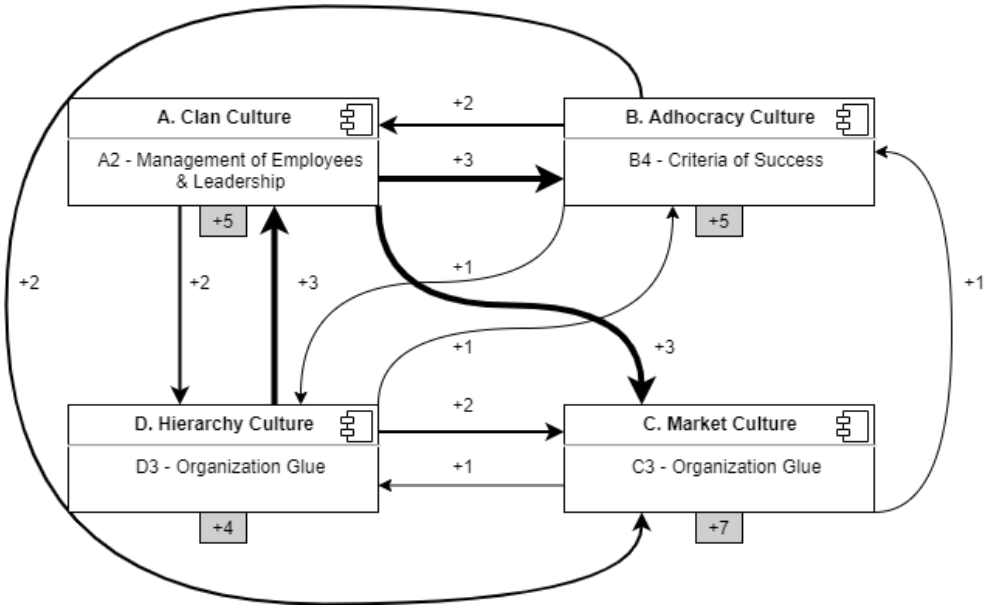


Figure 36: Consistent scenario visualization of interrelated relationships between CVF typologies.
[Source: own research data]

Through participative leadership and employee relations via transparent rules, goal accomplishment as the glue that holds the organization together strategically, and emphasis on product leader and innovation, the best combinatorial mixed organizational culture was identified and empirically allocated. This type of leadership is referred to as identity leadership, which strongly relates to the threefold cluster of shared values from RQ. 1. Previous research has shown that leaders are particularly effective when they develop a prototypical identity in and with their teams that is shared by all members (Steffens et al., 2014). As a result, employees can be addressed more directly and in a more value-oriented manner as a small part of a group, develop a sense of unity and go the famous 'extra mile.' Higher levels of the clan culture characteristics contribute to strengthen individual perceptions of the workforce regarding the courage to deal with new, uncertain situations (i.e., PER_3: U = 65,770, p < .001, r = .119, derived

from job position). This result provides a valuable strategic precondition for organizations operating in turbulent environments, thus building the empirical basis for answering the next research question in hand. In this sense, the consistent scenario network No. 4 appears to create a solid foundation for the evolutionary perspective of cultural development.

5.1.1.3 Reflections on Research Question 3

***RQ. 3.* How does work environment uncertainty affect the capability-building processes between corporate culture and workforce agility in different organizational contexts?**

The third and final research question of this thesis was directed to the role of uncertainty in the organizational decision-making environment in relation to the capability-building process between different cultural typologies and WA. More specifically, it was examined how employees perceive the organization's approach to uncertainty, which acts as a moderator in different types of organizational climate. Since the threefold construct of WEU is well established in previous studies of organization communication (Clampitt & Williams, 2005), the three components of expressed (EXP_1–4), outcome (OUT_1–4), and perceptual (PER_1–4) uncertainty satisfactorily explain the predictive relevance of the construct of WEU (Q^2 = .316) within Quantitative Study 2. In contrast to the boundary conditions that show WEU as a positive moderating effect in the literature, this study found opposing relationships regarding the capability-building processes between different culture types to increase WA.

As mentioned in the previous section, the unique moderator effect of WEU appeared in the relationship between adhocracy culture and WA. Path coefficients showed significant results also for clan culture and market culture, but without any effect size. One explanation for this result is the perfect ordinal two-way interaction between the variables, which relates to the partial support of hypothesis H_8, as demonstrated in Chapter 4.2.3.3. The indirect path ($\beta_{indirect}$ = .117; p < .001) was more accentuated than the direct effect from adhocracy culture to WA (β_{direct} = .023; p = non-significant), indicating that a high emphasis on WEU positively influences the relationship between the adhocratic culture and WA. However, in the case of

uncertainty avoidance in the workplace, higher levels of adhocracy cultures are unable to mitigate the negative impact of scenario uncertainty on WA due to its lack of dealing with complexity.

Due to the (partial) rejection of H_8, MGA-PLS and the Mann-Whitney U-test were used to further examine multi-group differences. To this end, the analysis highlighted the six control variables within the data set of Quantitative Study 2 that revealed different outcomes of effect characteristics (i.e., firm industry and location, firm size, firm age, job position, and job tenure). Based on the primary data, developing a market-oriented culture ($\beta_{\text{diff ≥250–<250 EM}} = -.173$; $p < .05$) becomes crucial for SMEs to gain knowledge, compiling results, and penetrate markets with higher levels of proactive behavior in the workforce ($\beta_{\text{diff ≥250–<250 EM}} = -.077$; $p < .05$). More precisely, organizations younger than 50 years since founding exhibited this cultural evolution ($\beta_{\text{diff <5y–≥50y}} = .324$; $p < .05$; $\beta_{\text{diff 5-49y–≥50y}} = .159$; $p < .05$) and associated higher levels of psychological empowerment in the workplace (i.e., WA→ADA with significant $\beta_{\text{diff <5y–≥50y}} = .093$; $p < .05$; $\beta_{\text{diff 5-49y–≥50y}} = .053$; $p < .05$). However, taming and stabilizing the market environment entails the risk that stability and profit orientation are not suitable long-term motivators for key employees who have grown with the organizational network.

This conclusion is supported by the firm location data, where the sample was differentiated by similar key characteristics similar to Hofstede's (1991; 2010) cultural IBM study. In contrast to the criticism of Hofstede's analysis, a theoretical framework was applied here to justify the results. In certain countries (e.g., in the U.S. and UK), organizations tend to have clear, short-term, and results-oriented performance ambitions, and thus, showed stronger influences of market cultures ($\beta_{\text{diff GER-U.S.}} = -.340$; $p < .05$; $\beta_{\text{diff GER-UK}} = -.419$; $p < .05$). Compared to German organizations, U.S. organizations behave more comfortably in ambiguous situations with flat hierarchical structures, leading to higher levels of resilience ($\beta_{\text{diff GER-U.S.}} = -.106$; $p < .05$) and adaptivity ($\beta_{\text{diff GER-U.S.}} = -.142$; $p < .05$). Therefore, hierarchical structures are established for convenience. When trying to promote change in the work environment, especially by increasing the relevance of OUT to WEU ($\beta_{\text{diff GER-U.S.}} = -.207$; $p < .10$), the concept of WEU has a lower moderating impact on WA. A similar picture emerged for UK corporations, which also tend to behave more agreeably in obscure situations. The strong focus on individuality and the

desire to adapt quickly to new needs (i.e., WA→ADA with significant $\beta_{\text{diff GER-UK}}$ = -.076; p < .10) less pressurizes uncertainty in the work environment on WA. Nevertheless, critical curiosity with the aspiration of a success-driven value system fosters the perception of changing trends and innovations.

Decision-making in hierarchical cultures naturally evolves with economic stability and mainly focuses on detailed plans or specific outcomes ($\beta_{\text{diff <5y–≥50y}}$ = .253; p < .05) to reach some level of predictability. The most remarkable results emerging from the data of firm industry, location, and firm age show significant differences between the groups and indicate a certain degree of an evolutionary process. These findings are consistent with the cross-industry cultural profile analysis conducted in Chapter 4.1.2.1 (p. 131 ff.). Organizations belonging to the 'old' economy (e.g., production and manufacturing companies) were found to have higher path weights in EXP on WEU ($\beta_{\text{diff GER: PI-SI}}$ = .153; p < .05), while they combined lower path weights in resilience (i.e., WA→RES with significant $\beta_{\text{diff GER: PI-SI}}$ = -.077; p < .10). This insight is accompanied by a wealth of experience and self-experienced transformations within the industry. The individual threads from the analyses that brought clan cultures together seemed to have evolved from a hierarchical-based reward system that formed a very well-coordinated group of people in comfortable surroundings (i.e., CC→WA with significant $\beta_{\text{diff GER: PI-SI}}$ = .174; p < .10). In contrast, organizations from the 'new' economy (e.g., services and IT companies) exhibited higher weights for WEU on WA ($\beta_{\text{diff GER: PI-SI}}$ = -.184; p < .10), referring to greater environmental vigilance.

Although a significant effect of PER on WEU ($\beta_{\text{diff <5y–≥50y}}$ = -.329; p < .05) occurred in organizations older than 50 years, it appears that the emphasis placed upon signs for changing situations does not outweigh the behavior of demanding long-term planning and avoiding weaknesses. With respect to WA, the decline in clan culture characteristics in long-established corporations resulted in less resilient handling of unexpected situations with lower levels of adaptive behavior than in middle-aged corporations (i.e., RES_2: 363.22; U = 73,747, p < .05, r = .104). Consequently, employees in these organizations may feel stifled in transformation processes and 'get stuck in the middle,' leading to employee fluctuation. In avoiding uncertainty, organizational aging emerges as the greatest risk of isolation from the environment. These organizations, in turn, require careful examination

and rapid response to inner-organizational and external mood swings (i.e., MC x WEU→WA with significant $\beta_{\text{diff 5-49y–≥50y}} = -.206$; $p < .05$).

The last major difference in the process of capability development within organizations relates to organizational cultures and their attitude toward job position and tenure. To deeply understand the organization's comfort zone, executives must understand the purpose and value of the organization by focusing on interpersonal relationships. Still, given the warnings in the previous research work that long-term employees are often resistant to change, this study illuminates a different perspective on dealing with uncertainty. In direct comparison to executives, employees at the expert level exhibited higher levels of EXP on WEU ($\beta_{\text{diff EM-EX}} = .135$; $p < .05$). Interestingly, they are more frequently to admit doubts or misgivings than their leaders, who regard uncertainty as an influencing virtue on WA (i.e., WEU→WA with significant $\beta_{\text{diff EM-EX}} = -.190$; $p < .10$), but in this context rather see a sign of weakness due to a strong focus on the outcomes.

Moreover, employees with more than ten years of organizational affiliation valued uncertainty in the work environment as a moderating force between market culture and WA (i.e., MC x WEU→WA with significant $\beta_{\text{diff EM ≥10y–EX}} = .407$; $p < .10$), while they also placed a higher emphasis on adhocratic values (i.e., AC→WA with significant $\beta_{\text{diff EM ≥10y–EX}} = .361$; $p < .05$). Shedding light on the criteria of success within organizational cultures, the direct communication of the corporation's unique selling proposition and its purpose was found to have a moderate effect on the proactivity among long-term employees (i.e., PRO_1: 363.69; $U = 28{,}542$, $p < .001$, $r = -.159$). However, at the direct comparison level to employees with shorter company affiliation, they showed a stronger affection for hierarchical cultures (i.e., HC→WA with significant $\beta_{\text{diff EM: <1y – ≥10y}} = -.528$; $p < .10$) and clan cultures relative to WA (i.e., CC→WA with significant $\beta_{\text{diff EM: <1y – ≥10y}} = -.315$; $p < .10$). This phenomenon is precisely the central problem in many organizations that contributes to the process of hermitization or so-called 'mature' clans.

In conclusion, it is necessary to create a climate for failure, not to be confused with losses, that pushes employees to their limits and awakens them from the state of 'Sleeping Beauty.' Executives' higher emphasis on resilience in the workplace (i.e., WA→RES with significant $\beta_{\text{diff EM-EX}} = -.100$; $p < .05$) can support this course of action. Based on these results, cultural evolution paths within organizations

represent a research gap in the existing literature. With this in mind, the next chapter proposes specific tools and measures that are especially suitable for large and established organizations.

5.1.2 Designing a New Organizational Approach for Cultural Change

Both studies have revealed a plethora of interesting perspectives that are useful for developing more consistent organizational culture constructs in scientific research. Building a cultural assimilation framework helps "acquiring executives think through integration operations and intentions for the combined organization, by mapping the degree of cultural change" (Lee Marks, Mirvis, & Ashkenas, 2013, p. 48). In the literature, most cultural approaches concentrate on individual components without going into their implementation and measurability in the real organizational context. Their effects have not been tested so far, thus, offering an antidote to the one best way for managing change (Hughes, 2018).

The patterns derived from the discussion of the research results lead to a chronological sequence of the different frameworks to make them more understandable. Burke (2017) established a four-phase model for leading organizational change, consisting of a pre-launch phase, a launch phase, a post-launch phase, and a sustaining phase. This new organization model for cultural development, which at first glance seems straightforward, performs by adapting the conceptual framework as a three-way combination of (1) the different culture types (cf. CVF by Cameron and Quinn, 2011), (2) the workforce agility concept, and (3) dealing with uncertainty in the work environment. Steps 4 and 5 thereupon provide concrete guidance based on the previous results. Annex 1 (p. 225) and Annex 2 (p. 231) both describe the characteristics and items behind each construct. The main advantage of the application is that it allows leaders to clarify and determine which aspects of their existing cultures should be maintained and which need to be revised. However, this approach is not a 'one-size-fits-all' process model that can be attained with a checklist or through training activities. It truly is a complex process in which the three areas affect the change levers in a combination that follows a managerial perspective on organizational culture.

Figure 37 illustrates the new organization model simplified for assessing and leading cultural change by placing the three paradigms into a contextual order.

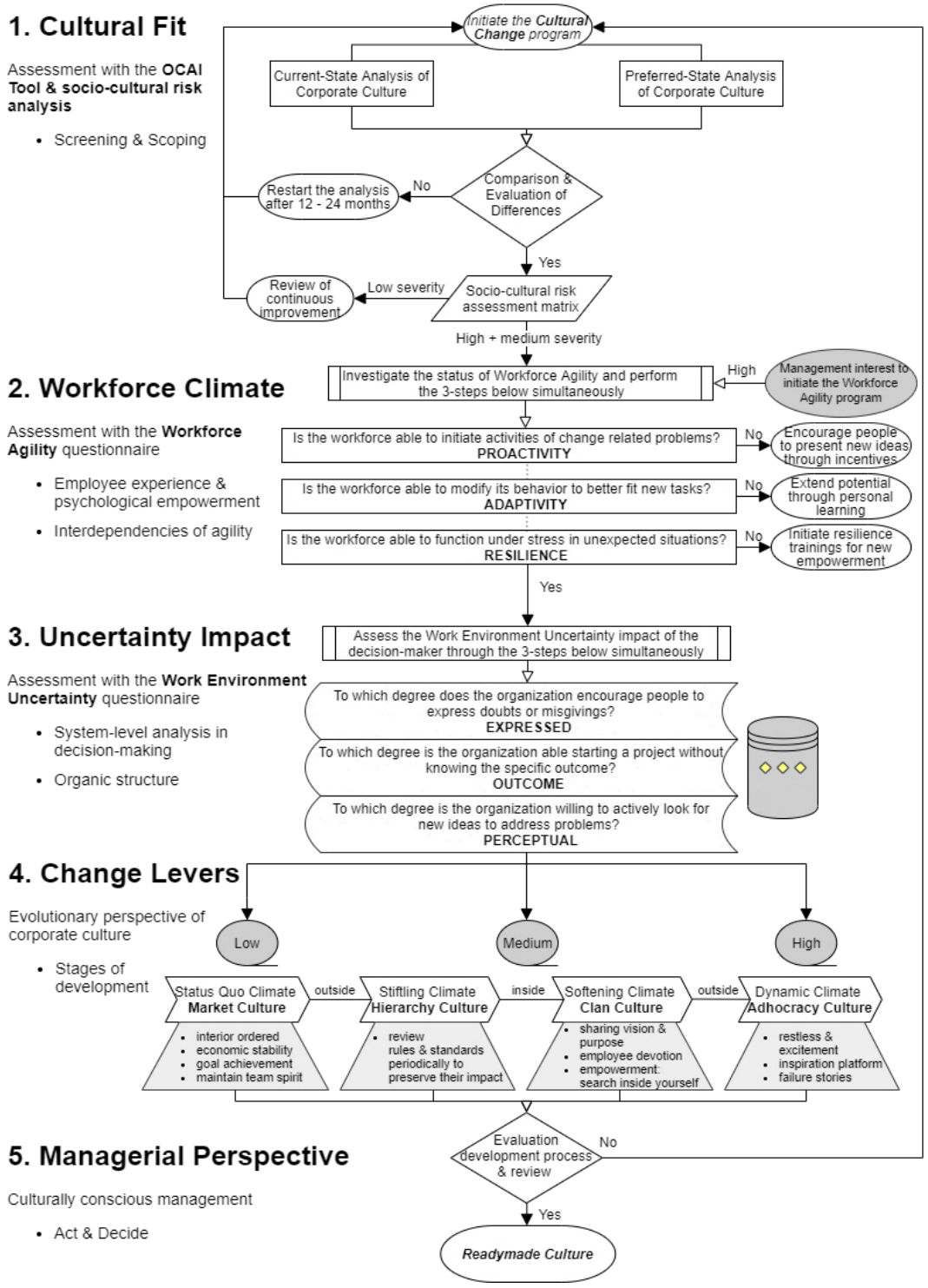


Figure 37: Process model on cultural change through workforce agility and uncertainty management. [Source: own version]

5.2 DISCUSSION OF THE IMPLICATIONS FOR CORPORATE PRACTICE

The study has shown that most organizations are composed of mixed-cultures. Consequently, the elicitation of data relating to the change levers does not fully match the patterns of the model. Nevertheless, organizational change often occurs as an "outcome/event/thing arising out of a particular policy/practice" (Hughes, 2018, p. 29). In this sense, the new organizational approach to cultural change provides excellent advice on which direction to move in cultural evolution. Thereby, further consideration must be given to the workforce and how to deal with uncertainty in the work environment. The following sections provide recommendations on the use and handling of the results, including some notices for implementation.

5.2.1 Recommendations

Organizational processes avail to connect the various elements of strategy, business model, and daily operations. The purpose of the process model depicted in Figure 37 (p. 204) is to find a suitable change lever that supports the manifestation of the employees' commitment, attitude, and experience in the organizational culture. In this sense, the term 'suitable' relates to the respective organizational context, especially for long-established organizations, and the presence of awareness for cultural change.

The first recommendation concerning the application of this model is to insert it into personal areas. It becomes crucial to check whether the proposed activities affect specific periods of time, as timing is integral to organizational change activities. In many cases, it is advisable to return to previous steps to revise the actions taken, either because intermediate results have occurred or other initiatives seemed more appropriate. This procedure can help achieve senior management-wide approval for cross-organizational surveys related to corporate culture and WA. However, the first validation phase emphasizes adherence to the individual process model steps. The OCAI tool (Step1) serves as the initial measurement instrument and creates two organizational culture profiles as a basis for discussion. In terms of agreeing upon measures to be initiated to promote cultural development, it is also necessary to gather more in-depth knowledge about the

psychological empowerment of the workforce in Steps 2 and 3. Furthermore, it is advantageous to collect all the data within one survey. This procedure reduces time-consuming efforts and records errors at different points in time.

The second recommendation aims at the regular repetition of the survey. In this sense, the recommended continuous assessment should be undertaken at regular intervals (approximately every 3 to 4 years) with deeper cultural learning through cross-cultural dialogues. Executives or change experts can experience the intensity of the measures with the organization while also eliciting a scalable participation rate among the workforce.

Consequently, it is useful to align targets with the results of this study. It takes a long time to change organizational culture types from the current to the preferred status. Awareness must be created that without this assessment, there is a risk of organizational aging, making difficult tasks more uncomfortable and leading to the rejection of adventures. It is a matter of finding an optimal level between the individual areas considered here to ultimately create a climate for nursing the cultural evolution in organizations. Whereby, keeping in mind that a grown man does not become a child again.

5.2.2 Guideline for Implementation

When building process models, organizations require instructions for implementation and execution. Since the model refers to general validity, it is advisable to create a corporate-specific guideline for registering the survey in relation to cultural change. The aim is to inform the workforce about the study's purpose and the importance of participating in the survey through a customized invitation via e-mail. Communicating the culture change process helps overcome resistance across the organization (Cameron, 2008). Process management teams should be empowered to conduct this survey for the entire organization. In this vein, the suggested course of action involves six steps of implementation:

1. Assessing differences in intra-organizational characteristics related to the following community and grouping aspects:
    - Demographical data: Gender, age group

- Job tenure and job position: Executives vis-à-vis employees, length of employment
- Affiliation of department: Purchasing vis-à-vis Development, Human Resources vis-à-vis Finance, Marketing vis-à-vis Sales, etc.
- Firm location: Americans vis-à-vis Europeans, Asians vis-à-vis Europeans, etc.
- Company affiliation: Headquarters or subsidiary firm

The anonymous setting through the survey approach ensures the participation of every organizational member without fear of being singled out.

2. Survey Dissemination 1: Collecting, summarizing, and reporting the culture survey data through the OCAI tool.

As a necessary first step for cultural change, the OCAI-based measurement creates the current and the preferred culture profile of an organization. Since the culture typologies are idealistic and often mixed within organizations, it is necessary to detect in which direction the real settings differ. Using the characteristic information from Step 1, the analysis combines data of individual respondent profiles from smaller samples of the population or even the entire organization. Although OCAI results do not in themselves provide any actions for cultural change, they form an explicit basis for discussion and a consistent understanding within the management team.

3. Survey Dissemination 2: Enabling the culture alignment process by collecting the survey data of constructs of WA and WEU.

Once deviations between current and preferred culture types are noticed, the next step is to identify and develop change measures. For this purpose, framework conditions for WA and the management of WEU are used for further evaluation. The focus is primarily on the psychological empowerment of the workforce. As soon as a certain level is reached, there is a seamless transition to system-level uncertainty analysis. This sequential flow has also proven successful in this survey, which confirms a high level of satisfaction among participants.

4. Assigning to one of the core directions of the cultural change levers:

Combining these frameworks into an overall picture by statistical means, three distinct directions of impact in the cultural evolution process for organizations emerge. This development should be initiated with the dynamics derived in decision-making to find the optimal level of uncertainty. At present, this investigation can be divided into three classes, shown in Figure 37 (p. 204) (i.e., low, medium, and high unpredictability). As such, the types of culture are destined to develop over generations in a kind of cyclical manner.

5. Deriving a list of relevant approaches to organizational culture change:

Following the cyclical development of organizational culture, the measures should be modified and evolved. Derived from the findings of this research project, the proposed initiatives for each change lever include a set of activities to mature and nurture the stream toward a preferred culture type. Along these lines, differences among leadership requirements for the transformed organizational culture must also be articulated (Cameron, 2008). Furthermore, the consistent implementation of leadership development should also be reviewed. One possibility that can be embedded in the process model described here is the Identity Leadership Inventory developed in 2014 (Steffens et al., 2014). In addition to the concept of prototypicality ('being') mentioned above, identity leadership consists of three other aspects: advancement ('doing'), impresarioship ('mattering'), and entrepreneurship ('crafting'). The process model lists essential characteristics of recognition for each culture type and establishes initial leadership initiatives for moving forward. Many of the initiatives involve the enhancement of employee experience in specific climates, e.g., a situation of failure where failure stories are implemented to reframe the mistakes, or an attitude of collaboration through 'Friday experiments' that provide two hours of free time for learning, brainstorming, or experimenting alone or in groups.

6. Re-evaluation of the measures and activities: Reflection and Learning.

Essentially to have a review of the main achievements, a further comparison of the impact of the initiatives for cultural change should take place. Therefore, the

means of discussing and agreeing upon activities must result in consensus. It is important to provide community platforms where employees can comment on their process journey and have the opportunity to request assistance. It is advisable to keep all activities documented, as they often bear fruit only at a later stage (approximately 3 – 4 years) in the context of cultural change.

5.3 CHAPTER SUMMARY AND CONCLUSIONS OF THE DISCUSSION AND IMPLICATIONS

In this chapter, the main findings from Quantitative Studies 1 & 2 were discussed along with the literature review from Chapter 2 to support the arguments. Both surveys provided perceptions in the contextual areas of leadership style, work experiences, and personal motivators. To this end, the analyses to the research questions were restored with a quantitative research methodology to give a phenomenological view of the psychological empowerment of the workforce through different cultural typologies. Based on the review of the theoretical objectives, six leading factors emerged that have led to their alignment for organizational culture practices:

(1) Espoused values represent barriers to the entire corporation, particularly in the field of organizational agility. The advised threefold cluster of shared values, composed of the super-categories of 'Being, Doing, and Becoming,' involves intrinsic motivators for the psychological empowerment of the workforce. This value cluster is strongly linked to the theory-driven and validated inventory of identity leadership.

(2) At different organizational levels, there are dedicated distinctions in the perception of culture types that lead to the antagonism of mixed-cultures. Cluster 1 (class of competitive control culture) and Cluster 2 (class of family hierarchy culture) are found in the 'old' economy, while Cluster 3 (class of innovative clan culture) and Cluster 4 (class of resilient market culture) dominate in the 'new' economy. It is noticeable that a composition of competing values prevails in the 'old' economy (clan culture vs. market culture).

(3) Following previous research, the three variables surveyed, proactivity, adaptivity, and resilience, explain the outcomes of an agile workforce through the

concept of psychological empowerment. Defining clear organizational goals results in positive effects on the proactivity of long-term employees (≥ 10 years).

(4) The clan culture type has a substantial influence on the construct of workforce agility, especially when it comes to resiliency in stressful situations and adaptability to better fit the changing environment. This finding relates to the analysis of the preferred corporate culture type for both industry types. All groups see flexibility and discretion, rather than stability and control, as the preferred culture type that prevails in dynamic environments.

(5) Significant statistical differences were found across different nationality groups, using Hofstede's (2010) theory on the dimensions of national culture as part of an explanation. A direct comparison shows that companies from the UK and the U.S. experience a greater influence from market cultures on WA. This finding explains the cultural differences in the form of a high success-driven, short-term orientation (e.g., Britain's masculine society with a clear performance ambition) combined with a lower level of uncertainty avoidance of hierarchical elements (e.g., the freedom of Americans with the expression 'The winner takes all').

(6) A high emphasis on uncertainty in the work environment positively moderates the relationship between adhocracy culture and WA with an acceptable f^2. In the case of lower attention to uncertainty in the workplace, the opposite occurs. Depending on the age of the organization, different focal points on WEU management emerge. Corporations older than 50 years especially suffer from a less perceived emphasis on fostering changing situations in decision-making.

In the final step, the findings were combined with a logical sequence for building a new organizational approach to cultural change. This practice-inspired research work, as mentioned in the introduction, aimed to provide a process model, especially for long-established organizations that need to stimulate possible contingencies in relationships between an agile workforce, uncertainty in the work environment, and different organizational culture typologies. With a view to the implications for corporate practice, recommendations and a guideline for their implementation were established. Building on those achievements, Chapter 6 provides a summary of the research, a review of the research contribution for practice, including its limitations and opportunities for further scope in this area.

CHAPTER 6. CONCLUSIONS

"Reasoning draws a conclusion and makes us grant the conclusion, but does not make the conclusion certain, nor does it remove doubt so that the mind may rest on the intuition of truth, unless the mind discovers it by the path of experience."

Roger Bacon (~1219 – 1292)
in The Opus Majus of Roger Bacon Part 2
by Robert Belle Burke (2002)

6 CONCLUSIONS

The last part of this thesis concludes with a review of the main insights and results. For this purpose, the theoretical contributions of the two quantitative studies are delineated by arguing how the findings add to the knowledge of organizational culture and workforce agility research. Furthermore, limitations of this research work, particularly related to research methodology, are discussed and areas of further studies are highlighted. Finally, this chapter presents concluding remarks relating to the achievement of the overarching research goals of this thesis.

6.1 REVIEW OF RESEARCH CONTRIBUTION

As outlined in the introductory part, this thesis aimed at scrutinizing the influence of different organizational culture types on the construct of WA through the moderating impact of uncertainty in the work environment. Recent studies have shown that only 7% of corporations feel very ready to execute the shift from functional hierarchy to team-centric, network-based models (Deloitte Insights, 2019). The process model for culture development, which used the conceptual framework to map and shape relationships well for large-scale organizations, proves that these complex requirements are still ambitious. The global reach and the significance in shaping solutions arise from the focus of different industry types, namely production ('old') vs. service and IT ('new') economies.

Seeking the theoretical lenses for the research aims, the examined five bodies of knowledge offer a profound understanding for answering the three questions in place. (1) As a way of introducing numerous factors relevant to the organizational ecosystem, a consistent context between change vs. transformation processes was established in Chapter 2.1. By looking at organizational change across different levels of interaction, transformations constitute the highest form and extreme profundity of organizational change. (2) The literature review in Chapter 2.2 ensured a common understanding of the thesis' main terms and ideas by analyzing the main approaches related to organizational agility. In particular, the concept of WA revealed a gap in research. (3) The second approach was suitable to reflect the research questions in the area of corporate culture discussed in the literature review

in Chapter 2.3. The major theories of Upper Echelons and the psychological aspects of workforce empowerment were related to the strength and breadth of this research field. (4) To identify the interplay of different organizational culture types, Chapter 2.4 examined the theoretical lens of the CVF. Drawing on the consideration of corporate culture values, the positioned dynamic capabilities of individuals were necessary to better balance exploration and exploitation efforts. (5) Reiterating from the contingency theory, Chapter 2.5 prepared the link between the CVF and the concept of WA by focusing on the moderator variable of WEU. Based on the perspective of distinct dynamic capabilities, the systematically developed conceptual framework adopted in Chapter 2.6 was expected to be useful to explore specific aspects of organizational tensions in this research context.

For addressing this theoretical research gap, the data collection and analysis procedure was conducted in two empirical studies. Both survey strategies resulted in a sizable data set of over 924 respondents from diverse backgrounds, as outlined in the methodology part of this thesis. Quantitative Study 1, the pre-study of the empirical chapter, focused on measuring the perceived current and preferred mixed cultural profiles for both industry types. In addition, the open-ended question relating to the value system of the workforce provided a means to arrive at the different value systems in different organizational levels encountered during the culture change process. New correlations emerged between the internal questions, i.e., employees at the expert level vs. executives at the management level. The performance of the pre-study was evident in the correlation analysis, which showed statistically significant interpretative reliability of the results, thus, validating the suitability of the OCAI as a survey instrument in practical terms.

To further penetrate the invisible area of Schein's (2004; 2010) triangular model of organizational culture, Quantitative Study 2 was used to test the measurement instrument underlying the conceptual framework through the PLS-SEM approach. The framework provided a complete picture and consisted of numerous latent constructs to empirically test the interrelationships of psychological empowerment and organizational culture with interaction moderation of WEU.

The discussion of the results drew on the testing of the eight scientific research hypotheses derived from the reflection of the critical literature review. Furthermore, these propositions were reinforced by the non-parametric Mann-Whitney U-test for statistical group differences. In this way, there are four statistically significant and promising outcomes from the research work which add to the body of knowledge in the following aspects:

(1) The study revealed the existence of four different clusters of mixed cultural typologies within different types of industries. As such, the proposition specified in the threefold bunch of shared values manifested in the super-categories of 'Being, Doing, and Becoming' is vital for shaping employees' perceptions of contextual factors in the workplace. These contingent factors constitute an extensive implication for other researchers investigating interpersonal relationships and values in the workplace, in line with Schwartz's (2012) Theory of Basic Human Values and Jung's (1971) Personality Traits Theory.

(2) This study emphasized new correlations between organizational culture types and the concept of agility in the workplace. There was a statistically strong significant relationship between the organizational clan culture quadrant and WA, which was reinforced by the CIB algorithm and its consistent scenario No. 4 for 'Group boundaries and identity.' This finding underscores the importance of team-relatedness in an empowered context regarding proactive behavior by considering the process of hermitization. According to the responses, employees in an uncertain decision-making environment felt more empowered and noticed more expressions of misgivings. Contrary to findings from prior research, hierarchy and market cultures also showed significant positive influences, illustrating the combination of new work and traditional environmental conditions to promote an agile workforce. However, the strength of adhocratic characteristics had to be assessed as non-significant, exhibiting the importance of possible external moderating factors.

(3) The synthesis of multi-group differences made a substantial contribution to advance theory-building in the research discipline on organizational culture. Different organizational glues appeared within organizations from the 'old' and the 'new' economy. More specifically, the relationship between market cultures

and WA – as opposed to theory – showed notably positive conditions in emerging SMEs younger than 50 years. However, the diminishing clan culture in corporations older than 50 years led to restraints in resiliency and lower adaptivity in the agile workforce. Among statistical differences in job tenure, long-term employees rated the moderating effects of WEU higher, while employees at the expert level exhibited higher levels of expressed uncertainty that was positively related to change. Furthermore, the specific statement of success criteria within the corporate value statements strengthened the proactive agility dimension of a long-term workforce. These findings further solidify the importance of the proposed process model in developing organizational culture.

(4) While no comprehensive boundary effect of WEU manifested between all organizational culture types and agility in the workforce, this study revealed another distinct avenue of perfect ordinal two-way moderation of WEU between adhocracy culture and WA. As such, the strong emphasis on WEU leads to higher adhocratic culture aspirations in WA. However, adhocratic characteristics were found to have detrimental effects on psychological empowerment in the workplace toward resilience building.

The resulting findings seem likely to help organizations facing comparable conditions in the environment. Furthermore, within this research gap, an approach of cultural development has been addressed through the concept of WA, with a detailed description of its characteristics in the corporate environment and the functional management levels beyond these correlations. Although there is much discussion in the research community on culture change, this process model provides valuable guidance in the various directions for intensity, rules, and ideas to further refine the framework. The final questionnaire that emerged after refinement and validation of the scales offers practical application, especially for long-established corporations, that vindicate the inclusion of culture assessment tools.

Economic valuation often underestimates complex multi-level organizations that benefit from taking a soft factor perspective on employees' psychological empowerment and cross-cultural integration. Since only a few extensive empirical studies have been conducted in this specific research area, other researchers can

benefit from this academic study. They can adopt the validated measurement instruments to generate further insights that trigger an economic perspective on organizational outcomes. The next sections thereupon outline extensive research limitations and propositions for future research regarding methodological improvements to the instrument and specific organization areas of observation.

6.2 RESEARCH LIMITATIONS

Although this research provides useful contributions to academic research and practices with its robust findings, three overarching limitations remain within this thesis. First, within the conceptual framework, effects were measured using a cross-sectional sampling method at one point in time, which could lead to problems in inferring causality. A survey at a later term could shift the direction of the relationships here. This is the case, for instance, if individuals perceive a lower influence of clan culture characteristics of WA in favor of market culture attributes. Nonetheless, including the moderating effect of uncertainty in the decision-making environment helps stabilize effective relationships. In this sense, the relations could be reciprocal or cyclical in nature, as described in the process model for culture development in organizations reviewed longitudinally. It should be noted that these developments depend on the size and age of the organization, the respective management actions taken, and the measurement periods under consideration. These issues give rise to potential questions regarding the accuracy of fit and practicability of different corporations to the process model outlined.

Second, most of the findings were collected in two types of industries, i.e., the 'old' vs. the 'new' economy, resulting in a restricted MGA and limited generalizability of the results. This part of delimitation includes the fact that the research work did not examine all related concepts of organizational agility and focused primarily on behavioral aspects of culture, leadership, and the workforce. To meet these limitations, all relationships and their directions build upon existing literary work and theories. As a reminder, Quantitative Study 1 used the CVF validated by Cameron and Quinn (2011) to measure and emphasize the perceived current and preferred culture types across different organizational levels. The underlying conceptual framework of Quantitative Study 2 included a series of items regarding the relationship between organizational culture types and

workforce agility through the moderating effect of WEU. These items were separately theorized and validated several times (Alavi et al., 2014; Clampitt & Williams, 2005; Muduli, 2017; Sherehiy & Karwowski, 2014). In both questionnaires, the measures were summarized, so some facets were inherently not captured. Nonetheless, a suitable database was collected for analyzing relationships within the conceptual framework during the course of the study.

Finally, the main empirical study also features distinct limitations related to the proportion and nature of samples. The specific study's limitations were discussed in detail in Chapter 3.2.4 (see Table 11, p. 121). One could argue that the presence of social desirability bias, which can either distend or inhibit potential results, cannot be entirely excluded from this study. Again, the risk seems acceptable for two reasons and could be nearly offset by the proposed migration approaches as the work progresses.

Complete anonymity of the participants' answers was assured throughout the briefing section in order to reduce the effects described above, as outlined in the corresponding methodology part of this thesis. As a methodical remedy, the independent conduct of the study deliberately avoided the collection of specific company data. Both studies, and particularly Quantitative Study 2 with n = 821, provided a large data set for analysis, which made the results more reliable. However, more than half of the total sample consisted of large corporations from the five most represented countries, namely Germany, the U.S., UK, Spain, and Austria. Respondents from German corporations predominated (77.7%), limiting the global generalizability of the results. Thus, the evaluation criteria used in the adoption stage through WA are particularly fitting to German, large-scale organizations.

In addition, the distribution of executives and employees from the expert level was achieved at an unequal level. In a direct comparison, three times more employees than executives participated. Accordingly, different patterns emerged with regard to the effect characteristics. Here, the generalization of the findings to the executive roles and the conclusions drawn from the Upper Echelons Theory must be carefully weighed. In reviewing all the considerations, the next section sheds light on ideas for future research to provide even further support for the findings of this academic research.

6.3 IDEAS FOR FURTHER RESEARCH

Given what has been revealed in this study, several avenues that have emerged from the limitations become of interest for future theoretical, methodological, empirical contributions. First and foremost, the conceptual framework presented in this thesis serves as a starting point for introducing an interdisciplinary construct of WA, four different organizational culture types, and the moderating effect of uncertainty in the decision-making environment. This refinement depicts a primary avenue for understanding the inherent complexity of psychological empowerment in the workplace through cultural determinants. The current stage of research specifies the survey measurement model. The sum of findings from both studies is sufficient to underpin the conceptual framework and its practical focus. In delving deeper into the propositions of various parts from the suggested framework, three areas may be worthwhile to investigate for the development of future academic research.

First, this study would benefit from future longitudinal work. The results of this thesis aspire to act as a pathfinder for this purpose. The quantitative method was applied here to capture the broad perspective of this research field. By collaborating with a selection of experts qualitatively, the model could be re-tested and challenged. Together, both methods form an understanding of how psychological characteristics affect the cultural, agile relationship with the workforce. It would be beneficial to expand the population under examination to other global contexts and cultures to increase the scope of the data set established. In this vein, researchers are encouraged to re-test the hypothesis in this thesis by employing a mix of methods.

Second, further research design criteria can be defined that relate to both the construct level and the application of methods. Future research could define its object of investigation more precisely, i.e., sampling method with the proposed framework only in specific corporations for direct competitive comparisons or at specific company levels, such as the composition and diversity of the top management teams for culture development. In this context, changes to the construct at the item-level are also conceivable. Given the existence of mixed cultures, it would be worthwhile to develop appropriate scales for measurement.

By investigating this phenomenon, the qualitative method should be adopted for data collection. As such, the aim is to explore its broad applicability while simultaneously extending the range of individual and contextual moderators. The moderator of WEU used in this study follows an internal perspective related to the perceived dealing of uncertainty at the decision-making level. Here, a distinction could be made between intentions to change caused by external dynamism and implemented change activities within the organization, thus identifying further organizational tensions.

Finally, another big avenue for future research will be to examine the monetary value of organizational culture as one of the most crucial factors of intangible assets. As explained in an earlier section, recent research has shed light on possible outcomes of affective employee commitment or job satisfaction. In further studies, researchers could attempt to quantify the creation of shareholder value through the 'soft' factor of the organizational culture. By integrating measures into the existing conceptual framework, a longitudinal study can identify interrelationships of effects exerted by the SEM approach. Thereby, researchers would contribute to future empirical findings. In this area, the established measures firmly support the proposed process model for cultural development. The decisive factor of organizational culture will receive more attention in the presentation of intangible assets in a public company's annual report.

6.4 CONCLUDING REMARKS AND FINAL NOTE

In today's economy, agility has evolved as one of the most paramount business megatrends in the VUCA world to meet the pressing organizational challenges of the 21st Century. The increasing demand for shaping modern knowledge and building a cultural mindset toward an agile workforce appears as the leading driver of organizational change and business transformations. In essence, this research work has strengthened the mission of supporting corporations and their members in taking on the challenges within changing environments. At the same time, the organizational climate with varying beliefs, values, and assumptions depends on how the organization embraces or avoids uncertainty in decision-making.

The research achievements from this thesis traversed a personal, professional, and academic journey that manifested itself in key research objectives, limitations, and ideas for future research. The route started with using the contingency theory from knowledge-based conceptual research to empirical, practice-related, and well-grounded observations. The methodology approach provided guidance for proposing management frameworks best suited to the respective organization. Again, this choice is argued in favor of this thesis for three reasons, as it offers meaningful, practice-oriented frameworks to guide culture development through an empowered agile workforce in organizations.

"Culture is an abstraction, yet the forces that are created in social and organizational situations derived from culture are powerful. If we don't understand the operation of these forces, we become victims to them." (Schein, 2010, p. 7). The quantitative findings, based on a cross-sectional survey sample, facilitated a normative leaning of the cause-and-effect relationships between decisive categories. These include the simple organizational culture taxonomies according to the CVF and the construct of WA under the specific dimension of uncertainty management in the explicit work environment. The data analysis revealed that leading organizational change with an agile workforce is highly influenced by clan-oriented cultures, which further raised the consciousness of deep analytical survey-based diagnostic tools to accelerate internal recognition of organizational culture characteristics. By providing a refined framework that is more explicit, this study sought to contribute to that success.

There is no formula for creating continuous cultural development. However, this thesis addresses the identified research gaps in the scope of both conceptual and empirical research by providing a value-neutral process model to avoid falling into a state of complete opacity. Finally, managers can rely on the extensive list of initiatives to select those measures that are most appropriate for their organization. This approach offers points of reference in part of the human experience as an extension of the Upper Echelons Theory, while organizational change is more a portion of natural selection in human nature. The moment new patterns that ensure survival over long periods begin to fade, other paradigms are in place to drive the next major transformation. In this sense, transformations also occur within corporations. Corporations cannot survive without economic success, like schools,

universities, or government agencies. It is the only organizational form that must change in the long-run to be sustainably successful.

APPENDIX

Annex 1: English and German version of the survey questionnaire for Quantitative Study 1.

Dear respondent,

Thank you for taking part in this survey on

"Organizational Culture Assessment through the Competing Values Framework (CVF)."

It should take no longer than 5 minutes to complete the questionnaire. Your answers contribute significantly to the success of my dissertation research project at the FOM University of Applied Sciences in Munich in cooperation with the UCAM university in Murcia/Spain.

This survey aims to gather your experiences, insights, and background information on the various types of organizational culture. Finally, it will be used to develop industry-specific competing values models.

There are no right or wrong answers to the questionnaire, all answers will be kept completely anonymous, and no individuals will be identified in the research.

If you have any queries regarding the questionnaire or the nature of the research, please do not hesitate to get in contact.

Thank you for your cooperation and support,

Lisa-Marie Ahl

General Issues – Demographic Variables *(Demographische Daten)*

Industry Type - ***Unternehmensbranche***

In which industry is the organization you work for (mainly) active?

In welcher Branche ist Ihr Unternehmen (hauptsächlich) tätig?

(Please select one answer.)

- ☐ Production/Manufacturing sector
  Industrie, Verarbeitendes Gewerbe
- ☐ Trade, Service, and IT sector
  Dienstleistungen und IT
- ☐ Others:
  Sonstige:

Firm Size - ***Unternehmensgröße***

How many people, full-time and part-time, does this organization currently employ?

Wie viele Personen – Vollzeit- und Teilzeitbeschäftigte – sind derzeit in Ihrem Unternehmen beschäftigt?

(Please select one answer.)

- ☐ 0 – 49 employees *(Mitarbeiter)*
- ☐ 50 – 249 employees *(Mitarbeiter)*
- ☐ ≥ 250 employees *(Mitarbeiter)*

Job Position of Respondent – ***Job Position***

What position do you (currently) occur in this organization?

Welche Position haben Sie (aktuell) in Ihrem Unternehmen?

(Please select one answer.)

- ☐ Executive (disciplinary and/or professional)
  Führungskraft (disziplinarisch und/oder fachlich)
- ☐ Employee
  Angestellte/r

Dominant Characteristics. ***Hauptmerkmal der Organisation.***

1. Dominant Characteristics. ***1. Hauptmerkmal der Organisation.***		**Now** / ***Heute***	**Preferred** / ***Zukunft***
A	The organization is a very personal place. It is like an extended family. People seem to share personal information. *Dieses Unternehmen besitzt einen sehr persönlichen Charakter. Es ist wie eine große Familie. Die Mitarbeiter teilen Informationen miteinander.*		
B	The organization is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks. *Dieses Unternehmen ist sehr dynamisch und unternehmerisch. Die Mitarbeiter sind bereit, etwas zu wagen.*		
C	The organization is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented. *Dieses Unternehmen ist sehr ergebnisorientiert. Die Mitarbeiter sind sehr ehrgeizig und auf Leistung aus.*		
D	The organization is a very controlled and structured place. Formal procedures generally govern what people do. *Dieses Unternehmen ist geordnet und gut strukturiert. In der Regel bestimmen Formalitäten die Handlungen der Mitarbeiter.*		
Total			

Management of Employees & Leadership. *Umgehen mit Mitarbeitern & Führung.*

2. Management of Employees & Leadership. *2. Umgehen mit Mitarbeitern & Führung.*		**Now** / *Heute*	**Preferred** / *Zukunft*
A	The management style in the organization is characterized by teamwork, consensus and participation. *Im Unternehmen ist der Führungsstil und Umgang mit Mitarbeitern geprägt von Teamarbeit, Konsens und Mitbestimmung (Partizipation).*		
B	The management style in the organization is characterized by individual risk taking, innovation, freedom and uniqueness. *Im Unternehmen ist der Führungsstil und Umgang mit Mitarbeitern geprägt von persönlichen Freiheiten, Kreativitätsförderung und Risikobereitschaft.*		
C	The management style in the organization is characterized by hard-driving competitiveness, high demands and achievement. *Im Unternehmen ist der Führungsstil und Umgang mit Mitarbeitern geprägt von Konkurrenzdenken, hohen Anforderungen und Fokus auf Leistungen.*		
D	The management style in the organization is characterized by security of employment, conformity, predictability and stability in relationships. *Im Unternehmen ist der Führungsstil und Umgang mit Mitarbeitern geprägt von Arbeitsplatzsicherheit, Vorhersagbarkeit und stabilen Arbeitsbeziehungen.*		
Total			

Organization Glue. ***Was die Organisation zusammenhält.***

3. Organization Glue. ***3. Was die Organisation zusammenhält.***		**Now** / ***Heute***	**Preferred** / ***Zukunft***
A	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high. *Das Unternehmen wird zusammengehalten durch Loyalität und gegenseitiges Vertrauen. Zugehörigkeit ist sehr wichtig.*		
B	The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being cutting edge. *Das Unternehmen wird zusammengehalten durch Freude an Innovation und Entwicklung. Der Zeit voraus zu sein ist sehr wichtig.*		
C	The glue that holds the organization together is the emphasis on achievement and goal accomplishment. *Das Unternehmen wird zusammengehalten durch Leistungsbereitschaft und Erfolg. Das Gewinnen - Wollen ist sehr wichtig.*		
D	The glue that holds the organization together is formal rules and policies. Maintaining a smooth-running organization is important. *Das Unternehmen wird zusammengehalten durch transparente Regeln und verlässliche Ordnung. Sicherheit ist sehr wichtig.*		
Total			

Criteria of Success. ***Erfolgskriterien in der Organisation.***

4. Criteria of Success. *4. Erfolgskriterien in der Organisation.*		**Now** / *Heute*	**Preferred** / *Zukunft*
A	The organization defines success on the basis of the development of human resources, teamwork, employee commitment and concern for people. *Das Unternehmen definiert Erfolg über die Entwicklung von Mitarbeitern, Teamarbeit, Engagement und den Mitarbeiterzusammenhalt.*		
B	The organization defines success on the basis of having the most unique or newest products. It is a product leader and innovator. *Das Unternehmen definiert Erfolg über einzigartige oder neue Produkte. Das Streben danach, Produktführer und Innovator zu sein.*		
C	The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key. *Das Unternehmen definiert Erfolg über Marktgewinne und darüber, die Konkurrenz hinter sich zu lassen. Marktführerschaft ist der Schlüssel zum Erfolg.*		
D	The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling and low-cost production are critical. *Das Unternehmen definiert Erfolg auf der Basis von Effizienz. Wichtig sind koordinierte Planung, reibungslose Prozesse und zuverlässige Leistungserbringung.*		
Total			

Open Question:

Which 5 values are the most important for you in your work environment?

Welche 5 Werte sind für Sie in Ihrem Arbeitsumfeld am wichtigsten?

(Please start with the most important factor.)

Annex 2: English and German version of the survey questionnaire for Quantitative Study 2.

Dear respondent,

Thank you for taking part in this survey on

"**The influence of organizational culture and its competing values on workforce agility.**"

It should take no longer than 10 minutes to complete the questionnaire. Your answers contribute significantly to the success of my dissertation at the UCAM university in Murcia/Spain in cooperation with the FOM University of Applied Sciences in Munich/Germany.

This survey aims to gather your experiences, insights, and background information on the various types of organizational culture. Finally, it will be used to develop industry-specific competing values models that help enable higher levels of workforce agility.

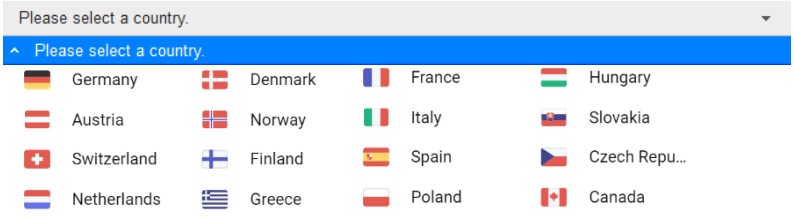
There are no right or wrong answers to the questionnaire, all answers will be kept completely anonymous, and no individuals will be identified in the research. To thank you for your participation in my survey, I will draw 10 Amazon vouchers at € 15 to all participants. This participation is voluntary. At the end of the survey, you have the option of leaving an e-mail address for the raffle and/or for receiving a summary of the research results. This is saved separately from your data record by technical measures of the online tool.

If you have any queries regarding the questionnaire or the nature of the research, please do not hesitate to get in contact.

Thank you very much for your time and support,

Lisa-Marie Ahl

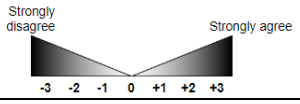
Part I. General Information

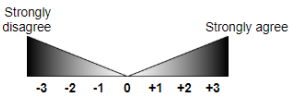
General Issues – Demographic Variables (Control Items)
Industry Type (IT_01, IT_02, IT_03) In which industry is the organization you work for (mainly) active? *(Please select one answer.)* ☐ Production/Manufacturing sector ☐ Trade, Service, and IT sector ☐ Others:
Firm Size (FS_01, FS_02, FS_03) How many people, full-time and part-time, does this organization currently employ? *(Please select one answer.)* ☐ 0 – 49 employees ☐ 50 – 249 employees ☐ ≥ 250 employees
Firm Age (years) (FA_01, FA_02, FA_03) How many years ago was this organization established? *(Please select one answer.)* ☐ < 5 years ☐ 5 – 49 years ☐ ≥ 50 years
Job Tenure / Years of Experience (JT_01, JT_02, JT_03) How long do you already work for this organization? *(Please select one answer.)* ☐ < 1 year ☐ 1 – 10 years ☐ > 10 years
Job Position of Respondent (JP_01, JP_02) What position do you (currently) occur in this organization? *(Please select one answer.)* ☐ Executive (disciplinary and/or professional) ☐ Employee
Firm Location (FL_01 – FL_31) At which location do you work for this organization? 

Part II. The Competing Values Framework (CVF) *(Cameron & Quinn, 2011; Strack, 2012)* ***German translations see Annex 1, p. 227 ff.***

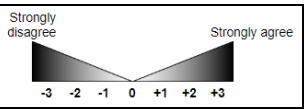
Clan Culture		Strongly disagree … Strongly agree (-3 -2 -1 0 +1 +2 +3)
CC_1	The organization is a very personal place. It is like an extended family. People seem to share personal information.	
CC_2	The management style in the organization is characterized by teamwork, consensus, openness and participation.	
CC_3	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high.	
CC_4	The organization defines success on the basis of the development of human resources, teamwork, employee commitment and concern for people.	

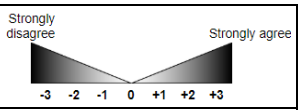
Adhocracy Culture		Strongly disagree … Strongly agree (-3 -2 -1 0 +1 +2 +3)
AC_1	The organization is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	
AC_2	The management style in the organization is characterized by individual risk taking, innovation, freedom and uniqueness. Trying new things and prospecting for opportunities are valued.	
AC_3	The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being cutting edge.	
AC_4	The organization defines success on the basis of having the most unique or newest products. It is a product leader and innovator.	

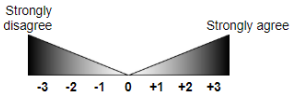
Market Culture		
MC_1	The organization is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	
MC_2	The management style in the organization is characterized by hard-driving competitiveness, high demands and achievement, exemplifying a no-nonsense focus.	
MC_3	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	
MC_4	The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	

Hierarchy Culture		
HC_1	The organization is a very controlled and structured place. Formal procedures generally govern what people do.	
HC_2	The management style in the organization is characterized by security of employment, conformity, predictability and stability in relationships.	
HC_3	The glue that holds the organization together is formal rules and policies. Maintaining a smooth-running organization is important.	
HC_4	The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling and low-cost production are critical.	

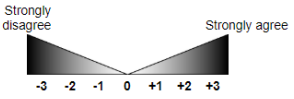
Part III. Workforce Agility *(Alavi et al., 2014; Sherehiy et al., 2007)*

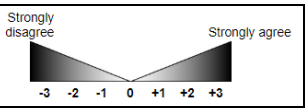
Proactivity		
PRO_1	I am able to predict the problems that might occur in my work. *Ich bin in der Lage, Probleme, die bei meiner Arbeit auftreten könnten, vorherzusehen.*	
PRO_2	I am able to solve new and complex problems at work. *Ich bin in der Lage, neue und komplexe Probleme bei der Arbeit zu lösen.*	
PRO_3	I look for the opportunities to make improvements at work. *Ich suche nach Möglichkeiten, um Verbesserungen bei der Arbeit zu erreichen.*	
PRO_4	When I see something that I do not like, I am trying to fix it. *Wenn ich etwas sehe, das mir nicht gefällt, versuche ich, es zu beheben.*	
PRO_5	I am trying to find out more effective ways to perform my job. *Ich versuche, effektivere Wege zu finden, um meine Arbeit zu erledigen.*	
PRO_6	I let time take care of things that I have to do. *Ich lasse die Zeit sich um meine Dinge kümmern.*	
PRO_7	At work, I stick to what I am told or required to do. *Bei der Arbeit halte ich mich an das, was man mir sagt oder von mir verlangt wird.*	

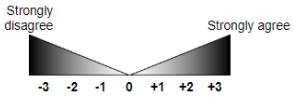
Adaptivity		
ADA_1	I accept critical feedback. *Ich akzeptiere kritisches Feedback.*	
ADA_2	I adjust to work with teams that have different customs. *Ich stelle mich auf die Arbeit mit Teams ein, die andere Gewohnheiten haben.*	
ADA_3	I change my behavior to work more effectively with other people and show respect for their values. *Ich ändere mein Verhalten, um effektiver mit anderen Menschen zusammenzuarbeiten und ihre Werte zu respektieren.*	
ADA_4	I communicate well with people of different backgrounds. *Ich kommuniziere gut mit Menschen unterschiedlicher Hintergründe/Werdegänge.*	
ADA_5	I easy adjust to the requirements of new equipment and new work procedures. *Ich stelle mich leicht auf die Anforderungen neuer Arbeitsverfahren ein.*	
ADA_6	I quickly switch from one project to another. *Ich wechsle schnell von einem Projekt zum anderen.*	
ADA_7	To keep up-to-date at work, I quickly learn new knowledge or skills. *Um bei der Arbeit auf dem neuesten Stand zu bleiben, lerne ich schnell neue Kenntnisse oder Fähigkeiten.*	

Resilience		
RES_1	The changes at work frustrate me. (R) *Die Veränderungen bei der Arbeit frustrieren mich.*	
RES_2	I like to change old way of doing things. *Ich mag es, die alte Art und Weise auf die Dinge getan werden, zu ändern.*	
RES_3	I remain calm and composed when faced with difficult circumstances. *Ich bleibe ruhig und gelassen, wenn ich mit schwierigen Umständen konfrontiert werde.*	
RES_4	I am able to perform my job efficiently in difficult or stressful situations. *Ich bin in der Lage, meine Arbeit in schwierigen oder stressigen Situationen effizient zu erledigen.*	
RES_5	When a difficult situation occurs, I complain about it (R). *Wenn eine schwierige Situation auftritt, beschwere ich mich darüber.*	
RES_6	I drop everything and take an alternate course of action to deal with an urgent problem. *Ich lasse alles stehen und liegen und wähle eine andere Vorgehensweise, um ein dringendes Problem zu lösen.*	
RES_7	I am able to perform my job without knowing the total picture. *Ich bin in der Lage, meine Arbeit auszuführen, ohne das Gesamtbild zu kennen.*	
RES_8	I am able to work well when faced with a demanding workload or schedule. *Ich bin in der Lage, gut zu arbeiten, wenn ich mit einem anspruchsvollen Zeitplan konfrontiert bin.*	

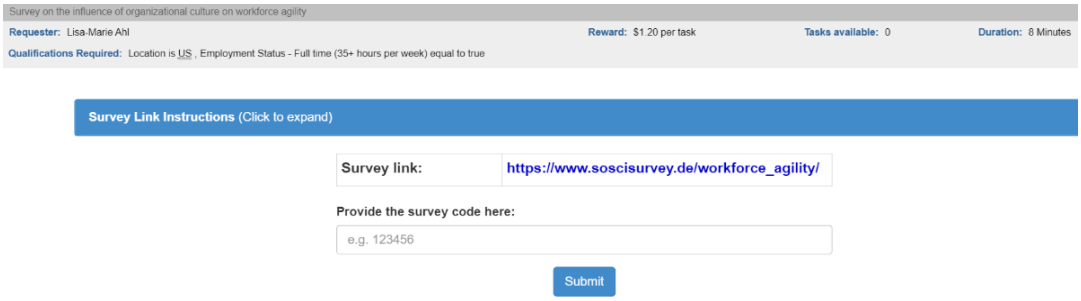
Part IV. Work Environment Uncertainty *(Clampitt & Williams, 2005)*

Expressed Uncertainty		
EXP_1	My organization doesn't want employees to admit that they are unsure about something. (R) *Meine Organisation will nicht, dass die Mitarbeiter zugeben, dass sie sich über etwas unsicher sind.*	
EXP_2	My organization discourages employees from talking about their misgivings. (R) *Meine Organisation hält die Mitarbeiter davon ab, über ihre Bedenken zu sprechen.*	
EXP_3	My organization doesn't encourage employees to discuss their doubts about a project. (R) *Meine Organisation ermutigt die Mitarbeiter nicht, ihre Zweifel an einem Projekt zu diskutieren.*	
EXP_4	In my organization, being unsure about something is a sign of weakness. (R) *In meiner Organisation ist es ein Zeichen von Schwäche, wenn man sich über etwas unsicher ist.*	

Outcome Uncertainty		
OUT_1	When my organization starts a project, it needs to know exactly where the project will end up. (R) *Wenn meine Organisation ein Projekt beginnt, muss sie genau wissen, wo das Projekt enden wird.*	
OUT_2	My organization needs to know the specific outcome before starting a project. (R) *Meine Organisation muss das konkrete Ergebnis kennen, bevor sie ein Projekt beginnt.*	
OUT_3	My organization wants precise plans before starting a job or project. (R) *Meine Organisation möchte genaue Pläne haben, bevor sie eine Arbeit oder ein Projekt beginnt.*	
OUT_4	My organization doesn't need a detailed plan when working on a project. *Meine Organisation braucht keinen detaillierten Plan, wenn sie an einem Projekt arbeitet.*	

Perceptual Uncertainty		
PER_1	My organization actively looks for signs that the situation is changing. *Meine Organisation sucht aktiv nach Anzeichen für eine Veränderung der Situation.*	
PER_2	My organization easily spots changing trends. *Meine Organisation erkennt leicht wechselnde Trends.*	
PER_3	My organization is always on the lookout for new ideas to address problems. *Meine Organisation ist immer auf der Suche nach neuen Ideen zur Lösung von Problemen.*	
PER_4	Even after my organization makes a decision, it will reevaluate the decision when the situation changes. *Selbst nachdem meine Organisation eine Entscheidung getroffen hat, wird sie diese Entscheidung neu bewerten, wenn sich die Situation ändert.*	

Annex 3: AMT procedure for MTurk client-side view of HIT.



Upon having clicked on '**Click to expand**' each participant was provided with the following instructions:

Survey Instructions reading time: 1-2 minutes. Make sure to read.

I am looking for participants (full-time and part-time employed) for my study on improving workforce agility! The survey takes about **8-10 minutes**, can be done mobile or on the desktop, and is absolutely anonymous. This survey aims to find out your experiences, insights, and background on the different cultural types of a company. Ultimately, this will be used to develop industry-specific competing value models that allow higher levels of workforce agility.

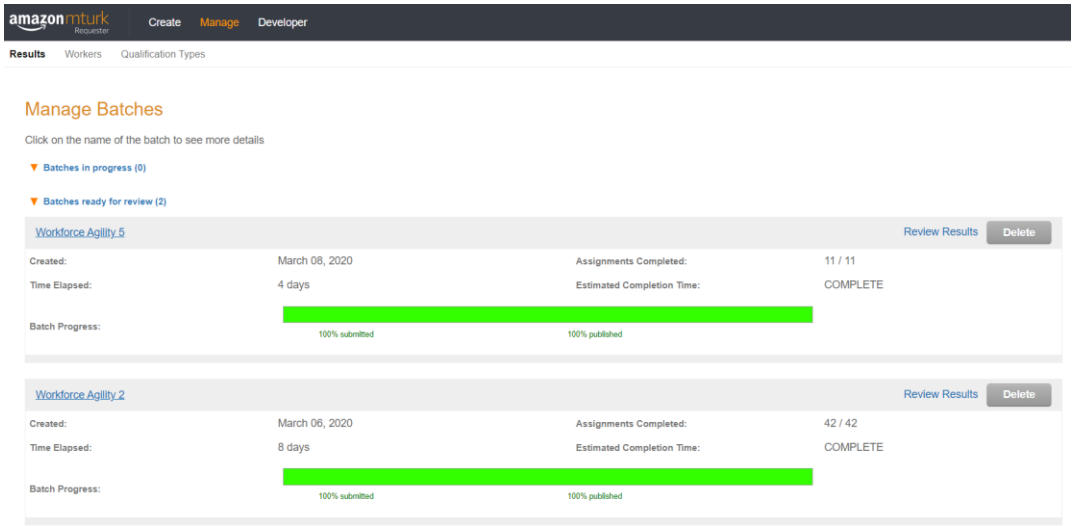
Select the link below to complete the survey. At the end of the survey, you will receive a code to paste into the box below to receive credit for taking my survey. Payments will only be made if the questionnaire is completely filled out. Do not start this HIT when you do not have enough time.

Make sure to leave this window open as you complete the survey. When you are finished, you will return to this page to paste the **survey code** into the box. **Do not provide me with your worker ID.** You can easily reach me via e-mail. Please be patient in this case, I am working with hundreds of MTurks simultaneously, alone. Leave me a reminder e-mail in case you did not receive funds. Screenshots help, so you can prove your progress.

Please note: The survey is not bugged. It has been tested with more than 300 participants by now. I do not influence the setup you are using. Old hardware or missing drivers may result in bad latency.

Overview of existing projects created for starting a new batch as AMT requester:

Extract of results from the '**Workforce Agility**' batch ready for review/payment:



Age distribution over workdays, being Monday to Friday, from the 03rd of March 2020 to 06th of March 2020 retrieved from the online MTurk tracking tool.

Year of Birth	Percentage	Age (as of 03/2020)
2000-2010	1.77 %	10-19
1990-2000	42.75 %	20-29
1980-1990	29.39 %	30-39
1970-1980	13.71 %	40-49
1960-1970	6.25 %	50-59
1950-1960	5.07 %	60-69
1940-1950	0.7 %	70-79
1930-1940	0.36 %	80-89

[Source: data acquired via online tracking tool by Difallah et al., 2018]

Annex 4: Final codebook for the analysis of the open question within Quantitative Study 1 (with inter-rater reliability measures).

Super-category	**Main categories** *(κ = 0.83)*	**Description** (Schwartz, 2012)	**Subcategories** (text material)
Being ***(ethical)***	Self-Transcendence *(κ = 0.94)*	Emphasizes concern for the welfare and interests of others	Appreciation Atmosphere Communication Community Cooperation Empathy Equality Fairness Goodness Honesty Integrity Loyalty Responsibility Support Team Tolerance Work-Life-Balance
	Self-Enhancement *(κ = 0.86)*	Emphasize pursuit of one's own interests and relative success and dominance over others	Autonomy Consciousness Efficiency Focus Humor Joy Leadership Management Performance Realization Reliability Remuneration Proudness Satisfaction Success

Super-category	**Main categories** *(κ = 0.83)*	**Description** (Schwartz, 2012)	**Subcategories** (text material)
Doing ***(behavioral)***	Conservation *(κ = 0.73)*	Refers to stability of society, of relationships, and of self, harmony, order, and preservation of the past	Acceptance Cohesion Commitment Constancy Family Feedback Kindness Participation Punctuality Regulation Resiliency Respect Security Thoroughness Transparency Trust
Becoming ***(aspirational)***	Openness to Change *(κ = 0.92)*	Refers to a readiness for new ideas, actions, and experiences	Collaboration Courage Creativity Curiosity Development Freedom Flexibility Innovativeness Interest Motivation Openness Predictability Self-Propulsion Vision

Annex 5: Definition of research constructs and PLS-SEM codebook.

	Construct	Indicator Code	Definition/Item
Control variables		**IT, FS, JT, FA, FL, JP**	Based on using MGA-PLS to determine the significance of relationships across the respondents' demographics, control variables are added in the structural model.
First Order	Adhocracy Culture	**AC**	The ability of people to nimbly collaborate in new, creative, and innovative ways.
	Clan Culture	**CC**	The ability to foster commitment and cohesion through supportive interpersonal relationships, develop human capital, nurture a collaborative culture.
	Market Culture	**MC**	The ability to focus on results, achievement, and attention to the competitive landscape and external positioning.
	Hierarchy Culture	**HC**	The ability to create and maintain structures and systems that support organizational control and learning.
Second Order	Workforce Agility	**WA**	The extent of how employees handle and respond to change by adapting to changes and new conditions and using the capabilities of the firm.
First Order	Resilience	**RES**	The extent of efficient functioning under stress, despite changing environment or when applied strategies and solutions have failed.
	Adaptivity	**ADA**	The extent of changing or modifying oneself or their behavior to better fit the new environment.
	Proactivity	**PRO**	The extent of activities that have a positive effect on the changing environment.

	Construct	Indicator Code	Definition/Item
Moderator Variable	Work Environment Uncertainty	**WEU**	The influence of organizational behavior on how employees perceive their organization managing uncertainty.
First Order	Expressed	**EXP**	The degree to which the organization encouraged employees to express doubts or misgivings.
	Perceptual	**PER**	The degree to which the organization was willing to actively look for new ideas to address problems or signs that the situation was changing.
	Outcome	**OUT**	The degree to which the organization needed detailed plans or a specific outcome before starting a project

[Source: definitions by Alavi et al., 2014; Clampitt & Williams, 2005; Lavine, 2014]

Annex 6: Results of MGA-PLS across types (firm size) in a two-step approach.

Annex 6a: Results of the MICOM procedure.

Construct	Configurational Invariance (Step 1)	Compositional Invariance (Step 2) LEs-SMEs		Partial Measurement Invariance
		Original Correlation	5.0%	
AC	Yes	.931	.692	Yes
CC	Yes	.859	.778	Yes
MC	Yes	.830	.587	Yes
HC	Yes	.790	.536	Yes
WA	Yes	.999	.996	Yes
PRO	Yes	.999	.995	Yes
ADA	Yes	.999	.994	Yes
RES	Yes	.996	.988	Yes
EXP	Yes	1.000	1.000	Yes
OUT	Yes	.873	.824	Yes
PER	Yes	.988	.997	No
WEU	Yes	.960	.972	No
AC x WEU	Yes	1.000	1.000	Yes
CC x WEU	Yes	1.000	1.000	No
MC x WEU	Yes	1.000	1.000	Yes
HC x WEU	Yes	1.000	1.000	Yes

Note: AC: Adhocracy Culture; CC: Clan Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; SMEs: Small- and Medium-sized Enterprises; LEs: Large Enterprises. **Step 1**: This is automatically established. **Step 2**: The original correlation is higher than 5% and the permutation *p*-value is higher than .05.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences (LEs-SMEs)	Confidence Interval	Original Correlation (LEs-SMEs)	Confidence Interval	
AC	-.576	[-.160; .161]	.146	[-.166; .185]	No / Yes
CC	-.555	[-.164; .159]	-.082	[-.229; .258]	No / Yes
MC	-.170	[-.157; .168]	-.206	[-.238; .256]	No / Yes
HC	.138	[-.164; .168]	-.131	[-.231; .254]	Yes / Yes
WA	-.028	[-.158; .156]	-.278	[-.250; .280]	Yes / No
PRO	-.101	[-.154; .165]	.030	[-.307; .311]	Yes / Yes
ADA	.021	[-.162; .160]	-.223	[-.215; .238]	Yes / Yes
RES	.009	[-.158; .161]	-.272	[-.263; .290]	Yes / Yes
EXP	.040	[-.160; .158]	-.243	[-.164; .187]	Yes / No
OUT	-.265	[-.162; .155]	-.108	[-.185; .213]	No / Yes
PER	-.447	[-.161; .157]	.301	[-.237; .260]	No / No
WEU	-.227	[-.161; .155]	-.121	[-.212; .229]	No / Yes
AC x WEU	.131	[-.183; .187]	-.268	[-.443; .465]	Yes / Yes
CC x WEU	-.044	[-.191; .178]	-.334	[-.507; .576]	Yes / Yes
MC x WEU	.019	[-.189; .179]	.226	[-.663; .653]	Yes / Yes
HC x WEU	-.009	[-.177; .177]	-.239	[-.456; .510]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; SMEs: Small- and Medium-sized Enterprises; LEs: Large Enterprises. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Annex 6b: Direct effects for firm size subsamples based on permutation test.

Relationships	LEs			SMEs			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.165**			**.450**			**.000*** **	**Yes**
AC→WA		.061	.260^{ns}		.011	.888^{ns}	.624^{ns}	No
CC→WA		.195	.000***		.296	.001***	.303^{ns}	No
MC→WA		.094	.040**		.267	.001***	.053**	Yes
HC→WA		.112	.006**		.220	.005**	.204^{ns}	No
WA→RES	**.609**	.780	.000***	**.704**	.839	.000***	.107^{ns} **(.101^{ns})**	No
WA→PRO	**.634**	.796	.000***	**.762**	.873	.000***	.038**(.034**)	Yes
WA→ADA	**.700**	.837	.000***	**.756**	.870	.000***	.262^{ns} **(.257^{ns})**	No
EXP→WEU		.697	.000***		.708	.000***	.842^{ns}	No
OUT→WEU		.180	.002**		.314	.000***	.130^{ns}	No
PER→WEU		.483	.000***		.254	.007**	.009**	Yes
WEU→WA		.127	.010**		.135	.056*	.932^{ns}	No
AC x WEU→WA		.069	.229^{ns}		.087	.373^{ns}	.879^{ns}	No
CC x WEU→WA		-.022	.682^{ns}		.079	.509^{ns}	.362^{ns}	No
MC x WEU→WA		.077	.126^{ns}		-.258	.001***	.001***	Yes
HC x WEU→WA		.025	.566^{ns}		.016	.844^{ns}	.910^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; SMEs: Small- and Medium-sized Enterprises; LEs: Large Enterprises. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Annex 7: Results of MGA-PLS across types (firm industry and location) in a two-step approach.

Relationships (Multi-group test based on 5,000 permutations)	**Diff Location** GER – UK
AC→WA	.230^{ns}
CC→WA	-.094^{ns}
MC→WA	**-.419****
HC→WA	-.010^{ns}
WA→RES	-.039^{ns}
WA→PRO	.041^{ns}
WA→ADA	-.076*
EXP→WEU	-.098^{ns}
OUT→WEU	.002^{ns}
PER→WEU	.178^{ns}
WEU→WA	-.188^{ns}
AC x WEU→WA	.224^{ns}
CC x WEU→WA	-.070^{ns}
MC x WEU→WA	.421^{ns}
HC x WEU→WA	.159^{ns}

Note: Path Coefficients-diff are bold-marked when compositional invariance and permutation test are significant; ns = non-significant; *p < .10, **p < .05, ***p < .001 (2-tailed test; Bootstrapping based on n = 5,000 subsamples).

Annex 7a: Results of the MICOM procedure.

Construct	**Configurational Invariance (Step 1)**	**Compositional Invariance (Step 2)** GER: PI – SI ǀ GER – U.S. ǀ GER – UK		**Partial Measurement Invariance**
		Original Correlation	**5.0%**	
AC	Yes	.867 ǀ .639 ǀ .845	.749 ǀ .333 ǀ .049	Yes ǀ Yes ǀ Yes
CC	Yes	.967 ǀ .870 ǀ .570	.808 ǀ .555 ǀ .243	Yes ǀ Yes ǀ Yes
MC	Yes	.793 ǀ .942 ǀ .766	.373 ǀ -.004 ǀ -.211	Yes ǀ Yes ǀ Yes
HC	Yes	.612 ǀ .520 ǀ .836	.427 ǀ -.358 ǀ -.516	Yes ǀ Yes ǀ Yes
WA	Yes	.998 ǀ .989 ǀ .995	.996 ǀ .989 ǀ .974	Yes ǀ Yes ǀ Yes
PRO	Yes	.999 ǀ .990 ǀ .994	.996 ǀ .988 ǀ .972	Yes ǀ Yes ǀ Yes
ADA	Yes	.998 ǀ .997 ǀ .998	.992 ǀ .976 ǀ .934	Yes ǀ Yes ǀ Yes
RES	Yes	.998 ǀ .970 ǀ .993	.991 ǀ .964 ǀ .937	Yes ǀ Yes ǀ Yes
EXP	Yes	1.000 ǀ 1.000 ǀ 1.000	1.000 ǀ .999 ǀ .998	Yes ǀ Yes ǀ Yes
OUT	Yes	.963 ǀ .936 ǀ .488	.945 ǀ -.828 ǀ -.938	Yes ǀ Yes ǀ Yes
PER	Yes	1.000 ǀ -.999 ǀ .974	.998 ǀ .916 ǀ .912	Yes ǀ No ǀ Yes
WEU	Yes	.992 ǀ .332 ǀ .958	.979 ǀ .863 ǀ .809	Yes ǀ No ǀ Yes
AC x WEU	Yes	1.000 ǀ 1.000 ǀ 1.000	1.000 ǀ 1.000 ǀ 1.000	Yes ǀ Yes ǀ Yes
CC x WEU	Yes	1.000 ǀ 1.000 ǀ 1.000	1.000 ǀ 1.000 ǀ 1.000	Yes ǀ Yes ǀ Yes
MC x WEU	Yes	1.000 ǀ 1.000 ǀ 1.000	1.000 ǀ 1.000 ǀ 1.000	Yes ǀ Yes ǀ Yes
HC x WEU	Yes	1.000 ǀ 1.000 ǀ 1.000	1.000 ǀ 1.000 ǀ 1.000	Yes ǀ No ǀ No

Note: Culture typologies (AC; CC; MC; HC); WA: Workforce Agility (PRO; ADA; RES); WEU: Work Environment Uncertainty (EXP; OUT; PER); PI: Production Industry; SI: Service Industry; GER: Germany; U.S.: United States; UK: United Kingdom. **Step 1**: This is automatically established. **Step 2**: The original correlation is higher than 5% and the permutation p-value is higher than .05.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences GER: PI – SI	Confidence Interval	Original Correlation GER: PI – SI	Confidence Interval	
AC	-.108	[-.154; .156]	-.068	[-.167; .163]	Yes / Yes
CC	-.304	[-.149; .155]	-.173	[-.240; .222]	Yes / Yes
MC	.586	[-.156; .152]	-.764	[-.241; .236]	No / No
HC	.077	[-.154; .159]	-.274	[-.236; .240]	Yes / No
WA	-.052	[-.152; .158]	-.122	[-.275; .264]	Yes / Yes
PRO	-.096	[-.149; .161]	-.015	[-.342; .312]	Yes / Yes
ADA	.006	[-.156; .155]	-.007	[-.215; .214]	Yes / Yes
RES	-.037	[-.153; .157]	-.133	[-.247; .275]	Yes / Yes
EXP	-.408	[-.152; .155]	-.009	[-.175; .172]	No / Yes
OUT	-.466	[-.157; .160]	-.227	[-.206; .197]	No / No
PER	-.051	[-.153; .157]	-.213	[-.230; .232]	Yes / Yes
WEU	-.396	[-.152; .158]	-.306	[-.219; .208]	No / No
AC x WEU	-.198	[-.171; .166]	-.330	[-.359; .345]	No / Yes
CC x WEU	-.208	[-.180; .169]	-.496	[-.520; .500]	No /Yes
MC x WEU	-.252	[-.186; .182]	-.975	[-.636; .630]	No / No
HC x WEU	-.119	[-.173; .169]	-.377	[-.492; .470]	Yes / Yes

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences GER – U.S.	Confidence Interval	Original Correlation GER – U.S.	Confidence Interval	
AC	-.564	[-.257; .259]	.127	[-.238; .314]	No / Yes
CC	-.299	[-.245; .259]	-.008	[-.347; .439]	No / Yes
MC	-.236	[-.253; .260]	.858	[-.344; .436]	Yes / No
HC	.003	[-.255; .255]	-.137	[-.354; .458]	Yes / Yes
WA	-.039	[-.252; .259]	-.565	[-.401; .474]	Yes / No
PRO	-.076	[-.250; .267]	-.206	[-.491; .531]	Yes / Yes
ADA	-.101	[-.258; .251]	-.544	[-.323; .410]	Yes / No
RES	.104	[-.244; .263]	-.252	[-.397; .505]	Yes / Yes
EXP	.594	[-.254; .259]	-.439	[-.240; .315]	No / No
OUT	.358	[-.254; .255]	.090	[-.299; .384]	No / Yes
PER	-.568	[-.252; .261]	.396	[-.344; .450]	No / Yes
WEU	.234	[-.243; .260]	.042	[-.306; .379]	Yes / Yes
AC x WEU	.675	[-.289; .278]	-.045	[-.550; .660]	No / Yes
CC x WEU	.393	[-.303; .276]	.077	[-.719; .864]	No / Yes
MC x WEU	.279	[-.306; .283]	1.050	[-.987; .999]	Yes / No
HC x WEU	.144	[-.282; .273]	-.059	[-.695; .854]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; PI: Production Industry; SI: Service Industry; GER: Germany; U.S.: United States. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences GER – UK	Confidence Interval	Original Correlation GER – UK	Confidence Interval	
AC	-.326	[-.333; .336]	-.087	[-.308; .442]	Yes / Yes
CC	-.289	[-.312; .351]	.496	[-.421; .589]	Yes / Yes
MC	.006	[-.322; .340]	.109	[-.414; .610]	Yes / Yes
HC	-.031	[-.323; .327]	-.141	[-.426; .621]	Yes / Yes
WA	.179	[-.316; .342]	-.234	[-.518; .629]	Yes / Yes
PRO	.249	[-.311; .344]	-.206	[-.640; .693]	Yes / Yes
ADA	-.019	[-.319; .344]	-.423	[-.407; .565]	Yes / No
RES	.218	[-.320; .347]	.081	[-.479; .669]	Yes / Yes
EXP	.018	[-.322; .333]	.224	[-.314; .464]	Yes / Yes
OUT	-.161	[-.335; .327]	.088	[-.356; .536]	Yes / Yes
PER	-.495	[-.327; .337]	.660	[-.426; .615]	No / No
WEU	-.254	[-.323; .338]	.499	[-.388; .547]	Yes / Yes
AC x WEU	.222	[-.375; .343]	.623	[-.670; .946]	Yes / Yes
CC x WEU	.238	[-.399; .349]	1.131	[-.934; 1.165]	Yes / Yes
MC x WEU	-.025	[-.429; .365]	.730	[-1.174; 1.371]	Yes / Yes
HC x WEU	-.092	[-.381; .348]	.528	[-.827; 1.157]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; GER: Germany; UK: United Kingdom. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Annex 7b: Direct effects for firm industry and location subsamples based on permutation test.

Relationships	PI (GER)			SI (GER)			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.194**			**.201**			**.902^{ns}**	**No**
AC→WA		.071	.332^{ns}		.078	.253^{ns}	.940^{ns}	No
CC→WA		.313	.000***		.139	.043**	.075*	Yes
MC→WA		.077	.258^{ns}		.044	.511^{ns}	.721^{ns}	No
HC→WA		.063	.318^{ns}		.127	.172^{ns}	.373^{ns}	No
WA→RES	**.549**	.741	.000***	**.668**	.818	.000***	.059* **(.060*)**	Yes
WA→PRO	**.649**	.806	.000***	**.680**	.825	.000***	.621^{ns} **(.622^{ns})**	No
WA→ADA	**.671**	.819	.000***	**.672**	.820	.000***	.991^{ns} **(.992^{ns})**	No
EXP→WEU		.766	.000***		.613	.000***	.003**	Yes
OUT→WEU		.195	.025**		.169	.001***	.790^{ns}	No
PER→WEU		.435	.000***		.501	.000***	.211^{ns}	No
WEU→WA		.034	.626^{ns}		.218	.004**	.068*	Yes
AC x WEU→WA		.001	.991^{ns}		.123	.079*	.223^{ns}	No
CC x WEU→WA		.051	.601^{ns}		-.040	.550^{ns}	.398^{ns}	No
MC x WEU→WA		.106	.134^{ns}		.058	.377^{ns}	.619^{ns}	No
HC x WEU→WA		-.017	.790^{ns}		.046	.526^{ns}	.496^{ns}	No

Relationships	GER			U.S.			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.181**			**.670**			**.001*** **	**Yes**
AC→WA		.091	.055*		.079	.532^{ns}	.941^{ns}	No
CC→WA		.218	.000***		.130	.353^{ns}	.565^{ns}	No
MC→WA		.028	.563^{ns}		.368	.004**	.035**	Yes
HC→WA		.103	.010**		.467	.008**	.042**	Yes
WA→RES	**.613**	.783	.000***	**.791**	.889	.000***	.080* **(.067*)**	Yes
WA→PRO	**.665**	.815	.000***	**.764**	.874	.000***	.332^{ns} **(.321^{ns})**	No
WA→ADA	**.668**	.818	.000***	**.920**	.959	.000***	.003**(.002**)	Yes
EXP→WEU		.668	.000***		.496	.001***	.064*	Yes
OUT→WEU		.213	.000***		.420	.000***	.081*	Yes
PER→WEU		.475	.000***		.432	.225^{ns}	.688^{ns}	No
WEU→WA		.120	.018**		.036	.811^{ns}	.595^{ns}	No
AC x WEU→WA		.103	.048**		.089	.570^{ns}	.925^{ns}	No
CC x WEU→WA		-.030	.574^{ns}		.101	.611^{ns}	.452^{ns}	No
MC x WEU→WA		.053	.261^{ns}		-.149	.439^{ns}	.207^{ns}	No
HC x WEU→WA		.038	.405^{ns}		-.056	.773^{ns}	.498^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; PI: Production Industry; SI: Service Industry; GER: Germany; U.S.: United States. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Relationships	GER			UK			Permutation Test	Sig.
	R^2	Direct Effect	p-Value	R^2	Direct Effect	p-Value	p-Value	
WA	**.181**			**.684**			**.084***	**Yes**
AC→WA		.091	.055*		-.139	.464^{ns}	.286^{ns}	No
CC→WA		.218	.000***		.312	.158^{ns}	.660^{ns}	No
MC→WA		.028	.563^{ns}		.447	.028**	.070*	Yes
HC→WA		.103	.010**		.113	.640^{ns}	.971ns	No
WA→RES	**.613**	.783	.000***	**.677**	.823	.000***	.658^{ns} **(.655^{ns})**	No
WA→PRO	**.665**	.815	.000***	**.600**	.775	.000***	.619^{ns} **(.627^{ns})**	No
WA→ADA	**.668**	.818	.000***	**.798**	.893	.000***	.243^{ns} **(.236^{ns})**	No
EXP→WEU		.668	.000***		.766	.000***	.399^{ns}	No
OUT→WEU		.213	.000***		.211	.117^{ns}	.991^{ns}	No
PER→WEU		.475	.000***		.297	.059*	.167^{ns}	No
WEU→WA		.120	.018**		.309	.123^{ns}	.371^{ns}	No
AC x WEU→WA		.103	.048**		-.121	.635^{ns}	.294^{ns}	No
CC x WEU→WA		-.030	.574^{ns}		.039	.871^{ns}	.752^{ns}	No
MC x WEU→WA		.053	.261^{ns}		-.368	.172^{ns}	.049**	Yes
HC x WEU→WA		.038	.405^{ns}		-.121	.666^{ns}	.410^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; GER: Germany; UK: United Kingdom. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Annex 8: Results of MGA-PLS across types (firm age) in a two-step approach.

Annex 8a: Results of the MICOM procedure.

Construct	Configurational Invariance (Step 1)	Compositional Invariance (Step 2) <5y vs. ≥50y | 5–49y vs. ≥50y		Partial Measurement Invariance
		Original Correlation	5.0%	
AC	Yes	.852 | .907	.174 | .730	Yes | Yes
CC	Yes	.818 | .919	.350 | .808	Yes | Yes
MC	Yes	.769 | .921	-.039 | .610	Yes | Yes
HC	Yes	.906 | .696	-.028 | .505	Yes | Yes
WA	Yes	.993 | .999	.981 | .997	Yes | Yes
PRO	Yes	.995 | 1.000	.979 | .996	Yes | Yes
ADA	Yes	.995 | .999	.961 | .995	Yes | Yes
RES	Yes	.968 | .998	.952 | .992	Yes | Yes
EXP	Yes	1.000 | 1.000	.999 | 1.000	Yes | Yes
OUT	Yes	.912 | 982	-.808 | 882	Yes | Yes
PER	Yes	-.957 | .999	-.991 | .998	Yes | Yes
WEU	Yes	.738 | .997	.672 | .978	Yes | Yes
AC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	No | No
CC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes
MC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes
HC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes

Note: AC: Adhocracy Culture; CC: Clan Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. **Step 1**: This is automatically established. **Step 2**: The original correlation is higher than 5% and the permutation *p*-value is higher than .05.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences (<5y – ≥50y)	Confidence Interval	Original Correlation (<5y – ≥50y)	Confidence Interval	
AC	.808	[-.270; .261]	-.131	[-.341; .273]	No / Yes
CC	.665	[-.277; .259]	-.415	[-.459; .359]	No / Yes
MC	.233	[-.279; .255]	-.343	[-.481; .359]	Yes / Yes
HC	-.117	[-.276; .257]	-.010	[-.474; .397]	Yes / Yes
WA	-.033	[-.280; .264]	.336	[-.510; .445]	Yes / Yes
PRO	.069	[-.281; .260]	-.076	[-.593; .556]	Yes / Yes
ADA	-.105	[-.270; .265]	.211	[-.405; .326]	Yes / Yes
RES	-.039	[-.281; .259]	.312	[-.539; .438]	Yes / Yes
EXP	-.258	[-.275; .258]	.412	[-.337; .249]	Yes / No
OUT	.249	[-.267; .265]	.208	[-.405; .307]	Yes / Yes
PER	.569	[-.270; .262]	-.279	[-.473; .349]	No / Yes
WEU	.087	[-.275; .256]	.307	[-.387; .313]	Yes / Yes
AC x WEU	-.144	[-.292; .310]	.675	[-.791; .648]	Yes / Yes
CC x WEU	-.034	[-.278; .318]	.382	[-.858; .689]	Yes / Yes
MC x WEU	-.116	[-.289; .336]	-.085	[-1.061; 1.098]	Yes / Yes
HC x WEU	-.554	[-.292; .296]	.087	[-.925; .771]	No / Yes

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences (5-49y – ≥50y)	Confidence Interval	Original Correlation (5-49y – ≥50y)	Confidence Interval	
AC	.505	[-.151; .144]	-.057	[-.171; .160]	No / Yes
CC	.333	[-.152; .149]	.009	[-.233; .217]	No / Yes
MC	.016	[-.147; .151]	-.002	[-.220; .217]	Yes / Yes
HC	-.145	[-.151; .141]	-.052	[-.237; .223]	Yes / Yes
WA	.019	[-.148; .143]	.309	[-.257; .251]	Yes / No
PRO	.036	[-.145; .143]	.135	[-.296; .295]	Yes / Yes
ADA	-.009	[-.147; .145]	.301	[-.219; .208]	Yes / No
RES	.022	[-.152; .151]	.085	[-.268; .258]	Yes / Yes
EXP	.228	[-.148; .152]	.027	[-.173; .157]	No / Yes
OUT	.374	[-.155; .147]	.009	[-.200; .190]	No / Yes
PER	.336	[-.154; .150]	-.189	[-.236; .223]	No / Yes
WEU	.385	[-.146; .152]	.120	[-.206; .200]	No / Yes
AC x WEU	.123	[-.165; .175]	.054	[-.422; .402]	Yes / Yes
CC x WEU	.199	[-.170; .171]	.079	[-.538; .501]	No / Yes
MC x WEU	.039	[-.164; .173]	-.368	[-.620; .611]	Yes / Yes
HC x WEU	-.086	[-.160; .164]	-.159	[-.472; .444]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Annex 8b: Direct effects for firm age subsamples based on permutation test.

Relationships	<5 y			≥50y			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.692**			**.142**			**.000*** **	**Yes**
AC→WA		.072	.644^{ns}		.114	.029**	.777^{ns}	No
CC→WA		.284	.027**		.156	.007**	.440^{ns}	No
MC→WA		.352	.009**		.029	.562^{ns}	.072*	Yes
HC→WA		.370	.003**		.117	.007**	.115^{ns}	No
WA→RES	**.732**	.856	.000***	**.601**	.775	.000***	.231^{ns} **(.219^{ns})**	No
WA→PRO	**.792**	.890	.000***	**.624**	.790	.000***	.158^{ns} **(.145^{ns})**	No
WA→ADA	**.826**	.909	.000***	**.665**	.816	.000***	.061* **(.053*)**	Yes
EXP→WEU		.619	.000***		.740	.000***	.310^{ns}	No
OUT→WEU		.390	.000***		.188	.011**	.129^{ns}	No
PER→WEU		.130	.293^{ns}		.459	.000***	.082*	Yes
WEU→WA		.155	.241^{ns}		.103	.068*	.744^{ns}	No
AC x WEU→WA		-.062	.692^{ns}		.056	.388^{ns}	.486^{ns}	No
CC x WEU→WA		.035	.825^{ns}		.014	.840^{ns}	.902^{ns}	No
MC x WEU→WA		-.179	.182^{ns}		.085	.179^{ns}	.142^{ns}	No
HC x WEU→WA		-.035	.765^{ns}		-.002	.969^{ns}	.823^{ns}	No

Relationships	5–49 y			≥50y			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.335**			**.142**			**.000*** **	**Yes**
AC→WA		.006	.936^{ns}		.114	.029**	.266^{ns}	No
CC→WA		.290	.000***		.156	.007**	.153^{ns}	No
MC→WA		.188	.002**		.029	.562^{ns}	.063*	Yes
HC→WA		.120	.170^{ns}		.117	.007**	.971^{ns}	No
WA→RES	**.676**	.822	.000***	**.601**	.775	.000***	.203^{ns} **(.200^{ns})**	No
WA→PRO	**.713**	.844	.000***	**.624**	.790	.000***	.130^{ns} **(.128^{ns})**	No
WA→ADA	**.755**	.869	.000***	**.665**	.816	.000***	.059* **(.059*)**	Yes
EXP→WEU		.663	.000***		.740	.000***	.118^{ns}	No
OUT→WEU		.139	.002**		.188	.011**	.598^{ns}	No
PER→WEU		.461	.000***		.459	.000***	.971^{ns}	No
WEU→WA		.212	.002**		.103	.068*	.224^{ns}	No
AC x WEU→WA		.117	.097*		.056	.388^{ns}	.576^{ns}	No
CC x WEU→WA		.057	.404^{ns}		.014	.840^{ns}	.661^{ns}	No
MC x WEU→WA		-.122	.060*		.085	.179^{ns}	.023**	Yes
HC x WEU→WA		043	.499^{ns}		-.002	.969^{ns}	.586^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Annex 9: Results of MGA-PLS across types (job tenure) in a two-step approach.

Annex 9a: Results of the MICOM procedure.

Construct	Configurational Invariance (Step 1)	Compositional Invariance (Step 2) <1y – ≥10y | 1–10y – ≥10y		Partial Measurement Invariance
		Original Correlation	5.0%	
AC	Yes	.990 | .984	.575 | .606	Yes | Yes
CC	Yes	.836 | .955	.713 | .726	Yes | Yes
MC	Yes	.727 | .726	.227 | .466	Yes | Yes
HC	Yes	.809 | .812	.098 | .313	Yes | Yes
WA	Yes	.996 | .998	.993 | .995	Yes | Yes
PRO	Yes	.994 | .997	.988 | .993	Yes | Yes
ADA	Yes	.999 | 1.000	.993 | .991	Yes | Yes
RES	Yes	.980 | .984	.974 | .984	Yes | No
EXP	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes
OUT	Yes	.959 | .999	.071 | .616	Yes | Yes
PER	Yes	.998 | .998	.992 | .994	Yes | Yes
WEU	Yes	.998 | .999	.939 | .960	Yes | Yes
AC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes
CC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes
MC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes
HC x WEU	Yes	1.000 | 1.000	1.000 | 1.000	Yes | Yes

Note: AC: Adhocracy Culture; CC: Clan Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. **Step 1**: This is automatically established. **Step 2**: The original correlation is higher than 5% and the permutation *p*-value is higher than .05.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences <1y – ≥10y	Confidence Interval	Original Correlation <1y – ≥10y	Confidence Interval	
AC	.101	[-.222; .215]	.029	[-.256; .267]	Yes / Yes
CC	.133	[-.223; .225]	-.109	[-.368; .389]	Yes / Yes
MC	-.126	[-.225; .227]	-.074	[-.321; .350]	Yes / Yes
HC	-.015	[-.225; .222]	.190	[-.390; .394]	Yes / Yes
WA	-.116	[-.223; .230]	.166	[-.315; .316]	Yes / Yes
PRO	-.355	[-.219; .225]	.216	[-.363; .370]	No / Yes
ADA	.117	[-.226; .231]	.032	[-.275; .280]	Yes / Yes
RES	-.097	[-.222; .227]	.089	[-.370; .375]	Yes / Yes
EXP	.381	[-.222; .227]	-.234	[-.258; .264]	No / Yes
OUT	.140	[-.223; .222]	-.006	[-.274; .286]	Yes / Yes
PER	.127	[-.224; .229]	-.177	[-.369; .364]	Yes / Yes
WEU	.364	[-.221; .222]	-.162	[-.283; .300]	No / Yes
AC x WEU	-.139	[-.265; .252]	-.325	[-.691; .696]	Yes / Yes
CC x WEU	-.154	[-.231; .224]	-.441	[-.770; .763]	Yes /Yes
MC x WEU	.015	[-.237; .238]	-.606	[-.647; .655]	Yes / Yes
HC x WEU	-.042	[-.270; .273]	-.266	[-.826; .855]	Yes / Yes

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences 1–10y – ≥10y	Confidence Interval	Original Correlation 1–10y – ≥10y	Confidence Interval	
AC	-.034	[-.183; .180]	.116	[-.190; .224]	Yes / Yes
CC	.014	[-.177; .189]	.160	[-.266; .292]	Yes / Yes
MC	-.162	[-.179; .184]	-.070	[-.253; .295]	Yes / Yes
HC	-.169	[-.176; .182]	.318	[-.254; .303]	Yes / No
WA	-.149	[-.177; .187]	.279	[-.286; .321]	Yes / Yes
PRO	-.286	[-.173; .190]	.384	[-.347; .359]	No / No
ADA	-.024	[-.183; .188]	.122	[-.249; .279]	Yes / Yes
RES	-.068	[-.180; .191]	.198	[-.299; .338]	Yes / Yes
EXP	.172	[-.179; .185]	-.068	[-.183; .216]	Yes / Yes
OUT	.076	[-.185; .183]	.108	[-.210; .247]	Yes / Yes
PER	.013	[-.180; .188]	-.016	[-.258; .311]	Yes / Yes
WEU	.144	[-.180; .186]	.042	[-.230; .258]	Yes / Yes
AC x WEU	-.013	[-.222; .206]	.057	[-.517; .536]	Yes / Yes
CC x WEU	.078	[-.224; .213]	.409	[-.570; .665]	Yes / Yes
MC x WEU	.111	[-.217; .201]	-.233	[-.721; .737]	Yes / No
HC x WEU	.044	[-.201; .200]	-.098	[-.518; .601]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Annex 9b: Direct effects for job tenure subsamples based on permutation test.

Relationships	<1y			≥10y			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.179**			**.305**			**.113^{ns}**	**No**
AC→WA		.074	.409^{ns}		.080	.392^{ns}	.965^{ns}	No
CC→WA		.208	.017**		.359	.002**	.317^{ns}	No
MC→WA		.090	.293^{ns}		.112	.199^{ns}	.847^{ns}	No
HC→WA		.113	.390^{ns}		.166	.071*	.692^{ns}	No
WA→RES	**.618**	.786	.000***	**.616**	.785	.000***	.980^{ns} **(.980^{ns})**	No
WA→PRO	**.662**	.813	.000***	**.635**	.797	.000***	.747^{ns} **(.745^{ns})**	No
WA→ADA	**.776**	.881	.000***	**.688**	.830	.000***	.141^{ns} **(.140^{ns})**	No
EXP→WEU		.726	.000***		.756	.000***	.757^{ns}	No
OUT→WEU		.185	.008**		.193	.031**	.951^{ns}	No
PER→WEU		.444	.000***		.440	.000***	.964^{ns}	No
WEU→WA		.148	.102^{ns}		.082	.372^{ns}	.592^{ns}	No
AC x WEU→WA		.125	.164^{ns}		.095	.322^{ns}	.784^{ns}	No
CC x WEU→WA		-.054	.663^{ns}		.007	.944^{ns}	.685^{ns}	No
MC x WEU→WA		.019	.860^{ns}		.094	.382^{ns}	.587^{ns}	No
HC x WEU→WA		.005	.959^{ns}		.070	.346^{ns}	.476^{ns}	No

Relationships	1–10y			≥10y			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.189**			**.305**			**.339^{ns}**	**No**
AC→WA		.018	.712^{ns}		.080	.392^{ns}	.580^{ns}	No
CC→WA		.218	.000***		.359	.002**	.202^{ns}	No
MC→WA		.117	.006**		.112	.199^{ns}	.965^{ns}	No
HC→WA		.144	.000***		.166	.071*	.835^{ns}	No
WA→RES	**.643**	.802	.000***	**.616**	.785	.000***	.712^{ns} **(.713^{ns})**	No
WA→PRO	**.670**	.819	.000***	**.635**	.797	.000***	.621^{ns} **(.625^{ns})**	No
WA→ADA	**.718**	.847	.000***	**.688**	.830	.000***	.589^{ns} **(.592^{ns})**	No
EXP→WEU		.703	.000***		.756	.000***	.436^{ns}	No
OUT→WEU		.207	.000***		.193	.031**	.895^{ns}	No
PER→WEU		.445	.000***		.440	.000***	.942^{ns}	No
WEU→WA		.131	.007**		.082	.372^{ns}	.663^{ns}	No
AC x WEU→WA		.105	.069*		.095	.322^{ns}	.943^{ns}	No
CC x WEU→WA		.014	.798^{ns}		.007	.944^{ns}	.962^{ns}	No
MC x WEU→WA		.004	.931^{ns}		.094	.382^{ns}	.452^{ns}	No
HC x WEU→WA		-.017	.695^{ns}		.070	.346^{ns}	.362^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Annex 10: Results of MGA-PLS across types (job position) in a two-step approach.

Annex 10a: Results of the MICOM procedure.

Construct	Configurational Invariance (Step 1)	Compositional Invariance (Step 2) Employees–Executives		Partial Measurement Invariance
		Original Correlation	5.0%	
AC	Yes	.960	.662	Yes
CC	Yes	.970	.763	Yes
MC	Yes	.936	.547	Yes
HC	Yes	.600	.476	Yes
WA	Yes	.993	.996	No
PRO	Yes	.999	.995	Yes
ADA	Yes	.984	.993	No
RES	Yes	.998	.987	Yes
EXP	Yes	1.000	1.000	Yes
OUT	Yes	.988	.741	Yes
PER	Yes	.998	.996	Yes
WEU	Yes	.988	.967	Yes
AC x WEU	Yes	1.000	1.000	Yes
CC x WEU	Yes	1.000	1.000	Yes
MC x WEU	Yes	1.000	1.000	Yes
HC x WEU	Yes	1.000	1.000	Yes

Note: AC: Adhocracy Culture; CC: Clan Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. **Step 1**: This is automatically established. **Step 2**: The original correlation is higher than 5% and the permutation *p*-value is higher than .05.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences (EM–EX)	Confidence Interval	Original Correlation (EM–EX)	Confidence Interval	
AC	-.306	[-.169; .175]	-.074	[-.177; .200]	No / Yes
CC	-.272	[-.170; .173]	.127	[-.244; .269]	No / Yes
MC	-.223	[-.166; .170]	-.022	[-.242; .270]	No / Yes
HC	-.053	[-.167; .170]	.196	[-.246; .272]	Yes / Yes
WA	-.297	[-.165; .170]	.069	[-.263; .278]	No / Yes
PRO	-.334	[-.167; .172]	.131	[-.322; .327]	No / Yes
ADA	-.004	[-.169; .165]	.220	[-.229; .248]	Yes / Yes
RES	-.438	[-.166; .171]	.026	[-.276; .302]	No / Yes
EXP	.009	[-.172; .170]	-.188	[-.174; .196]	Yes / No
OUT	-.264	[-.172; .167]	-.115	[-.189; .226]	No / Yes
PER	-.242	[-.170; .168]	-.050	[-.246; .288]	No / No
WEU	-.158	[-.170; .174]	-.337	[-.214; .230]	Yes / No
AC x WEU	-.282	[-.192; .190]	-.531	[-.461; .500]	No / No
CC x WEU	-.136	[-.204; .183]	.026	[-.536; .607]	Yes / Yes
MC x WEU	.033	[-.194; .192]	-.259	[-.680; .695]	Yes / Yes
HC x WEU	-.007	[-.193; .185]	-.289	[-.479; .530]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; EM: Employees; EX: Executives. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Annex 10b: Direct effects for job position subsamples based on permutation test.

Relationships	Employees / Experts			Executives			Permutation Test	Sig.
	R^2	Direct Effect	p-Value	R^2	Direct Effect	p-Value	p-Value	
WA	**.179**			**.282**			**.286^{ns}**	**No**
AC→WA		.046	.356^{ns}		-.067	.502^{ns}	.284^{ns}	No
CC→WA		.214	.000***		.250	.003**	.734^{ns}	No
MC→WA		.125	.005**		.087	.296^{ns}	.692^{ns}	No
HC→WA		.151	.000***		.116	.427^{ns}	.697^{ns}	No
WA→RES	**.598**	.773	.000***	**.763**	.874	.000***	.008** **(.006**)**	Yes
WA→PRO	**.645**	.803	.000***	**.711**	.843	.000***	.314^{ns} **(.309^{ns})**	No
WA→ADA	**.741**	.861	.000***	**.708**	.841	.000***	.548^{ns} **(.546^{ns})**	No
EXP→WEU		.745	.000***		.610	.000***	.029**	Yes
OUT→WEU		.148	.019**		.261	.000***	.228^{ns}	No
PER→WEU		.462	.000***		.404	.000***	.440^{ns}	No
WEU→WA		.097	.031**		.287	.006**	.067*	Yes
AC x WEU→WA		.057	.312^{ns}		.170	.234^{ns}	.324^{ns}	No
CC x WEU→WA		.030	.581^{ns}		-.131	.335^{ns}	.168^{ns}	No
MC x WEU→WA		.047	.309^{ns}		-.087	.354^{ns}	.214^{ns}	No
HC x WEU→WA		-.003	.935^{ns}		.111	.330^{ns}	.189^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Annex 11: Results of MGA-PLS across types (job tenure and job position) in a two-step approach.

Relationships (Multi-group test based on 5,000 permutations)	**Diff Job Tenure & Job Position** EM: <1y – ≥10y ǀ EM ≥10y – EX
AC→WA	**-.326*** ǀ **.361****
CC→WA	**-.315*** ǀ .160^{ns}
MC→WA	.199^{ns} ǀ -.116^{ns}
HC→WA	**-.528*** ǀ .176^{ns}
WA→RES	**.075*** ǀ -.049^{ns}
WA→PRO	.085^{ns} ǀ -.062^{ns}
WA→ADA	**.092*** ǀ -.052^{ns}
EXP→WEU	-.028^{ns} ǀ .012^{ns}
OUT→WEU	.030^{ns} ǀ -.014^{ns}
PER→WEU	-.103^{ns} ǀ .070^{ns}
WEU→WA	.257^{ns} ǀ -.222^{ns}
AC x WEU→WA	-.182^{ns} ǀ .154^{ns}
CC x WEU→WA	.003^{ns} ǀ -.008^{ns}
MC x WEU→WA	**-.569**** ǀ **.407***
HC x WEU→WA	-.067^{ns} ǀ -.085^{ns}

Note: Path Coefficients-diff are bold-marked when compositional invariance and permutation test are significant; ns = non-significant; *p < .10, **p < .05, ***p < .001 (2-tailed test; Bootstrapping based on n = 5,000 subsamples).

Annex 11a: Results of the MICOM procedure.

Construct	**Configurational Invariance (Step 1)**	**Compositional Invariance (Step 2)** EM: <1y – ≥10y ǀ EM ≥10y – EX		**Partial Measurement Invariance**
		Original Correlation	**5.0%**	
AC	Yes	.757 ǀ .841	.159 ǀ .261	Yes ǀ Yes
CC	Yes	.972 ǀ .991	.448 ǀ .584	Yes ǀ Yes
MC	Yes	.421 ǀ .667	.055 ǀ -.092	Yes ǀ Yes
HC	Yes	.195 ǀ .091	-.921 ǀ -.803	Yes ǀ Yes
WA	Yes	.993 ǀ .996	.977 ǀ .978	Yes ǀ Yes
PRO	Yes	.997 ǀ .998	.982 ǀ .984	Yes ǀ Yes
ADA	Yes	.976 ǀ .988	.933 ǀ .935	Yes ǀ Yes
RES	Yes	.991 ǀ .995	.960 ǀ .961	Yes ǀ Yes
EXP	Yes	1.000 ǀ 1.000	1.000 ǀ 1.000	Yes ǀ Yes
OUT	Yes	.934 ǀ .972	.878 ǀ .883	Yes ǀ Yes
PER	Yes	.988 ǀ .996	.988 ǀ .990	No ǀ Yes
WEU	Yes	.990 ǀ .996	.979 ǀ .979	Yes ǀ Yes
AC x WEU	Yes	1.000 ǀ 1.000	1.000 ǀ 1.000	Yes ǀ Yes
CC x WEU	Yes	1.000 ǀ 1.000	1.000 ǀ 1.000	Yes ǀ Yes
MC x WEU	Yes	1.000 ǀ 1.000	1.000 ǀ 1.000	Yes ǀ Yes
HC x WEU	Yes	1.000 ǀ 1.000	1.000 ǀ 1.000	Yes ǀ Yes

Note: AC: Adhocracy Culture; CC: Clan Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; EM: Employees; EX: Executives. **Step 1**: This is automatically established. **Step 2**: The original correlation is higher than 5% and the permutation p-value is higher than .05.

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences EM: <1y – ≥10y	Confidence Interval	Original Correlation EM: <1y – ≥10y	Confidence Interval	
AC	.343	[-.319; .315]	.286	[-.363; .422]	No / Yes
CC	.149	[-.312; .307]	.624	[-.421; .459]	Yes / No
MC	.059	[-.317; .309]	-.232	[-.466; .546]	Yes / Yes
HC	.100	[-.316; .318]	.143	[-.455; .489]	Yes / Yes
WA	-.060	[-.317; .325]	.637	[-.655; .668]	Yes / Yes
PRO	-.169	[-.304; .320]	.418	[-.747; .742]	Yes / Yes
ADA	.019	[-.313; .327]	.067	[-.480; .528]	Yes / Yes
RES	-.004	[-.314; .322]	.740	[-.654; .630]	Yes / No
EXP	.177	[-.313; .313]	.047	[-.309; .352]	Yes / Yes
OUT	.256	[-.309; .318]	.424	[-.310; .340]	Yes / No
PER	.232	[-.323; .305]	-.074	[-.514; .567]	Yes / Yes
WEU	.270	[-.318; .309]	.227	[-.375; .404]	Yes / Yes
AC x WEU	.055	[-.391; .384]	.079	[-.953; 1.052]	Yes / Yes
CC x WEU	.226	[-.335; .317]	.743	[-.861; .876]	Yes /Yes
MC x WEU	.158	[-.338; .321]	-.749	[-.901; .996]	Yes / Yes
HC x WEU	.257	[-.356; .340]	-.162	[-.863; .914]	Yes / Yes

Construct	Equal Mean Assessment (Step 3a)		Equal Variance Assessment (Step 3b)		Full Measurement Invariance
	Original Differences EM ≥10y–EX	Confidence Interval	Original Correlation EM ≥10y–EX	Confidence Interval	
AC	-.218	[-.284; .282]	-.209	[-.412; .335]	Yes / Yes
CC	-.097	[-.293; .291]	-.444	[-.415; .385]	Yes / No
MC	-.027	[-.288; .282]	.029	[-.466; .382]	Yes / Yes
HC	-.023	[-.289; .293]	-.087	[-.516; .437]	Yes / Yes
WA	.046	[-.304; .286]	-.438	[-.582; .586]	Yes / Yes
PRO	.114	[-.304; .279]	-.293	[-.655; .651]	Yes / Yes
ADA	-.009	[-.286; .286]	-.036	[-.481; .405]	Yes / Yes
RES	.012	[-.304; .291]	-.527	[-.548; .589]	Yes / Yes
EXP	-.112	[-.285; .287]	-.037	[-.332; .281]	Yes / Yes
OUT	-.181	[-.288; .296]	-.268	[-.336; .285]	Yes / Yes
PER	-.141	[-.288; .289]	.040	[-.572; .458]	Yes / Yes
WEU	-.175	[-.286; .289]	-.153	[-.398; .347]	Yes / Yes
AC x WEU	-.053	[-.349; .375]	-.092	[-.1010; .834]	Yes / Yes
CC x WEU	-.157	[-.288; .317]	-.570	[-.812; .847]	Yes / Yes
MC x WEU	-.127	[-.287; .289]	.195	[-.860; .691]	Yes / Yes
HC x WEU	-.140	[-.356; .355]	.072	[-1.029; .898]	Yes / Yes

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; EM: Employees; EX: Executives. **Step 3**: (a) Not all confidence intervals of latent variable score means include the original differences value, so there is not equal means. (b) Not all confidence intervals of latent variable score variances include the original differences value, so there are not equal variances.

Annex 11b: Direct effects for job tenure and job position subsamples based on permutation test.

Relationships	EM: <1y			EM: ≥10y			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.358**			**.493**			**.371^{ns}**	**No**
AC→WA		-.032	.787^{ns}		.294	.048**	.062*	Yes
CC→WA		.095	.362^{ns}		.410	.005**	.052*	Yes
MC→WA		.171	.079*		-.028	.845^{ns}	.229^{ns}	No
HC→WA		-.245	.305^{ns}		.283	.078*	.007**	Yes
WA→RES	**.808**	.899	.000***	**.679**	.824	.000***	.085* **(.092*)**	Yes
WA→PRO	**.751**	.866	.000***	**.610**	.781	.000***	.374^{ns} **(.383^{ns})**	No
WA→ADA	**.777**	.881	.000***	**.623**	.789	.000***	.086* **(.092*)**	Yes
EXP→WEU		.593	.000***		.622	.000***	.678^{ns}	No
OUT→WEU		.277	.000***		.247	.000***	.608^{ns}	No
PER→WEU		.372	.000***		.474	.000***	.197^{ns}	No
WEU→WA		.323	.014**		.065	.677^{ns}	.218^{ns}	No
AC x WEU→WA		.142	.387^{ns}		.324	.038**	.479^{ns}	No
CC x WEU→WA		-.135	.448^{ns}		-.138	.363^{ns}	.990^{ns}	No
MC x WEU→WA		-.249	.031**		.320	.078*	.001***	Yes
HC x WEU→WA		-.040	.725^{ns}		.027	.866^{ns}	.826^{ns}	No

Relationships	EM ≥10y			EX			Permutation Test	Sig.
	R^2	Direct Effect	*p*-Value	R^2	Direct Effect	*p*-Value	*p*-Value	
WA	**.493**			**.282**			**.189^{ns}**	**No**
AC→WA		.294	.047**		-.067	.495^{ns}	.054*	Yes
CC→WA		.410	.005**		.250	.004**	.313^{ns}	No
MC→WA		-.028	.846**		.087	.304^{ns}	.484^{ns}	No
HC→WA		.283	.079*		.116	.425^{ns}	.439^{ns}	No
WA→RES	**.679**	.824	.000***	**.763**	.874	.000***	.298^{ns} **(.309^{ns})**	No
WA→PRO	**.610**	.781	.000***	**.711**	.843	.000***	.462^{ns} **(.473^{ns})**	No
WA→ADA	**.623**	.789	.000***	**.708**	.841	.000***	.354^{ns} **(.364^{ns})**	No
EXP→WEU		.622	.000***		.610	.000***	.874^{ns}	No
OUT→WEU		.247	.000***		.261	.000***	.809^{ns}	No
PER→WEU		.474	.000***		.404	.000***	.394^{ns}	No
WEU→WA		.065	.676^{ns}		.287	.007**	.271^{ns}	No
AC x WEU→WA		.324	.044**		.170	.221^{ns}	.475^{ns}	No
CC x WEU→WA		-.138	.370^{ns}		-.131	.326^{ns}	.970^{ns}	No
MC x WEU→WA		.320	.081*		-.087	.364^{ns}	.020**	Yes
HC x WEU→WA		.027	.862^{ns}		.111	.328^{ns}	.614^{ns}	No

Note: CC: Clan Culture; AC: Adhocracy Culture; MC: Market Culture; HC: Hierarchy Culture; WA: Workforce Agility; PRO: Proactivity; ADA: Adaptivity; RES: Resilience; EXP: Expressed; OUT: Outcome; PER: Perceptual; WEU: Work Environment Uncertainty; EM: Employees; EX: Executives. Bootstrapping based on n = 5,000 subsamples. Multi-group test based on 5,000 permutations. Sig.: Significant. ***p < .001; **p < .05; *p < .10. 2-tailed test for group comparisons for hypothesized effects and R^2.

Annex 12: Difference between the dimensions of the research framework and job position – Mann-Whitney U-test.

Dimension	Variable	Mean Rank Executive | Employee n = 170 | n = 651		Mann-Whitney U	z	p	$r\left(\frac{z}{\sqrt{n}}\right)$
Adhocracy Culture **AC**	AC_1	475.47	394.16	66,295.500	3.981	.001***	.139
	AC_2	441.56	402.38	60,641.000	1.874	.050**	.065
	AC_3	445.81	399.40	61,588.500	2.165	.021**	.076
	AC_4	446.35	401.77	61,344.000	2.047	.026**	.071
Clan Culture **CC**	CC_1	454.87	399.54	62,793.000	3.819	.005**	.133
	CC_2	431.81	403.65	59,136.500	1.065	.155^{ns}	.037
	CC_3	459.91	396.37	63,902.000	3.102	.001***	.108
	CC_4	431.43	405.67	58,807.500	1.101	.198^{ns}	.038
Market Culture **MC**	MC_1	456.46	399.13	63,063.000	3.027	.004**	.106
	MC_2	443.88	401.13	61,126.500	2.036	.032**	.071
	MC_3	454.10	396.59	63,106.000	2.409	.004**	.084
	MC_4	454.22	399.71	62,682.000	1.828	.006**	.064
Hierarchy Culture **HC**	HC_1	395.94	414.93	52,774.000	-.985	.339^{ns}	-.034
	HC_2	368.03	421.61	48,113.000	-2.273	.007**	-.079
	HC_3	385.84	413.09	51,641.500	-1.227	.168^{ns}	-.043
	HC_4	436.78	404.27	59,717.000	1.919	.103^{ns}	.067
Workforce Agility ***Resilience*** **RES**	RES_1	442.54	402.76	60,696.500	1.398	.047**	.049
	RES_2	465.71	394.75	65,035.500	3.241	.001***	.113
	RES_3	461.48	396.51	64,125.000	3.297	.001***	.115
	RES_4	470.94	394.69	65,642.000	4.123	.001***	.144
	RES_5	463.87	397.19	64,323.500	2.844	.001***	.099
	RES_8	485.06	391.00	68,050.000	4.487	.001***	.157
Workforce Agility ***Proactivity*** **PRO**	PRO_1	442.85	401.46	60,940.500	2.120	.033**	.074
	PRO_2	444.05	401.72	61,067.000	2.422	.028**	.085
	PRO_3	483.41	391.43	67,788.500	4.050	.001***	.141
	PRO_4	463.96	396.62	64,272.000	3.270	.001***	.114
	PRO_5	443.19	401.95	60,887.000	2.287	.032**	.080
Workforce Agility ***Adaptability*** **ADA**	ADA_1	429.23	405.00	58,464.000	1.134	.225^{ns}	.040
	ADA_2	413.65	409.68	55,894.000	-.374	.831^{ns}	-.013
	ADA_3	402.85	412.50	54,052.000	-.500	.627^{ns}	-.017
	ADA_4	349.70	427.01	44,914.500	-3.432	.001***	-.120
	ADA_5	402.34	412.64	53,972.000	-.404	.603^{ns}	-.014
	ADA_6	481.44	391.95	67,420.000	4.787	.001***	.167
	ADA_7	404.12	412.17	54,271.000	-.210	.686^{ns}	-.007
Perceptual Uncertainty **PER**	PER_1	453.94	392.63	64,009.500	2.721	.001***	.095
	PER_2	445.51	397.47	62,006.000	2.392	.013**	.083
	PER_3	469.10	391.90	65,770.000	3.401	.001***	.119
	PER_4	415.04	406.14	56,501.500	.139	.664^{ns}	.005
Outcome Uncertainty **OUT**	OUT_1	453.11	400.00	62,494.500	2.725	.008**	.095
	OUT_2	467.44	395.61	65,013.500	3.968	.001***	.138
	OUT_3	383.93	416.73	50,928.000	-1.413	.101^{ns}	-.049
	OUT_4	402.37	412.63	53,934.500	-.428	.606^{ns}	-.015

Note: Non-significance for group differences EXP will not be listed; *p < .10, **p < .05, ***p < .001; ns = non-significant (2-tailed test).

Annex 13: Difference between the dimensions of the research framework and job tenure – Mann-Whitney U-test.

Dimension	Variable	Mean Rank 1 - 10 years ǀ ≥ 10 years *n* = 504 ǀ *n* = 137		Mann-Whitney U	z	*p*	$r\left(\frac{z}{\sqrt{n}}\right)$
Adhocracy Culture **AC**	AC_1	318.86	328.86	33,447.500	-.589	.569^{ns}	-.023
	AC_2	321.50	316.82	35,020.000	.243	.793^{ns}	.010
	AC_3	307.78	360.32	28,870.000	-3.024	.003**	-.119
	AC_4	306.78	373.31	27,357.000	-3.603	.001***	-.142
Clan Culture **CC**	CC_1	324.75	307.19	36,416.000	.654	.311^{ns}	.026
	CC_2	320.62	315.42	35,120.500	-.274	.750^{ns}	-.011
	CC_3	316.35	331.14	32,934.500	-1.227	.394^{ns}	-.048
	CC_4	324.22	309.17	36,145.000	.604	.390^{ns}	.024
Market Culture **MC**	MC_1	313.25	349.53	30,615.500	-1.903	.037**	-.075
	MC_2	309.35	359.03	29,140.500	-3.118	.004**	-.123
	MC_3	310.09	349.43	30,252.500	-2.282	.023**	-.090
	MC_4	311.34	356.54	29,655.500	-1.587	.008**	-.063
Hierarchy Culture **HC**	HC_1	311.75	355.01	29,864.000	-3.131	.013**	-.124
	HC_2	308.95	362.91	28,688.000	-4.108	.002**	-.162
	HC_3	308.11	352.54	29,726.500	-2.606	.010**	-.103
	HC_4	314.95	343.27	31,473.000	-1.823	.104^{ns}	-.072
Workforce Agility ***Resilience*** **RES**	RES_1	314.52	344.84	31,258.000	-1.852	.083*	-.073
	RES_2	327.76	289.30	38,603.500	2.090	.029**	.083
	RES_3	319.78	325.48	33,910.000	-.304	.740^{ns}	-.012
	RES_4	319.20	325.29	33,845.500	-.347	.709^{ns}	-.014
	RES_5	309.98	361.55	28,968.000	-3.367	.003**	-.133
	RES_8	323.07	310.97	35,900.000	-.261	.451^{ns}	-.010
Workforce Agility ***Proactivity*** **PRO**	PRO_1	308.19	363.69	28,542.000	-4.038	.001***	-.159
	PRO_2	320.14	324.16	34,091.000	-.737	.812^{ns}	-.029
	PRO_3	313.54	346.06	30,984.000	-2.342	.052*	-.092
	PRO_4	314.02	344.53	31,341.000	-2.284	.083*	-.090
	PRO_5	314.72	341.71	31,626.500	-2.478	.108^{ns}	-.098
Workforce Agility ***Adaptability*** **ADA**	ADA_1	314.48	340.40	31,835.000	-1.620	.136^{ns}	-.064
	ADA_2	316.13	336.55	32,296.500	-.893	.221^{ns}	-.035
	ADA_3	313.62	345.78	31,039.500	-2.208	.058*	-.087
	ADA_4	314.74	344.04	31,368.000	-2.160	.083*	-.085
	ADA_5	324.90	304.35	36,719.000	.901	.230^{ns}	.036
	ADA_6	320.40	320.88	34,467.500	-.089	.976^{ns}	-.004
	ADA_7	328.84	289.58	38,819.500	1.897	.019**	.075
Perceptual Uncertainty **PER**	PER_1	315.72	317.00	34,122.500	-.007	.830^{ns}	-.000
	PER_2	318.56	315.96	34,711.000	-.023	.921^{ns}	-.001
	PER_3	317.86	320.83	34,262.000	-.316	.889^{ns}	-.012
	PER_4	316.08	327.31	33,330.000	-.481	.524^{ns}	-.019

Note: Non-significance for group differences OUT and EXP will not be listed; *p < .10, **p < .05, ***p < .001; ns = non-significant (2-tailed test).

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