



TECHNISCHE UNIVERSITÄT MÜNCHEN

Lehrstuhl für Unternehmensführung

**Employee Identity:  
A theoretical and empirical examination of the factors (determinants)  
influencing the employee's identity formation**

Nadine J. M. Bernklau

Vollständiger Abdruck der von der Fakultät für Wirtschaftswissenschaften der  
Technischen Universität München zur Erlangung des akademischen Grades eines

**Doktors der Wirtschaftswissenschaften (Dr. rer. pol.)**

genehmigten Dissertation.

Vorsitzender: Prof. Dr. Robert K. Freiherr von Weizsäcker

Prüfer der Dissertation: 1. Prof. Dr. Alwine Mohnen  
2. Prof. Dr. Claudia Peus

Die Dissertation wurde am 24.09.2018 bei der Technischen Universität München eingereicht  
und von der Fakultät für Wirtschaftswissenschaften am 15.03.2019 angenommen.

---

## Executive Summary

Assuming that employee identity can support or even substitute monetary incentives, a few main questions arise for the employer (principal): How does employee identity emerge? What are the influencing factors (determinants) in the process of employee identity formation and how are the relationships between the single influencing factors shaped? To answer these questions, the formation process is analyzed from two perspectives. In the first part of this thesis, the theoretical framework is constructed to understand the employee's identity formation and its influencing factors (determinants). In the second part, these determinants and their interdependencies are empirically examined.

The concept of "employee identity" can be derived from the research field of "organizational identity" and Mead's socio-psychological theory of human identity formation. Employee identity consists of three dimensions: i) continual development of identity, ii) identity components, and iii) identification. It is revealed that the main factors influencing the process of employee identity formation are organizational communication and culture, above all the cultural aspect of recognition in an organization. Recognition is relevant on two levels: (1) recognition as an equal member of an organization with a special role and function and (2) recognition as a member who makes a valuable, individual contribution to an organization. The influencing factors are analyzed and discussed according to the relevant issues in Mead's theory and then compared with contemporary organizational theories and empirical studies in order to show parallels and differences for evaluating the applicability of Mead's theory for the concept employee identity in the organizational environment.

The second part of this thesis aims to evaluate empirically the effects of the influencing factors (determinants) on identification – one of three dimensions of the identity concept. The empirical study was conducted in a German DAX company in the R&D function and structural equation modeling (SEM) served as methodological basis. The results confirm the following: The single determinants (latent factors in SEM) embedded in the model structure with their interdependent relations amongst each other show effects towards the identification process. To analyze the heterogeneity of organizational communication and the cultural topic of recognition, ten model variants were created to discover which characteristics of the influencing factors have more significant effects in the respective structural models and which have fewer. Thereby, all model variants have the same model structure, because only selected measurement models change which represent the different characteristics of the influencing factors.

In general, all ten different model variants show the hypothesized significant effects in the model structure. This means: The ten variants reveal that - derived from Mead's theory - the

general structure and interdependences between the latent factors is relatively stable and enduring, although certain measurement models of the SEM change. All models indicate that being recognized as member of an organization always positively correlates with the communication determinant, which is expressed in five different model variants through diverse aspects of satisfaction with the communication content and climate. This influencing factor of communication often has a direct, positive correlation to the employee's identification process and almost always correlates indirectly via the mediator recognition of an employee as valuable for the company. This mediation factor is also tested with two different measurement models in the model variants to reflect different possible ways of recognizing an employee's value. The mediation effect is revealed for nine out of ten model variants.

Based on this thesis's theoretical and empirical results, recommendations can be derived for the principal how to trigger and enable employee formation processes in the DAX company's R&D function and that only stimulating one influencing factor does not necessarily lead to expected effects. It is necessary to know the general system of the interdependent influencing factors for enabling identification processes and to consider the other two dimensions of identity in order to fully understand the concept employee identity. Then, the principal can actively control and successfully use employee identity as substitute for monetary incentives.

---

## Acknowledgements

Zuerst möchte ich meiner Doktormutter, Prof. Dr. Alwine Mohnen, danken, dass sie mir die Möglichkeit gab, als externer Doktorand an ihrem Lehrstuhl promovieren zu können. Ihre Begeisterung für Managementthemen, insbesondere für Anreizsysteme und behavioral economics, übertrugen sich vom ersten Moment an auf mich. Durch meine Erfahrungen in der Praxis in einem großen Industrieunternehmen reizte es mich vor allem, einen unkonventionelleren, nicht-monetären Anreiz, der nach aktueller Forschung monetäre Anreize unterstützt oder sogar substituieren kann, genauer theoretisch und empirisch zu untersuchen, nämlich: Mitarbeiteridentität und insbesondere deren Entstehungsprozess. Hier stieß ich bei Alwine auf eine sehr große Offenheit gegenüber diesem Thema. An dieser Stelle möchte ich ihr herzlich für die vielen konstruktiven Diskussionen, Anregungen und wissenschaftlichen Impulse danken. Genauso möchte ich ihr aber auch sehr für ihr Verständnis danken, dass ich zwei Anforderungen gerecht werden musste – zum einen auf meiner Arbeitsstelle in der Industrie und zum anderen auf der Promotionsstelle. Somit war es mir möglich, beides gut miteinander vereinbaren zu können und vor allem die empirische Untersuchung für Industrie und Wissenschaft gleichermaßen attraktiv ausgestalten zu können.

Meiner Zweitkorrektorin, Prof. Dr. Claudia Peus, möchte ich auch sehr für die Offenheit zu diesem Themenfeld danken.

Des Weiteren waren die Diskussionen mit dem Lehrstuhlteam in den Doktorandenseminaren sehr interessant und hilfreich, um für sich neue Inspirationen zu bekommen, aber auch um die unterschiedlichen Forschungsansätze im Team zu erfahren. Ein großes Dankeschön an das gesamte Lehrstuhlteam! In der Industrie möchte ich vor allem dem gesamten R&D Management danken, die sich sehr für dieses Thema nicht nur im Rahmen der Forschungsarbeit interessierten, sondern wie es in der Praxis umgesetzt werden kann. Das gab mir wiederum viele hilfreiche Impulse für die wissenschaftliche Umsetzung. Für den regelmäßigen und wichtigen Gedankenaustausch möchte ich mich bei meinem ehemaligen Chef Henning T. und bei meinen Kollegen Dr. Philipp S., Dr. Ulrich H., Thomas B., Dr. Simon S. und Dr. Peter H. bedanken. In meinem Freundeskreis möchte ich vor allem Agnes K. für die vielen vielschichtigen Diskussionen und das große Interesse zu meinem Thema danken.

Zuletzt möchte ich mich noch aller herzlichst bei meiner Familie für die immerwährende Unterstützung bedanken. Ich weiß es sehr zu schätzen, bei Euch immer ein offenes Ohr für Themen aller Art zu haben. Genauso war das auch bei meinem Projekt Dissertation, über das ich mit Euch viel diskutiert habe. Aus diesen Gesprächen nahm ich immer sehr viele neue Ideen, Ansichten und vor allem Kraft und Motivation mit. Euch ist diese Arbeit gewidmet.

## Table of contents

<b>Table of contents</b> .....	<b>v</b>
<b>Table of figures</b> .....	<b>ix</b>
<b>Table of tables</b> .....	<b>x</b>
<b>List of abbreviations</b> .....	<b>xiii</b>
<b>1. Objective and structure of this thesis: Employee identity serving as substitute of monetary incentives</b> .....	<b>1</b>
1.1 Motivation and objective .....	1
1.2 Research approach and structure .....	2
<b>2. The construct of employee identity and its formation</b> .....	<b>4</b>
2.1 Identity: Technical term and differentiation from other related constructs .....	4
2.2 Literature overview: Employee identity and its formation .....	6
2.2.1 The role of employee identity in the research fields “corporate identity” and “social identity” .....	7
2.2.2 The role of employee identity in the research field “organizational identity” .....	9
2.3 Literature overview: Human identity formation concepts and their applicability to serving as theoretical basis for employee identity formation.....	12
2.3.1 Approaches in psychology, sociology, and philosophy .....	13
2.3.2 Research field “symbolic interactionism” and its conceptual relevance for employee identity formation .....	14
2.4 Symbolic interactionism: Introduction to George Herbert Mead’s theory of human identity formation - 16 key findings.....	16
2.4.1 Continual development in identity formation: Key finding 1.....	17
2.4.2 Identification through communication: Key findings 2-5 .....	17
2.4.3 Different facets of role-taking in the identification process: Key findings 6-9.....	18
2.4.4 Recognition in the identification process: Key findings 10-13 .....	20
2.4.5 Identity components “I” and “Me”: Key findings 14-16 .....	21
2.5 Derivation of Mead’s theory to the organizational context: General applicability of the key findings 1-16 for the concept employee identity and its formation .....	23
<b>3. Evaluation of organizational communication as first influencing factor for employee identity formation: Mead in comparison with current theoretical and empirical approaches</b> .....	<b>26</b>
3.1 Organizational communication .....	27
3.1.1 Overview of definitions .....	27

---

3.1.2 Conceptual overlaps between Mead and Gerald Goldhaber’s organizational communication theory.....	28
3.2 Evaluation of the key findings by Mead and their applicability in the organizational context.....	31
3.2.1 Key finding 2: Message transfer in sender-receiver models .....	31
3.2.2 Key finding 3: Information – definition, value, purpose, meaning, and intention ..	35
3.2.3 Key findings 4: Communication satisfaction – definitions regarding content and climate for a satisfying communication supply and demand .....	39
3.2.4 Key findings 5 & 7: Impacts of communication satisfaction on identification .....	43
3.3 Conclusions and the adapted key findings in the organizational context .....	46
<b>4. Evaluation of organizational culture as second influencing factor for employee identity formation: Mead in comparison with current theoretical and empirical approaches .</b>	<b>47</b>
4.1 Evaluation of the key findings by Mead and their applicability in the organizational context.....	48
4.1.1 Organizational culture .....	48
4.1.1.1 Theoretical attributes of organizational culture .....	48
4.1.1.2 Key Finding 8: Different levels of expressing culture - Edgar Schein’s concept	50
4.1.1.3 Key Finding 9: Overview of relations between role-taking, culture, and communication .....	55
4.1.2 Recognition as part of organizational culture.....	57
4.1.2.1 Key Finding 10: Different levels of expressing recognition - Axel Honneth’s concept .....	57
4.1.2.2 Key Finding 11: Relations between communication, culture, and recognition	61
4.1.2.3 Key Findings 11 & 12: Recognition of “rights” in organizations .....	63
4.1.2.4 Key Findings 11 & 13: Recognition of “solidarity” in organizations.....	66
4.2 Conclusions and the adapted key findings in the organizational context .....	68
<b>5. Summary of the theoretical framework: The applicability of Mead’s theory for the concept employee identity and its formation.....</b>	<b>70</b>
<b>6. Development of the empirical model structure based on the theoretical framework ...</b>	<b>73</b>
6.1 Derivation of the hypotheses from the theoretical framework .....	73
6.2 Aggregation to a hypotheses system: The empirical model structure and its model variations I-X.....	80
<b>7. Study design.....</b>	<b>84</b>
7.1 Study characteristics .....	84
7.1.1 Motivation for this study.....	84

---

7.1.2 General framework and pre-conditions .....	85
7.2 Methodology selection: The Structural Equation Modelling.....	86
7.2.1 Structural Equation Models (SEM): Application area .....	86
7.2.2 Characteristics of covariance-based SEMs.....	87
7.2.2.1 General structure of SEMs: The structural and measurement models .....	87
7.2.2.2 Reflexive measurement model .....	88
7.2.2.3 Different estimation approaches in SEMs.....	89
7.2.3 Evaluation of covariance-based SEMs .....	92
7.2.3.1 Evaluation of the measurement models.....	92
7.2.3.1.1 Content validity of the measurement models: Qualitative analysis .....	93
7.2.3.1.2 Testing measurement models – Part I: First-generation criteria .....	94
7.2.3.1.3 Testing measurement models – Part II: Second-generation criteria .....	97
7.2.3.2 Evaluation of the Structural Equation Model.....	104
7.2.4 Mediation in SEMs .....	105
7.3 Factor measuring and data collection .....	107
7.3.1 Development and validation of new measures in organizational research .....	107
7.3.2 Existing measures in organizational research.....	107
7.3.3 Factor measuring in this study .....	111
7.3.4 Survey development and pretest .....	112
7.3.5 Participants .....	115
<b>8. Results of the study .....</b>	<b>116</b>
8.1 Analysis approach for the tested model variations I-X.....	116
8.2 Analysis details based on data structure.....	119
8.3 Measurement models: Results of the expert interviews and the first-generation criteria .....	120
8.3.1 Factor 1: Recognition as member of the organization.....	120
8.3.2 Factor 2: Satisfaction with company information.....	121
8.3.3 Factor 3: Satisfaction with R&D information within the company .....	122
8.3.4 Factor 4: Satisfaction with job information .....	123
8.3.5 Factor 5: Satisfaction with the official interactional communication climate.....	124
8.3.6 Factor 6: Satisfaction with the informal interactional communication climate ....	125
8.3.7 Factor 7: Recognition as member with a value for the organization regarding the job performance .....	126

8.3.8 Factor 8: Recognition as member with a value for the organization regarding the job performance contribution based on creative work.....	127
8.3.9 Factor 9: Communication-oriented identification climate.....	128
8.4 CFA and SEM models: Results of the second-generation criteria and of the SEM analysis for the models I-V with mediation factor 7 .....	130
8.4.1 Model I - impact of factor 2.....	131
8.4.2 Model II - impact of factor 3.....	135
8.4.3 Model III - impact of factor 4.....	139
8.4.4 Model IV - impact of factor 5.....	143
8.4.5 Model V - impact of factor 6.....	147
8.4.6 Result interpretation: Models I-V .....	151
8.5 CFA and SEM models: Results of the second-generation criteria and of the SEM analysis for the models VI-X with mediation factor 8 .....	157
8.5.1 Model VI - impact of factor 2.....	157
8.5.2 Model VII - impact of factor 3.....	161
8.5.3 Model VIII - impact of factor 4.....	165
8.5.4 Model IX - impact of factor 5.....	169
8.5.5 Model X - impact of factor 6.....	173
8.5.6 Result interpretation: Models VI-X.....	177
<b>9. Summary for the empirical study and its design, evaluation method, results, and limitations.....</b>	<b>181</b>
9.1 Study design and evaluation method.....	181
9.2 Summary of the study's results.....	182
9.3 Generalizability and limitations of the research design .....	185
<b>10. Conclusions on the results for the construct employee identity serving as substitute for monetary incentives: Practical implications and future research.....</b>	<b>186</b>
10.1 Identity dimension: Identification.....	187
10.1.1 Comprehensive review of the influencing factors .....	187
10.1.2 Single review of the influencing factors .....	188
10.1.3 Interdependent review of the influencing factors.....	190
10.2 Identity dimensions: Identity components and continual development.....	194
10.3 Outlook.....	196
<b>Bibliography .....</b>	<b>198</b>
<b>Appendix .....</b>	<b>225</b>



---

## Table of figures

Figure 1: Structure of this thesis.....	3
Figure 2: Overview of the different research lines in the organizational environment .....	7
Figure 3: Shannon-Weaver communication model .....	31
Figure 4: Pragmatic information and its confirmation or degree of newness.....	38
Figure 5: The levels of culture .....	51
Figure 6: Overview of the model variations in the study .....	82
Figure 7: Overview of different analysis possibilities with or without latent variables.....	87
Figure 8: Structure of a structural model .....	88
Figure 9: Structure of a measurement model.....	89
Figure 10: Testing scheme for covariance-based SEMs .....	93
Figure 11: Overview of an exemplary, generic confirmatory factor analysis construct .....	98
Figure 12: Mediation analysis.....	106
Figure 13: Overview of the analyzed models I-X.....	117
Figure 14: Model I – SEM analysis .....	133
Figure 15: Model II – SEM analysis .....	137
Figure 16: Model III – SEM analysis .....	141
Figure 17: Model IV – SEM analysis .....	145
Figure 18: Model V – SEM analysis .....	149
Figure 19: Model VI – SEM analysis .....	159
Figure 20: Model VII – SEM analysis .....	163
Figure 21: Model VIII – SEM analysis .....	167
Figure 22: Model IX – SEM analysis .....	171
Figure 23: Model X – SEM analysis .....	175

## Table of tables

Table 1: The structure of relations of recognition .....	61
Table 2: Overview of appreciation.....	67
Table 3: First-generation evaluation criteria .....	97
Table 4: Summary of relevant second-generation evaluation criteria.....	101
Table 5: Summary of relevant global fit indices.....	104
Table 6: Data structure .....	115
Table 7: Models I-V – univariate and multivariate distribution of the data set .....	119
Table 8: Models VI-X – univariate and multivariate distribution of the data set .....	119
Table 9: Factor 1 – results of the psychometrical measurements and the EFA .....	121
Table 10: Factor 2 – results of the psychometrical measurements and the EFA .....	122
Table 11: Factor 3 – results of the psychometrical measurements and the EFA .....	123
Table 12: Factor 4 – results of the psychometrical measurements and the EFA .....	124
Table 13: Factor 5 – results of the psychometrical measurements and the EFA .....	125
Table 14: Factor 6 – results of the psychometrical measurements and the EFA .....	126
Table 15: Factor 7 – results of the psychometrical measurements and the EFA .....	127
Table 16: Factor 8 – results of the psychometrical measurements and the EFA .....	128
Table 17: Factor 9 – results of the psychometrical measurements and the EFA .....	129
Table 18: CFA model I – results of the second-generation criteria .....	132
Table 19: CFA model I – correlations between the latent factors.....	132
Table 20: CFA model I – model fit indices.....	132
Table 21: Model I – detailed information .....	133
Table 22: Model I – model fit indices.....	134
Table 23: Model I – direct, indirect, and total effects.....	134
Table 24: CFA model II – results of the second-generation criteria .....	136
Table 25: CFA model II – correlations between the latent factors.....	136
Table 26: CFA model II – model fit indices .....	136
Table 27: Model II – detailed information .....	137
Table 28: Model II – model fit indices.....	138
Table 29: Model II – direct, indirect, and total effects.....	138
Table 30: CFA model III – results of the second-generation criteria .....	140
Table 31: CFA model III – correlations between the latent factors.....	140

---

Table 32: CFA model III – model fit indices.....	140
Table 33: Model III – detailed information .....	141
Table 34: Model III – model fit indices.....	142
Table 35: Model III – direct, indirect, and total effects.....	142
Table 36: CFA model IV – results of the second-generation criteria .....	144
Table 37: CFA model IV – correlations between the latent factors .....	144
Table 38: CFA model IV – model fit indices.....	144
Table 39: Model IV – detailed information .....	145
Table 40: Model IV – model fit indices .....	146
Table 41: Model IV – direct, indirect, and total effects .....	146
Table 42: CFA model V – results of the second-generation criteria.....	148
Table 43: CFA model V – correlations between the latent factors .....	148
Table 44: CFA model V – model fit indices.....	148
Table 45: Model V – detailed information .....	149
Table 46: Model V – model fit indices .....	150
Table 47: Model V – direct, indirect, and total effects .....	150
Table 48: Overview of the direct, indirect, and total effects in the models I-V .....	151
Table 49: Overview of the variances in the models I-V.....	151
Table 50: CFA model VI – results of the second-generation criteria .....	158
Table 51: CFA model VI – correlations between the latent factors .....	158
Table 52: CFA model VI – model fit indices.....	158
Table 53: Model VI – detailed information .....	159
Table 54: Model VI – model fit indices .....	160
Table 55: Model VI – direct, indirect, and total effects .....	160
Table 56: CFA model VII – results of the second-generation criteria.....	162
Table 57: CFA model VII – correlations between the latent factors .....	162
Table 58: CFA model VII – model fit indices.....	162
Table 59: Model VII – detailed information .....	163
Table 60: Model VII – model fit indices .....	164
Table 61: Model VII – direct, indirect, and total effects .....	164
Table 62: CFA model VIII – results of the second-generation criteria.....	166
Table 63: CFA model VIII – correlations between the latent factors .....	166
Table 64: CFA model VIII – model fit indices.....	166

---

Table 65: Model VIII – detailed information .....	167
Table 66: Model VIII – model fit indices .....	168
Table 67: Model VIII – direct, indirect, and total effects .....	168
Table 68: CFA model IX – results of the second-generation criteria .....	170
Table 69: CFA model IX – correlations between the latent factors.....	170
Table 70: CFA model IX – model fit indices.....	170
Table 71: Model IX – detailed information .....	171
Table 72: Model IX – model fit indices.....	172
Table 73: Model IX – direct, indirect, and total effects.....	172
Table 74: CFA model X – results of the second-generation criteria .....	174
Table 75: CFA model X – correlations between the latent factors.....	174
Table 76: CFA model X – model fit indices.....	174
Table 77: Model X – detailed information .....	175
Table 78: Model X – model fit indices.....	176
Table 79: Model X – direct, indirect, and total effects.....	176
Table 80: Overview of the direct, indirect, and total effects in the models VI-X .....	177
Table 81: Overview of the variances in the models VI-X.....	177
Table 82: Overview of the empirical results – models I-V.....	184
Table 83: Overview of the empirical results – models I-V.....	185

---

## List of abbreviations

CB	Covariance-based
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CSQ	Communication Satisfaction Questionnaire
IFI	Incremental Fit Index
n.d.	No date
N.N.	No Name
n.s.	Not significant
PLS	Partial least square
R&D	Research & Development
RMSEA	Root-Mean-Square-Error of Approximation
SCT	Social Categorization Theory
SIT	Social Identity Theory
SEM	Structural Equation Model(ling)
SRMR	Standardized Root Mean Square Residual

## 1. Objective and structure of this thesis: Employee identity serving as substitute of monetary incentives

### 1.1 Motivation and objective

To act successfully in the market, it is in the employers' strong interest that employees work for the benefit of the company. This means to pursue and operate defined strategies in accordance to the organizational targets. Nevertheless, the intentions of the principals (employers) and agents (employees) can differ, a gap that is sometimes unfortunately strengthened through information asymmetries (Lafont and Martimort 2001; Picot et al., 2008). To overcome these information asymmetries, the economic literature contains different approaches to incentivizing employees. Monetary approaches exist, but non-monetary ones such as praise also have been in the focus (for more details, see the meta-analyses by Cameron and Pierce, 1994; Eisenberger and Cameron, 1996).

In the research field "incentives" Akerlof and Kranton introduced a completely new idea: Employee identity can supplement or even substitute monetary incentives which solely used are "costly and ineffective" (Akerlof and Kranton, 2005, p. 11). Based on the utility of employee identity, the agent takes a higher effort action, and this leads to a reduction in the wage needed to evoke this higher effort action. In contrast, an outsider - a person who does not identify with a company - "(...) requires a bigger wage differential to compensate her for the utility she loses when she works in the interests of the firm" (Akerlof and Kranton, 2005, p. 15).

With respect to the principal's application and controlling of incentives, the construct employee identity has a decisive characteristic: It cannot be "handed over" to the agent such as monetary incentives through financial transactions and the variability is also limited both with respect to their amount and to how they are paid, e.g., via bonus, higher salaries or the possibility of stockholdings. It is an inner process of every member to evoke and develop employee identity in an organization which is enabled and fostered by diverse influencing factors. Main factors are organizational communication, culture and its aspect recognition which will be extensively introduced, justified, and discussed in this thesis. For the principal, these factors and their interdependencies between them are essential to know in order to trigger, affect, and control their effects when considering employee identity as substitute for monetary incentives in the organization. This guidance how to act as employer is also presented on basis of this thesis's results.

Following this argumentation, this thesis's central question is:

**What are the influencing factors (determinants) in the process of employee identity formation and how are the relationships between the single influencing factors shaped?**

This question is clarified in-depth by a theoretical and empirical examination.

## 1.2 Research approach and structure

Deriving from the central research question, the thesis's aspiration is to discover and evaluate the relevant influencing factors evoking and developing the employee's identity formation process. Thereby, the interplay between the single factors and their combined effects are studied. For the principal, these initializing factors and their interdependencies lay the foundation for using effectively employee identity as a substitute for monetary incentives.

To cover this aspiration, this thesis's approach adds to the existing literature as follows. The review of economic literature reveals a broad and extensive discourse on identity topics with regard to identity of organizations, identity characteristics, and employee identity. However, this thesis's research focus on the examination of the interdependent factors influencing the employee's identity formation which the principals can actively control up to a certain extent, has not been analyzed in detail yet. Therefore, the aspirations in the theory section are to develop an employee identity concept derived from a cross-disciplinary socio-psychological theory followed by in-depth analyses of each initializing factor. The aspirations in the empirical section complement the theory section by generating an empirical model structure of the influencing factors and their interdependencies. Thereby, it can be identified if the factors' hypothesized relations in the general model structure are enduring, although certain characteristics of the factors are varied.

This thesis is structured in a theoretical and an empirical section. In chapter 2, the theoretical framework entails the cross-disciplinary discussions on concepts of human identity formation, if and how to adapt them for the organizational context in line with economic research. This results in applying the symbolic interactionism approach, above all George Mead's theory which postulates communication and culture, particularly recognition, as the main influencing factors of human identity formation. The chapters 3 and 4 focus on a systematical analyzation of each key finding in Mead's theory in comparison with current economic research to reason their application for the concept employee identity or to which extend adaptations are necessary.

Based on the adapted key findings valid for the concept employee identity from the theory section, the hypotheses and the empirical model structure are created in chapter 6. The aim of the thesis's second part is to examine empirically the factors' interdependent effects on identification – one dimension of the concept employee identity next to the other two dimensions identity components and continual development of identity. To analyze the heterogeneity of the influencing factors organizational communication and culture - above all the cultural aspect recognition, ten model variants were created while the general structure between the factors remains unchanged (chapter 8). The model variants' results show that the hypothesized relations between the factors are still valid. This approach of model variants can be adequately covered by Structural Equation Modelling (SEM) (see chapter 7). Dependent on the thesis's theoretical and empirical results, practical implications are formulated for the employer (principal) to evoke and control employee identity acting as substitute for monetary incentives in the organization (chapter 10). Figure 1 visualizes the structure of the thesis.

Structure of this thesis	
1	Thesis: Motivation, objective, and structure
2	Employee identity
3	Influencing factor: Organizational communication
4	Influencing factor: Organizational culture
5	Summary of the theoretical framework
6	Development of the empirical model structure
7	Study design
8	Results of the empirical study
9	Summary of the empirical study
10	Thesis: Conclusion, and implications for the practice

Figure 1: Structure of this thesis (own figure)



## 2. The construct of employee identity and its formation

### 2.1 Identity: Technical term and differentiation from other related constructs

What is identity? Who am I? These central questions are an integral subject of various research disciplines ranging from philosophy, theology to psychology and sociology. However, in the economic sciences, the awareness of identity topics has risen during the last decades to study an organization's identity and employee identity.

One single definition and interpretation of the technical term identity is not available because of large variation on the topic from inter- and intra-disciplinary researches. Nonetheless, irrespective of the scientific discipline, analyzing identity encompasses a broad range of perspectives which can be clustered into the following research dimensions: The constancy of identity, the characteristics and uniqueness of identity, the process of identity formation and its influencing factors, and the conceptual components of identity. These dimensions are now introduced at a glance in order to better understand their meaning.

What does the dimension "constancy of identity" entail? Is identity always the same or does it change over time? The philosopher Ricoeur (1996) approached this topic by analyzing intensively the roots of the term identity deriving from the Latin words "idem" (sameness) and "ipse" (selfhood). The word "sameness" implicates duration over time, whereas the term "selfhood" integrates the possibility of changes during a period. Following his thoughts, both poles have to be combined in identity discussions.

Assuming that there are stable and altering elements reflecting identity, what do stable elements mean? Ricoeur refers to characteristics and mimic but these stable identity elements can be influenced in social interactions over time albeit they cannot be changed completely. The psychologist Petzold (2012) stresses identity - embedded into a changing environment - as an important starting point for psycho analyses. Following this, are these elements matured at birth or is there a continuous or time-constraint development? The psycho analyst Erikson (1997) developed a life cycle model for identity formation and argued that it has to be developed step-by-step during the complete life cycle. In contrast, the psychotherapist Marcia (1994) examined identity formation with ending in full "identity achievement". Thereout, the dimension rises: How is this formation process triggered by certain influencing factors? The social environment is one common stimulus being interpreted in various constellations of the different research disciplines. For Erikson (1997), for example, in every step in the development a rising conflict or crisis has to be solved by the individual with the environment whereas for the sociologist Mead (1978), symbolic interaction is the key word for evolving identity via communication processes in social orders and via the consideration of recognition. He stresses the successful interaction between the individual and the environment by

understanding the messages' content, meaning, and intention in the cultural context and the individuals' recognition of their roles and value contributions for the social environment. The philosopher Hegel also delved into the aspect of legal persons combined with the topic recognition (Hegel, 1973). Based on these thoughts and Mead's theory, the philosopher Honneth (1995) developed a recognition theory. However, if the environment plays such an important factor in identity formation, why is not everyone's personality uniform? The psychologist Freud (2005) already discussed the different components of identity and his thoughts are generally in line with those of many other researchers, including Mead, who are dividing identity into a personal (very individual and unique) and a social component. These components shall harmonically complement each other and build the inner unit of one person's self – his identity.

The previous paragraph outlines how diverse the field of identity can be discussed, and that one definition is not easy to publish. Nevertheless, describing technical terms in encyclopedias demands a strong reduction of complexity and a condensation to essential interpretations in order to understand them immediately. Even the time-honored Merriam-Webster's encyclopedia does not publish one key description but encompasses these cross-disciplinary dimensions: Identity is defined as "sameness of essential or generic character in different instances" or "the distinguishing character or personality of an individual" or "the relation established by psychological identification" (N.N., Merriam Webster's online encyclopedia: identity, n.d.). The last description shows the link to the technical term identification, which is defined as "an act of identifying: the state of being identified" or amongst other descriptions as "a largely unconscious process whereby an individual models thoughts, feelings, and actions after those attributed to an object that has been incorporated as a mental image" (N.N., Merriam Webster's online encyclopedia: identification, n.d.). The interpretation of the term identification is the following: Identification of an individual deals with the external impressions (objects) or social environment and how these affect the individual's personality (mental image) (details see chapter 2.4). Hence, these external influences have to be unified with the individual's characteristics to get a stable identity in various situations distinguishing from other individuals (details see chapter 2.4).

In economic literature, the already introduced dimensions are also reflected in examinations of the concepts "the organization's identity" and "employee identity" whereby the latter is the central topic of this thesis. The general understanding of the relationship between the technical terms "identity" and "identification" is most of the time adopted in the organizational context (details see chapter 2.2). Employee commitment is another theoretical construct that is very often used for examinations in economic research (Meyer and Allen,

1997; Meyer et al., 2002; Rhoades and Eisenberger, 2002). This construct has similarities but also relevant differences. Van Knippenberg and Sleebos briefly summarize both constructs: “While commitment refers to a relationship in which the individual and the organization are separate entities psychologically, identification implies that the individual and the organization are one in the sense that the organization is included in individual’s self-conception. Furthermore, (...) commitment is more contingent on perceptions of the quality of the exchange relationship between individual and organization than identification is, because identification implies psychological oneness whereas commitment does not” (van Knippenberg and Sleebos, 2006, p. 574). However, as this thesis focuses on the employee’s identity formation process including the relation between identity and identification, the construct of commitment will not be further examined in detail.

## **2.2 Literature overview: Employee identity and its formation**

In the 1980s, scientific research in business started to develop different concepts for an organization’s identity. The research followed on trends in the daily business life of organizations (Birkigt et al., 2000). This approach still results in marketing and branding perspectives while examining an organization’s identity. Nevertheless, it was recognized that the role of employees, above all their employee identities, in organizational groups must be considered as well. Three main research fields were established, varying according to the research’s focus: An approach via an external marketing perspective, called corporate identity; an approach via an internal perspective – relevant both for an organization’s identity and for an employee’s identity, called organizational identity; and an approach via an individual’s cognitive perspective, called social identity (see next figure).

The following sub-chapters examine the three approaches regarding the relevance and role of employee identity and its formation process. It is explained why the research field “organizational identity” provides the thesis’s theoretical basis.

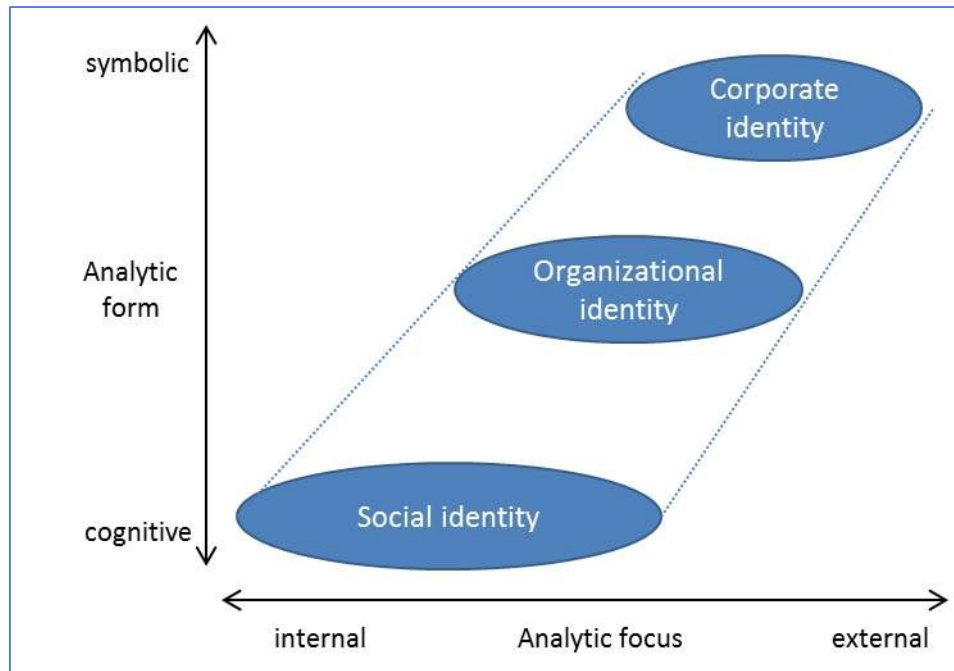


Figure 2: Overview of the different research lines in the organizational environment (Cornelissen et al., 2007, p. S4)

### 2.2.1 The role of employee identity in the research fields “corporate identity” and “social identity”

#### Corporate Identity

The intellectual movement of “corporate identity” concentrates on “outward-bound symbolic presentation” of an organization as a whole, integrating different facets of communication (see Balmer, 2008, p. 884). From a marketing perspective, brand identity and product identity as well as the corporate identity play an important role (Balmer, 2001). In particular, the corporate logos make an important contribution to an organization’s perception (Van Riel and Van den Ban, 2001; Henderson et al., 2003). Consequently, the outside view that an organization generates is deeply examined (Van Riel and Balmer, 1997; Birkigt et al., 2000). Above all, the role of the management in creating and establishing a corporate identity has been emphasized (Balmer, 1995). Symbolism, language, behavior, and visual aspects to externals and their backward perception (mirroring) of the organization have all been the object of studies, and this is defined as corporate image (Abratt, 1989; Christensen and Askegaard, 2001; Hatch and Schultz, 1997). But corporate image also includes how employees perceive that their organization is recognized by externals (Dutton and Dukerich, 1991; Dutton et al., 1994). Birkigt et al.’s (2000) practice-oriented concept summarize the focus of this research trend: Corporate identity is a planned and operative self-expression and how a company behaves toward its internal and external environment. It is based on the company’s

philosophy, a long-term company target, and a defined and desired image. It consists of four elements: Corporate personality, behavior, design, and communication.

In general, the internal employees' identification processes are somewhat neglected (Hatch and Schultz, 1997) and their contribution to shaping an organization's identity. Therefore, this research approach is not pursued as general basis for this thesis.

### **Social Identity**

"Social identity" has its spotlight on individual identification with a social group and the psychological effects of group membership in relation to inward and outward group-thinking or cognitive processes (Tajfel and Turner, 1986). This research field consists of social identity theory (SIT) by Tajfel and Turner in 1979 and 1986 and was extended by Turner with the social categorization theory (SCT). As this theory originated in psychology, not in organizational studies, the identity of organizations and the employee's identity are not primarily in the focus. However, it is often applied for an organization perceived as a group with different sub-groups and the behavioral relation to the employee (Ashforth and Meal, 1989; Hogg and Terry, 2000; Haslam et al., 2000; Ellemers et al., 2004).

SIT is based on three assumptions (details see Tajfel and Turner, 1986): First, individuals would like to see themselves in a positive way "(...) to maintain or enhance their self-esteem" (Tajfel and Turner, 1986, p. 16). Second, every group is evaluated by individuals and has therefore a tendency to a positive or negative reputation. This influences an individual's social identity. Third, a group's evaluation is conditioned by its environment, in detail through comparisons with other groups using social criteria such as characteristics or attributes. This means, if the group to which an individual belongs is more positively perceived than other groups, then the reputation is high. Contrarily, if the prestige is evaluated as low, the individual tends to leave the group. Turner's extension of the SIT theory is the SCT theory and has its roots in defining more precisely the factors of social categories (Turner et al., 1994): Whether a person perceives himself more as an individual (personal identity) or more depersonalized as a social group (social identity) depends on the situation and the circumstances, his level of self-categorization, his personal sense of self, and how he compares himself with others. In psychology, social identity theory contributes amongst others to research about conflicts (Ashforth and Mael, 1989).

This research approach focuses on identification while categorizing groups (organizations) into high and low reputation and attractiveness compared with other groups and on the degree of depersonalization by an individual to shape his social identity. However, this thesis's aim is to reveal the principal's sphere of influence in evoking and controlling an employee's identity formation process in order to use employee identity as substitute of monetary incentives. The

principal has an influence - but a limited one - on the company's whole reputation. Too many actors contribute to a company's perceived attractiveness. Additionally, the measurable characteristics how good a company's reputation is ranked compared with other companies strongly vary from employee to employee according to the employee's endeavor to enhance his personal self-esteem. This approach rather reflects the individual employee's view and not the organization's view of factors influencing the employee's identity formation. In consequence, one further theoretical approach is needed which gives the principal enough leeway to trigger these factors.

### **2.2.2 The role of employee identity in the research field "organizational identity"**

The research movement "organizational identity" focuses both on the identity of organizations that are perceived as unique units with their own selves "who am I as organization?" and focuses on the awareness that these units consist of collections of individuals having their own employee identities "who am I as employee?" (Hatch and Schultz, 2002; Gioia et al., 2000; Cornelissen, 2002; Whetten, 2006; Ashforth and Mael, 1996). Thereby, the interplay between the organization and the individual employees for emerging organizational and employee identity is an elementary issue that was described by Hatch and Schultz in 1997: "Organizational identity refers broadly to what members perceive, feel and think about their organizations. It is assumed to be a collective, commonly-shared understanding of the organization's distinctive values and characteristics" (Hatch and Schultz, 1997, p. 357).

Following this idea, two foci developed. On the one hand, there are representatives of the "social actor perspective", as for example Whetten, Czarniawska or Mackey. On the other hand, there is the "social constructionist perspective" represented by Dutton, Gioia, Schultz, Ravasi, Corley or Fiol. Both approaches have commonalities, but the central difference between them is that the "social actor perspective" is more static in describing the organization's characteristics and pursues rather a centralistic definition created by the management that must be adopted by the employees for an organization's identity to emerge (Ravasi and Schultz, 2006). In contrast, the "social constructionist perspective" involves all employees equally in the organization's identity formation and examines the employee and his personal employee identity in that organization.

"Social constructionist perspective" means that shared understandings of an organization's sense-making, meaning, attitudes, beliefs, rules, behaviors guide the individual's integration

into that organization by shaping his actions and cognitions; furthermore, this idea leads to a unique self-definition of the whole organization as internalized by its members (Gioia et al., 2000; Gioia and Thomas, 1996; Hatch and Schultz, 1997; Dutton et al., 1994; Elsbach and Kramer, 1996; Ravasi and Schultz, 2006; Corley et al., 2006). These processes of common understandings are not static and can be revised over the course of time (Ravasi and Schultz, 2006).

In 1948, Selznick examined the interplay of the organization's and employees' mutual identity-influencing relations and this following section will summarize his relevant statements based on Selznick (1948 and 2011). Selznick (1948) noted that a consistent appearance of an organization as a whole reduces disaffection. However, the presumption is that there is a common perception of which character is reflected by this organization. Thereby, an organization can exist in its environment and can guarantee self-maintenance through organized and aligned actions. As consequence of Selznick's argumentation, when an internal conflict of central attitudes begins to topple the organization, the existence of the organization as a whole is threatened (Selznick, 1948, p. 30). This stresses the importance of each member for an organization's identity. Selznick argues that the individual's and the organization's identity are interdependent: While the individual has his own personality, he is integrated in the organization which also expresses its own identity as a community. Consequently, the individual shapes the organization and the organization shapes his personal employee identity. In 1957, Selznick wrote that the internal process of value commitment within a group leads to a "distinctive identity" (Selznick, 2011, p. 16). Furthermore, he emphasizes the importance of every organization's history, through which a learning curve and a common behavior or social pattern emerges within the social construct organization for internal and external influences.

The essential part of the "social actor perspective" is reflecting the organization's character. While employees and their employee identities are mentioned, this perspective does not explicitly examine how they develop those identities. However, a basic understanding of a very well-known concept of how an organization's identity can be described is relevant for further thoughts on employee identity. This concept was developed by Albert and Whetten (1985) to characterize the identity of organizations with the adjectives "central", "enduring" and "distinctive". According to Whetten (2006), "distinctive" means differentiated from all other competitors and standing out of the industry environment. "Central" can be seen as the fundamental attributes of each organization (Whetten, 2006) and represents the "social actor perspective".

Albert's and Whetten's (1985) original definition was reviewed in detail by Olof Brunninge, and he discovered an inconsistency of handling this definition in research: Most publications

cite identity as central, enduring and distinctive but in the original source it is obvious that identity “(...) *is claimed to be* central, distinctive and temporally continuous” (Brunninge, 2005, p. 12). According to his analyses, even Albert and Whetten did not pursue their original definition consistently, as can be seen in Albert et al. (2000) or in Whetten (1998). This shows that a common understanding of what organizational identity is and is not is still lacking. Subsequent to Brunninge’s publication, Whetten wrote a review of his original concept and also emphasizes that organizational identity “(...) failed to measure up to its own definitional standard” (Whetten, 2006, p. 220). Albert and Whetten’s revised definition of organizational identity is now explicitly embedded into an identity concept consisting of three components: The ideational, the definitional and the phenomenological one (Whetten, 2006). The first has its focus on the organization’s members (Who are we as an organization?), the second on the three organizational characteristics central, enduring, and distinctive for a specific identity, and the third on observations regarding identity and practical experiences in daily business life (Whetten, 2006, p. 220).

Meanwhile, the representatives of the “social constructionist perspective” interpret “central” as “(...) beliefs about the organization that are widely “shared” by many organization members” (Corley et al., 2006, p. 91) and for example as described more fully in Dutton and Dukerich’s (1991) examination. A character is based on shared understandings and beliefs and therefore, cannot be changed every day by single members and so possesses enduring facets but there is still a continuous development through internal and external influences affecting the shared assumptions (Corley et al., 2006; Gioia and Thomas, 1996; Corley, 2004).

The kind of building-up such shared understandings and the conscious process of defining what is central and enduring for the organization and distinguishes the organization from competitors, is strongly related to the organization’s culture. For Hatch and Schultz (1997), organizational culture that expresses the shared assumptions and values through the employees’ meanings, actions, and beliefs (details see Schein’s concept in chapter 4.1.1.2), influences the organization’s identity. Thereby, for the single employee sense-making during his identity process and during an organization’s identity process plays a key role. However, Whetten (2006) stresses the link between identity and culture only when the employees adopt cultural elements which are in line with the organization’s self-definition. For him, all other cultural elements are irrelevant. For the role of organizational culture in an organization’s identity formation process, Hatch and Schultz (2002) developed a concept based on Mead’s human identity formation theory (introduction to Mead see the next two chapters). Although an organization is not a human, Jenkins (2008) alludes to Mead’s theory on an abstract level applicable for different environments and argues that is possible to transfer such a theory to the concept organization’s identity formation.



Cultural aspects must be expressed. This is associated with any kind of organizational communication. This exchange of communication - for example through language or other communicative expressions such as behavior - is central for each identity process (Czarniawska and Wolff, 1998; Czarniawska, 1997; Hatch and Schultz, 2002; Ibarra and Barbulescu, 2010; Pratt and Rafaeli, 2001).

### **Summarized conclusions of the role of employee identity**

Following these thoughts, it can be recognized that organizational identity research has its focus on the unique identity of an organization but it does not neglect the view of individuals with their personal selves building up such a collective unit with its own self (e.g. Kreiner and Hollensbe, 2006). Furthermore, the interdependencies between the organization and the employee and their impacts on the employee's identity as well as the organization's identity play a crucial role – above all the approach of “shared” meanings, assumptions, and beliefs. Using employee identity as substitute of monetary incentives, the principal needs starting points to evolve the employee's identity formation process. In this context, the research field “organizational identity” provides room for action for the principal: “Shared” indicates an influenceable exchange between an individual, the principal, and the collective. As discussed, this exchange induces identity formation processes in combination with communicational and cultural influence. This means that the organizational environment with its members is important for the individual employee's identity formation to find an answer on the employee's relevant question “Who am I as employee in the organization?”.

The research field “organizational identity” already studied the formation process of an organization's identity, but a comprehensive theoretical examination of influencing employee identity formation has not been extensively analyzed yet. In consequence, the interdependences of factors influencing the identity formation have also not been in the research focus. However, with respect to this thesis's initial aim, such a theoretical concept is necessary. The next chapter will therefore provide an introduction to concepts drawn from other research disciplines examining the trigger points of human identity formations in order to derive them for the concept employee identity.

### **2.3 Literature overview: Human identity formation concepts and their applicability to serving as theoretical basis for employee identity formation**

Based on the previous literature overview of identity in economic research, it became obvious that a comprehensive theoretical construct of the factors influencing the employee's identity

formation has not been extensively studied yet. However, psychological, sociological, and philosophical sciences already intensively discussed human identity formation. This chapter concisely introduces to the important theories of each discipline with regard to potential applications for the concept employee identity and its formation in organizations. In particular, the appropriate human theory is selected considering the usage of employee identity as substitute for monetary incentives. Furthermore, this theory should fit into the research field organizational identity which was already identified as the relevant economic research field for employee identity studies. The literature overview will unveil why George Herbert Mead provides an applicable basic theory contributing to the “shared perceptions and meaning” perspective of the research field organizational identity.

### 2.3.1 Approaches in psychology, sociology, and philosophy

In the dimension of examining identity formation and its influencing factors two essential theories were called (see chapter 2.1) – the one from Erikson and the one from Mead which is explained in the next chapter. The psycho analyst Erik Erikson (1997) differentiated the identity formation process into eight different steps along the life cycle. In every certain age period, the human has to solve a “crisis” with basic attitudes in order to strengthen his identity in a demanding and changing environment and to build a continuous and stable set of characters. To illustrate exemplarily, during teenager age (so called fifth step) the crisis of identity versus identity confusions can be solved by Erikson’s defined basic attitude “fidelity” (Erikson, 1997, p. 32). This theory is still a very relevant fundament for further theories and is picked up in the gestalt psychology to treat in the presence missed conflicts in one of Erikson’s eight steps laying in the past (Ladisich-Raine and Pernter, 2012). Client-centered psychology refers to Erikson’s conflict resolution as well (Finke and Stumm, 2012).

Sigmund Freud also discussed the topic of inner fight of the growing self. For him, the psyche consists of different facets that represent norms from the “outer” world and complete inner characteristics “id”, “ego” and “super-ego” (Freud, 2005). These components are in conflict with each other (Freud, 2005).

The philosopher and sociologist Jürgen Habermas developed the “kritische Gesellschaftstheorie”. Habermas’s theory (1976) includes life cycle aspects referring to Erikson and adds the ideas of “role-taking” and “social interaction” from Mead as the main representative of symbolic interactionism (for details on this theory see the following chapter). The philosopher Paul Ricoeur (1996) developed a very abstract and wide-spanning theory on identity incorporating constancy and changing aspects of identity. He defines

formation processes through narrative and communicational interactions between individuals. For him, the experiences and expressions with other individuals have to be told to get a consistent and comprehensible story on his identity formation between the identity's poles of stable parts (e.g. characteristics) and changeable parts in the course of time. Ricoeur (1996) calls that "narrative identity". According to Axel Honneth (1995), the philosopher Georg Hegel emphasizes the mutual recognition in the societies as an important trigger for identity formation processes. Besides communicative interactions, the recognition-idea is also an elementary factor in Mead's theory. Referring to Hegel and Mead, the social philosopher Honneth (1995) picks up this fundamental element to create a multilayered recognition theory. Recognition is based on societal value systems and impacts the perspective on a legal personality in a state.

Considering the initial spark of this thesis which is employee identity acting as substitute of monetary incentives, the principal is interested in knowing and controlling factors influencing the employee's (the agent's) identity formation. Following this, Erikson's and Habermas's theories covering life cycle aspects from birth and the respective crisis to overcome in certain age periods, do not provide sufficiently transferrable influencing factors relevant in the business context. Ricoeur with its narrative identity approach also provides difficult starting points for the principal to enable employee identity processes. However, theories which address recognition and communicative interaction topics as trigger points for identity, can be actively controlled by the principal and they are generally adaptable for the organizational environment. Mead's theory tackles these topics. The next chapters will give a comprehensive introduction and then discussion on the applicability of this theory.

### **2.3.2 Research field "symbolic interactionism" and its conceptual relevance for employee identity formation**

The fundamental subject of symbolic interactionism is the interactionism between an individual and society. "Shared" understandings and beliefs as well as the role of culture are essential arguments for identity formations. Mead was an important figure in social behaviorism research. His theory is from a behavioral point of view but it is not an idealistic or a subcutaneous one: He did not find a satisfying answer in the tradition of psychology as to how a human's fully developed mind was embedded in behavior (Mead, 1978, p. 39). Therefore, his point of view was: Analyzing human experiences from a society's standpoint, not from individual psychology. The condition for his approach is that communication is the basis for any kind of social order. Therefore, he analyzes how individuals' experiences and

behaviors are influenced by social systems (Mead, 1978, p. 39). Mead's theory was further discussed by Strauss, Goffman, and Krappmann. Cooley was another pioneer.

In the next chapter, Mead's theory will be described in detail to understand its key messages. Then, it is possible to discuss its application for the construct employee identity. At this point, the main statements are already summarized in this paragraph to get a first overview based on Mead (1978): Human identity must be developed over time through all kinds of experiences, actions, processes, norms, and structures in social cultures via "significant symbols" in communicative interactions between the individual and the environment (Mead, 1978, p. 177). Significant symbols are the key for evolving identity because then, the message's content, meaning, and intention was successfully transmitted between the sender and the receiver and provokes action-reactions between them. These significant interactions also enables role-taking in order to draw conclusions on the reaction of other persons and mirroring one's behavior from the other's perspective (Mead, 1978, p. 187ff). The interactions are based on "shared"-perspectives and "shared"-developments of social norms, values, and behavior systems and strongly reflect the individual's recognition of his role and value contribution in society (Mead, 1978, p. 197). Significant communication and the communicated society's culture to receive recognition are the main influencing factors for identity formation processes. Due to the continuous exchange of the individual with his environment he is influenced by the society, incorporates the communicated cultural behavior and in return, he also can shape and change his social environment with his characteristics, reactions, ideas, and demands. For a fully-developed human identity, Mead emphasizes to harmonize the individual's characteristic and his incorporated cultural imprint. Therefore, the importance of the society on identity formation is reflected in the identity components: The self consists of the components "I" (personal) and "me" (social) and both parts should be balanced to represent one identity (Mead, 1978, p. 216ff).

The researchers Goffman, Krappmann, and Strauss address special topics with regard to the basic understanding of identity formation processes in symbolic interactionism research. They delved deeply into diverse details, whereas Mead provides a comprehensive theory on identity. Cooley was the intellectual leader for the social interactionism movement. He laid the foundation for the inextricable relation between human identity and a society. Moreover, he also introduced reflected recognition and behavior in identity formation processes and called it the "looking-glass self" (Cooley, 1922, p. 184). Krappmann's focus lies on communication but he criticizes the emphasis on interactionism while neglecting life cycle aspects (Krappmann, 1975). Strauss also refers to communication, though his main focus is on an individual acting in a specific role and his interaction with the society on the basis of this

communicated role (Strauss, 1968). Goffman's theory emphasizes daily interaction and above all the influence of society's norms and rules on the individual (Goffman, 1974).

### **Applicability of human identity formation theories for employees**

In general, the symbolic interactionism approach is applicable for studying identity formation processes in the organizational environment – in particular the usage of employee identity acting as substitute for monetary incentives. It offers an abstract level how the process of identity formation functions (e.g. no life cycle allusion) and does not neglect the influence of communication, culture, recognition and society (e.g. the organization, the principal) in such processes. The “shared”-perspective is also reflected in both the social interactionism and the “organizational identity” research field.

Transferring Mead's main statements roughly to the organizational environment, indicate interesting starting points for its application: A principal's and agent's “shared”-approach to perceptions and beliefs with regard to corporate culture, the active use of recognition towards the agent, and the processes of inter-organizational interaction and reflection (role-taking) over time, in which communication between the principal and the agent plays an essential role. Then, the employee can balance his identity components “I” and “me” according to his individual characteristics, his private and business life imprints over years and the organization's cultural influence in order to answer “Who am I as employee in the organization?”. In organizational identity theory, Hatch and Schultz (2002) already transferred Mead's theory to the concept of the organization's identity. In the following chapters now, Mead serves as basis for all further thoughts on employee identity. The applicable main statements of his theory will be deeply discussed and reasoned (see chapter 3 and 4).

## **2.4 Symbolic interactionism: Introduction to George Herbert Mead's theory of human identity formation - 16 key findings**

Mead's original theory is now extensively introduced. For the purpose of receiving a comprehensive overview of the central contents, his thoughts are outlined and then summarized in key findings which are relevant for this thesis's aim. These key findings lay the foundation for later discussions in depth on the usage of this theory as conceptual basis of employee identity and the factors influencing the formation process (chapter 3 and 4).

### 2.4.1 Continual development in identity formation: Key finding 1

For developing a human identity, Mead introduced society as the relevant factor. He stresses that mind and identity must be developed over time in the context of social orders – they are not matured at birth (Mead, 1978, p. 244). In these social orders, social and moral conflicts are produced between the individual and the “other” and these have impacts on identity formation (Mead, 1978, p. 351ff). Furthermore, social orders change over time. Consequently, identity is not a complete fixed construct; it is a constant development during a life cycle (Mead, 1978, p. 351ff). There are identity components which are relative enduring but not complete unchangeable. The roots of these evolutionary thoughts are from Darwin’s theory of evolution theory (Dunn, 1998, p. 190). Dunn (1998), p. 190 calls that principle of emergence – “the idea that life forms are in a continual state of evolution”. This means changeability and a (lifetime) interplay between an organism with its environment. Here, a society is to be imagined as an evolutionary, complex unit (Morris, 1978, p. 13). Based on Mead’s thoughts, the first key finding can be phrased:

**Key finding:**

- (1) The self is not a stable and unchangeable construct. It is developed over time and not complete fixed.

### 2.4.2 Identification through communication: Key findings 2-5

Mead’s identity formation theory contains a strong focus on identification, constructed through three essential factors: Communication, role-taking for a person’s acceptance in society as well as for reflecting oneself, and participation through mutual kinds of recognition.

“The principle which I have suggested as basic to human social organization is that of communication involving participation in the other. This requires the appearance of the other in the self, the identification of the other with the self, the reaching of self-consciousness through the other. This participation is made possible through the type of communication which the human animal is able to carry out - a type of communication distinguished from that which takes place among other forms which have not this principle in their societies” (N.N., *livros gratis*, p. 114 and Mead, 1978, p. 299).

“It is this recognition of the individual as a self in the process of using his self-consciousness which gives him the attitude of self-assertion or the attitude of devotion to the community. He has become, then, a definite self” (N.N., *livros gratis*, p. 88 and Mead, 1978, p. 237).

Communication is the key to evolving an identity, “the appearance of the self” (N.N., *livros gratis*, p. 33 and Mead, 1978, p. 108). Through it, an individual gets in contact with others, can express himself, can reflect himself and can adapt himself. Individuals communicate via different channels such as words, gestures or facial expressions which all have a meaning (Mead, 1978, p. 51) – communication is multilayered. A communication match between the sender and the receiver is successful, when the message’s purpose, meaning, and intention was transmitted and not just an order of signs (Mead, 1978, p. 51). Mead compares this

process that the pure message becomes a “significant symbol” (Mead, 1978, p. 189 and p. 111) and the significant symbol stimulates the initializing person in the same way as the other person (Mead, 1978, p. 191). An “intelligent conduct” of such actions is only possible in a society of reflective characters - an animal cannot think about its action by taking another animal’s role and cannot reflect or predict the other animal’s reaction (Mead, 1978, p. 112). For reflective individuals, the meaning of interactions appears in the context of their own experiences and how they conduct themselves in future conversations (Mead, 1978, p. 112f). Sometimes the reactions follow an unconscious procedure (Mead, 1978, p. 188). This means that the receiver’s response is completely individual associated with experiences he made in the past, his individual character, and his intention in the communicational exchange.

“We are, especially through the use of the vocal gestures, continually arousing in ourselves those responses which we call out in other persons, so that we are taking the attitudes of the other persons into our own conduct. The critical importance of language in the development of human experience lies in this fact that the stimulus is one that can react upon the speaking individual as it reacts upon the other” (N.N., *livros gratis*, p. 33 and Mead, 1978, p. 108).

“It is, of course, the relationship of this symbol, this vocal gesture, to such a set of responses in the individual himself as well as in the other that makes of that vocal gesture what I call a significant symbol. A symbol does tend to call out in the individual a group of reactions such as it calls out in the other” (N.N., *livros gratis*, p. 34 and Mead, 1978, p. 110).

To briefly summarize Mead’s statements in the key findings for communication as the initiator and the influencing factor for an identity formation process:

**Key findings:**

- (2) Communication processes are multi-layered and need senders and receivers.
- (3) “Significant symbols” are transported messages with a purpose, meaning, and intention.
- (4) Communication processes are successful when the sender and receiver have a common understanding of the “significant symbols”, which induces an “intelligent conduct” of action-reaction processes based on an individual’s background of experiences and expectations.
- (5) Communication enables and influences the identification process.

### 2.4.3 Different facets of role-taking in the identification process: Key findings 6-9

Role-taking can proceed in two different constellations: First, an individual can take the role of another person to himself (as reflection) and second he can switch between different actors in a human interaction process. This leads to situations in which he has to face phases and facets of common tasks in a society in which all members are involved (Mead, 1978, p. 197). But how does role-taking emerge between the individual and the social group? Mead differentiates the steps of human development from childhood to adulthood: The “play” and the “game” phase. During the first phase (this paragraph refers to Mead, 1978, p. 187ff), children very often play with imaginary friends and lead discussions by switching the roles of

significant others between themselves and the invisible friend (Mead, 1978, p. 192). In this context, they get a better understanding of other roles and can also test imaginary socialization how the imaginative colleague reacts to their action and how they feel about this reaction. The second step, the “game” phase (this paragraph refers to Mead, 1978, p. 187ff), contains the next challenge. In a real game with other children, one child takes over one role, but he must be able to reconstruct and assess everyone else’s reactions in order to be successful in that role. It is not necessary that all the other roles are conscious in one’s mind at the same time. However, during the game while interacting in a special situation, he has to recall the other’s aim and attitude (Mead, 1978, p. 193). Individuals are dependent and affected by the other’s behaviors and the other way around. This means that role-taking controls the development of an individual personality (Mead, 1978, p. 195).

As already described, other persons play an important role in a person’s identity process. Mead calls this influencing society or group “the generalized other” entering “as an organized process or social activity into the experience of any one of the individual members of it”, (N.N., *livros gratis*, p. 71 and Mead, 1978, p. 197). Moreover, role-taking means that an individual has to adopt

“(…) attitudes of their attitudes toward the various phases or aspects of the common social activity or set of social undertakings in which, as members of an organized society or social group, they are all engaged; and he must then, by generalizing these individual attitudes of that organized society or social group itself, as a whole, act toward different social projects which at any given time it is carrying out, or toward the various larger phases of the general social process which constitutes its life and of which these projects are specific manifestations. This getting of the broad activities of any given social whole or organized society as such within the experiential field of any one of the individuals involved or included in that whole is, in other words, the essential basis and prerequisite of the fullest development of that individual's self” (N.N., *livros gratis*, p. 71 and Mead, 1978, p. 197).

For Mead, this is decisive to develop a full identity. In this, on the one hand an individual has to identify with general targets and purpose of a social order he belongs to. Moreover, he must take an active part in the “common social activity” to contribute to a lively social group. In concrete terms, an individual has to be familiar with the norms, rules, values, attitudes and behaviors of a social order. On the other hand, the “generalized other” plays a significant role in internalizing these, in turning them into long-term attitudes, values, and behaviors which can be recalled in the different situations and phases of life that an individual goes through within a social system (N.N., *livros gratis*, p. 77ff and Mead, 1978, p. 209ff). Generally speaking, it enables him to develop a full individual identity that functions as a moral compass for appropriate behavior in this social order. Identification means adopting the culture of the environment in which the individual lives. However, it also means critically considering with the “generalized other” to contribute actively in shaping both the community and one’s own identity. Role-taking is based on communicative interactions between the individual and the social order to transfer the cultural understanding. Mead thus refers to his already explained communication process (see chapter 2.4.2), when describing role-taking as relevant for



entering certain societies as a new member and for deciding which sort of social group fits with the individual's own cultural convictions:

"(...) for of all such classes or subgroups, it is the one which claims the largest number of individual members, and which enables the largest conceivable number of human individuals to enter into some sort of social relation, however indirect or abstract it may be, with one another – a relation arising from the universal functioning of gestures as significant symbols in the general human social process of communication" (N.N., livros gratis, p. 72 and Mead, 1978, p. 199).

Based on Mead's explications on the meaning of role-taking, these are the key findings:

**Key findings:**

- (6) The evolution of role-taking has two main steps, the "play" and "game" phase.
- (7) Role-taking is enabled and based on "significant" symbols in communication processes.
- (8) Culture is represented by - above all - shared basic attitudes, beliefs, values, norms, behaviors and functions as a guardrail how to act as individual in a social order.
- (9) Culture is expressed by communication, which enables role-taking with the social order – this means that an individual's identity formation is influenced by the group's culture, but he as an individual with his own set of characteristics can also influence the group with his convictions.

#### 2.4.4 Recognition in the identification process: Key findings 10-13

As already described role-taking plays an important role in the identity formation processes of every individual with the environment. However, membership in a social group presumes a central aspect: Recognition. Mead describes it in the following way: "It is that self which is able to maintain itself in the community, that is recognized in the community in so far as it recognizes the others" (N.N., livros gratis, p. 90 and Mead, 1978, p. 240). The more interaction partners the individual meets in his life, the more his personal self-image is extended due to the many reflections he receives from his environment. In step 2 of role-taking ("game" phase), the individual learns to adopt and to internalize the social norms, rules, behaviors, and values of a social group, called the "generalized other". This process shows the individual's recognition of these social attitudes towards the "generalized other". At the same time, the individual experiences the fact of being recognized as a member of this social order. In Mead's opinion, an individual must be recognized as a legal person and this has two implications (Honneth, 1995, p. 78f): On the one hand, the individual learns which obligations he has in a social order. On the other hand, he also experiences which rights he has in a social group and realizes that these legitimate rights are respected. Consequently, such a system also enables him to demand fulfilling roles within the society.

"If one is maintaining his property in the community, it is of primary importance that he is a member of that community, for it is his taking of the attitude of the others that guarantees to him the recognition of his own rights (...) It gives him his position, gives him the dignity of being a member in the community, it is the source of his emotional response to the values that belong to him as a member of the community. It is the basis for his entering into the experience of others" (N.N., livros gratis, p. 91 and Mead, 1978, p. 242f).

Furthermore, Mead mentions a second kind of recognition next to membership recognition, namely being recognized as individual with a value for the society. Honneth interprets Mead's explanations of recognition of rights linked to the dignity of membership in social group as follows (Honneth, 1995, p. 79f): Experiencing recognition means being aware of one's own individual social value for the society as it is perceived by the other members. Being in a legal social system though means understanding the social orders, but every reaction is individual and grounded in personal experiences (compare chapter 2.4.2). These individual reactions are not completely controllable for groups and challenge every interaction. An individual discusses his role and social attitudes and norms within a group. In the course of such a process, conflicts arise – above all when the individual has another opinion contrary to the “generalized others” (Mead, 1978, p. 351). These moral conflicts force the individual to seek for new forms of recognition within the group (Honneth, 1995, p. 82). Consequently, social attitudes are frequently under high scrutiny. An individual's intention to renew social norms can be, for one thing, to get more leeway to interpret them within the social norm constructs (Honneth, 1995, p. 82) and, for another thing, to reach self-fulfillment (Mead, 1978, p. 249). With regard to divisions of work in a social group, recognition helps an individual to be conscious of his own unique individual skills (Mead, 1978, p. 253 and Honneth, 1995, p. 88). The following key findings reflect Mead's perspective with regard to the individual's recognition:

**Key findings:**

- (10) Being part of a social group is related to recognition on the social role and appreciation.
- (11) Recognition is expressed through cultural features by the social order and has an essential function in the process of human identity formation.
- (12) In a social order, the individual must be recognized as a legal person who understands his rights and obligations.
- (13) The individual can be recognized as valuable for the social order based on his performance.

### 2.4.5 Identity components “I” and “Me”: Key findings 14-16

In Mead's theory, there is a strong focus on social interactions for building up a personality. This approach is also reflected in the identity's components. Which components does the human identity contain? Mead differentiates between the “I” and the “me” (Mead, 1978, p. 216ff). The “self” arises from both. The interdependence between them is the following: The “me” develops by adopting attitudes and behaviors of a social group (Mead, 1978, p. 217). The “I” represents the individual attitudes, behaviors, and reactions towards the community's attitudes in the context of the individual's experience from beginning of his life (Mead, 1978, p. 240). Both components reflect an individual's identity and their interdependence is the harmonization of both components to get a balanced identity. Therefore, both have to be

considered. This explains the individuality of each person. Despite individuals growing up in one social group with the same values and attitudes and facing with similar or identical schemata regarding different roles in a society, they perceive and react as an individual person with a unique background of personal experiences. To summarize, the “I” is not always one hundred percent calculable (Mead, 1978, p. 221) due to individual instinctive and impulsive reactions (Mead, 1978, p. 254), also partially based on personal experiences, and whereas, the “me” represents the sum of an individual’s attitudes shaped by different roles and philosophies in a social group (Mead, 1978, p. 221). In consequence, the “me” also reflects how others perceive the individual and the corresponding expectations of the individual.

“The “I” both calls out the “me” and responds to it. Taken together, they constitute a personality as it appears in social experiences. The self is essentially a social process going on with these two distinguishable phases. If it did not have these two phases there could not be conscious responsibility, and there would be nothing novel in experience” (N.N., *livros gratis*, p. 81 and Mead, 1978, p. 221).

Mead infers that the self must be a “reflective thought” (N.N., *livros gratis*, p. 92 and Mead, 1978, p. 245). Both identity components reflect Mead’s general approach: The interplay between the individual and his environment and how this human with his balanced identity find his position in this social context to answer the question “Who am I in this society?”. Mead’s key statements can be summarized in the following key findings:

**Key findings:**

- (14) The human self, identity, is categorized in the two parts “I” and “me”.
- (15) The “I” subsumes the individual attitudes, behaviors, and reactions towards the community’s attitudes in the context of the individual’s experience.
- (16) The “me” is the sum of an individual’s attitudes shaped by different roles and philosophies in a social group.

## 2.5 Derivation of Mead's theory to the organizational context: General applicability of the key findings 1-16 for the concept employee identity and its formation

Based on the developed key findings in Mead's theory, the next step is to derive the human identity formation concept to the organizational context – above all to employees and their employee identity process. The key findings' applicability in the organizational context is examined in detail in chapter 3 and 4.

### Key findings in Mead's theory at a glance:

#### Continual development:

- (1) The self is not a stable and unchangeable construct. It is developed over time and not fixed.

#### Communication:

- (2) Communication processes are multi-layered and need senders and receivers.
- (3) "Significant symbols" are transported messages with a purpose, meaning, and intention.
- (4) Communication processes are successful when the sender and receiver have a common understanding of the "significant symbols", which induces an "intelligent conduct" of action-reaction processes based on an individual's background of experiences and expectations.
- (5) Communication enables and influences the identification process.

#### Role-taking:

- (6) The evolution of role-taking has two main steps, the "play" and "game" phase.
- (7) Role-taking is enabled and based on "significant" symbols in communication processes.
- (8) Culture is represented by - above all - shared basic attitudes, beliefs, values, norms, behaviors and functions as a guardrail how to act as individual in a social order.
- (9) Culture is expressed by communication, which enables role-taking with the social order – this means that an individual's identity formation is influenced by the group's culture, but he as an individual with his own set of characteristics can also influence the group with his convictions.

#### Recognition:

- (10) Being part of a social group is related to recognition on the social role and appreciation.
- (11) Recognition is expressed through cultural features by the social order and has an essential function in the process of human identity formation.
- (12) In a social order, the individual must be recognized as a legal person who understands his rights and obligations.
- (13) The individual can be recognized as valuable for the social order based on his performance.

#### The identity components:

- (14) The human self, identity, is categorized in the two parts "I" and "me".
- (15) The "I" subsumes the individual attitudes, behaviors, and reactions towards the community's attitudes in the context of the individual's experience.
- (16) The "me" is the sum of an individual's attitudes shaped by different roles and philosophies in a social group.

The key findings are ordered according to the main three dimensions which lay the foundation for Mead's identity theory: i) continual development of identity, ii) identity components and iii) identification through communication, role-taking and culture, respectively recognition.

According to these key findings, the concept employee identity can be derived as follows:

To identify with the organizational group and its subgroups, (e.g. divisions in an organization), an employee must get in contact with the groups' culture, namely shared assumptions, social norms, rules and behaviors - via multilateral communication processes (see for comparison key findings 8 and 9). Following this, from an employee's identity perspective, the organization and its internal sub-groups shape the employee's identity component "me", whereas each employee's characteristics are represented by the identity component "I" (see for comparison key findings 14-16). Both identity components shape the employee's self – his identity in the organization. The employee adapts himself to the respective organizational group and its shared culture and influences the group with his experiences and individual set of characteristics (see for comparison key finding 9). Thereby, role-taking effects – enabled by significant symbols – play a crucial role in identifying with the organization (see for comparison key finding 7). Without communication an employee is not able to identify with a company (see for comparison key finding 5). He receives feedback in any kind of a communicated cultural expression that takes account of recognition, which also fosters identification (see for comparison key finding 11). To be concrete, recognition is twofold – an employee can be recognized both as an accepted member of the organization with special roles and functions and as valuable for the company based on his skills, ideas, and performance (see for comparison key finding 10, 12, and 13).

An employee who has a network of diverse groups within the organization can boost his influence and is more influenced by the organization's culture or even sub-cultures. This enables a continual development of the way of working together due to permanent verbal and non-verbal communicational exchanges between the individual and the organization. In consequence, the employee's identity is not a fixed construct – it is permanently confronted with influencing and affecting impulses (see for comparison key finding 1). Communication exchanges in organizations have senders and receivers – independently from the organizational hierarchy (see for comparison key finding 2). The transported message becomes a significant symbol when sender and receiver both have the same understanding of the message's content, meaning and intention (see for comparison key finding 3) – the main prerequisite for starting identity processes. It is accompanied by satisfying action-reaction processes based on significant symbols in an organization but always contingent on the individual's background of experiences and expectations (see for comparison key finding 4).

The first derivation of the key findings into the organizational context shows that organizational communication and organizational culture, above all recognition, seem to contribute essentially to an employee's identification which is one of the three dimensions of identity theory. Therefore, it is necessary to further analyze in-depth the applicability of the key findings in the organizational context in the chapters 3 and 4 based on the key findings 2-13, but except key finding 6. This key finding refers to the identity formation process during childhood; consequently, it is irrelevant to discuss that in this thesis's context. For the general understanding of Mead's theory, it was necessary to introduce this aspect though.

The key findings 1 and 14-16 are important for understanding the whole concept employee identity. However, they are very context-independent; they can be used in each context. Therefore, these key findings can be applied in the organizational context without further business-specific adaptations. Employee identity is a continual, changing process and the employee's identity consists of the components the employee's unique "I" and the employee's "me" influenced by the organization. Both have to be harmonized for a balanced employee identity.

Irrespective of the need to adapt one dimension for the organizational context or not, these three dimensions are essential to regard in order to give an adequate answer on the employee's identity - "Who am I as employee in the organization?". To find this answer, the interplay between the employee and the organization are at center stage according to Mead's "symbolic interactionism" approach. Following this logic, the influencing factors communication and recognition represent this interplay. Communication describes the interactional exchange between the employee and the organization which can enable internalizing and identification effects. Recognition reflects the position and value of an individual employee embedded into the community of the organization.

### 3. Evaluation of organizational communication as first influencing factor for employee identity formation: Mead in comparison with current theoretical and empirical approaches

In chapter 2, the key findings of Mead's theory were worked out, summarized and in a first step adapted for the organizational context. The key findings 1, 5 and 14-16 are applicable for each social community and as a consequence for the organizational context, too. However, communication, role-taking, and culture related key findings might be driven by the social context. Therefore, these key findings in Mead's theory are analyzed and compared with current economic theories and empirical research to prove their applicability in the organizational environment. Chapter 3 mainly focuses now on communication and relevant aspects of communication concerning role-taking whereas chapter 4 analyzes in-depth role-taking, and culture, above all recognition.

This chapter contains examinations of those key findings which address the topic communication:

#### Key findings - communication:

- (2) Communication processes are multi-layered and need senders and receivers.
- (3) "Significant symbols" are transported messages with a purpose, meaning, and intention.
- (4) Communication processes are successful when the sender and receiver have a common understanding of the "significant symbols", which induces an "intelligent conduct" of action-reaction processes based on an individual's background of experiences and expectations.
- (5) Communication enables and influences the identification process.

Moreover, the specific facet of role-taking enabled by communication is also already examined in this chapter with a focus on communication.

#### Key finding – role-taking:

- (7) Role-taking is enabled and based on "significant" symbols in communication processes.

Based on these key findings on communication, the following questions arise for the organizational context.

- How does a communication process emerge in organizations and how is it processed to become significant according to Mead? (see chapter 3.1.1 "social interaction" – Fiske, 1990, p. 2 or Goldhaber's concept in chapter 3.1.2)
- Does the nowadays used technical term information relate to Mead's concept of "significant symbol" and transfer the purpose, meaning, and intention of a message in

organizations? (see chapter 3.1.1 “create, negotiate, and manage meanings” - Cheney and Christensen, 2001, p. 234 or Goldhaber’s concept in chapter 3.1.2)

- When is the transmitted message satisfying and what does the presence of communication satisfaction in an organizational communication process mean? Is this comparable with Mead’s “significant symbol” understanding? (see chapter 3.1.1 “desired way” - Oliver, 1997, p. 64 or Goldhaber’s concept in chapter 3.1.2)

To answer these questions, a deeper understanding of organizational communication must be developed. Therefore, first of all, organizational communication is defined. The subsequent steps put the key findings center stage to analyze and compare Mead’s statements with current theories and empirical studies for the purpose of discussing the applicability of Mead’s theory in the organizational context.

### 3.1 Organizational communication

#### 3.1.1 Overview of definitions

Traditional research lines differentiate organizational communication into external and internal communication, although one recent trend sees both as linked and no further relevance to differ between them (Cheney and Christensen, 2001). But there are also opposing voices that still stress the importance of differences (Vercic et al., 2012). Based on the already developed concept employee identity (see chapter 2.5), it is necessary to consider both external and internal communication, whereby the latter is essentially more important for this thesis’s studies on employee identity formation. Vercic et al. (2012) argue that in decentral, highly-branched companies in a volatile market environment trust and loyalty have to be built up through internal communication. Kalla (2003) describes the dimensions of internal communication as follows: Business, management, corporate, and organizational communication. Business communication “(...) addresses the communication skills of all employees, management communication focuses on the development of the managers’ communication skills and capabilities, corporate communication focuses on the formal corporate communication function, and organisational communication addresses more philosophically and theoretically oriented issues” (Kalla, 2003, p. 305). Another approach to defining dimensions of internal communication creates the categories of “internal line management communication”, “internal team peer communication”, “internal project peer communication”, and “internal corporate communication” (Welch and Jackson, 2007).



Independently from the focus on the internal or external addressees, how is organizational communication defined? Oliver characterizes communication as “(...) an interchange of ideas, facts and emotions, by two or more persons, with the use of words, letters and symbols based on the technical problem of how accurately the symbols can be transmitted, the semantic problem of how, precisely, the symbols convey the desired meaning, and the effectiveness of how the received meaning affects conduct in the desired way” (Oliver, 1997, p. 64). Or a very simple definition by Fiske: “social interaction through messages” (Fiske, 1990, p. 2). Cheney and Christensen define “(...) organizational communication in general terms as a set of processes through which organizations create, negotiate, and manage meanings (including those related to their own constitution), external organizational communication can be thought of as a subset of those processes (...)” (Cheney and Christensen, 2001, p. 234). Goldhaber defines organizational communication as follows and adds a full concept to his definition which explains the relevant details of the heterogeneous field of communication: “Organizational communication is the process of creating and exchanging messages within a network of interdependent relationships to cope with environmental uncertainty” (Goldhaber, 1986, p. 16). In comparison to the other definitions, his one is more general and needs more explanations what is meant (see following chapter).

### 3.1.2 Conceptual overlaps between Mead and Gerald Goldhaber’s organizational communication theory

The previous chapter illustrated the heterogeneity of the definitions’ foci and also introduced Goldhaber’s comprehensive organizational communication. This one will now be discussed and analyzed because it gives the most comprehensive overview of the main relevant topics of this wide-spanning field. Goldhaber’s concept set the boundaries for the following definition: “Organizational communication is the process of creating and exchanging messages within a network of interdependent relationships to cope with environmental uncertainty” (Goldhaber, 1986, p. 16). The definition reveals seven sub-concepts, namely focus topics that are interdependent, and this definition functions as bracket for these focus topics. These sub-concepts are listed in the order of the definition: “process, message, network, interdependence, relationship, environment, and uncertainty” (Goldhaber, 1986, p. 16). The next section summarizes Goldhaber’s concept based on his publication in 1986 and shows parallels to Mead’s statements (see chapter 2.4).

- Goldhaber calls communication between members of the organization among themselves and with externals as a “process”. A process contains the creation and the exchange of the

message being “ongoing, ever changing and continuous” (Goldhaber, 1986, p. 16). The same view on communication processes can be found in Mead’s theory (see chapter 2.4.2).

- For Goldhaber, the concept of “message” covers the different aspects of “when a message is a message”. The first question is hereby: “How does a message emerge?” A symbol becomes significant when the individual associates it with a meaning and feeling. A symbol can be a word or a gesture. To achieve an effective exchange of the message, the sender and the receiver have to have the same understanding and meaning of a series of significant symbols. Otherwise, the purpose of the message cannot be fulfilled. Hence, Goldhaber’s view of emerging communication processes is relatively similar to Mead’s theory (see chapter 2.4.2). Those series of symbols become a message which is exchanged through the interaction of the sender and the receiver. According to Goldhaber, the second question is: “To whom is the message to be addressed?” In organizational communication, two main categories are common: Messages to internals and messages to externals. The third question in Goldhaber’s concept “message” can be formulated as: “Which channel is used to transport the message?” To gain a deeper insight into the different kinds of messages, the following list covers the main types: Verbal (such as discussions, letters, speeches) or non-verbal (such as gestures, behavior, body language, the personal impression with voice, clothing, physical look); and also the context in which a message is embedded, (such as the room environment or further contexts such as background music). Many messages are also supported by technologies such as videos, voice technologies (telephones, ...), or computer technologies (chat programs, emails, ...). The fourth question belonging to every message is “Why is this message created and what is its aim or function?”
- The concept of “network” by Goldhaber covers the roles between the sender and the receiver who represent individuals or groups and how these roles can be influenced by communication in and between the organizational hierarchies, by the shared interpretation of a message, and the content of that message. Every member in an organization has an official role derived from his position and job description. Depending on their role, employees and managers get a special network with others within and outside the company. However, everybody in the company also has an informal network based on sympathies, office neighbors, and so on. The formal and informal networks can be influenced by the organization’s hierarchy to which senders and receivers belong. In general, it is differentiated by vertical communication to subordinates, to managers, and by horizontal communication. Furthermore, a receiver within a network does not always receive the message firsthand. Depending on whether the message is transported, it can have positive or negative consequences on the network. Last but not least, the content of

each message is a very strong determining factor on the sender-receiver-roles. Mead also examines this aspect of roles having a certain function in a social order, but in relation to the society's culture (see chapter 2.4.3). This network-aspect – the interdependencies between culture and communication – will be addressed in chapter 4.1.1.3.

- The fourth sub-concept which is mentioned in the organizational communication definition by Goldhaber is “interdependence”. Goldhaber compares an organization with an open system consisting of different subsystems that influence each other. Communication affects and induces consequences such as activities for different sub-groups like departments or different communication networks independently from official structures like divisions or teams. The sender of a message should be aware of the cascade he can induce. Mead examines this fact in his theory with the successful match of a communication process between the sender and the receiver which evolves action-reaction processes (see chapter 2.4.2 and 2.4.3).
- The sub-concept of “relationship” addresses the part of organizational communication studies that considers the human behavior of the sender and receiver in their personal relationship to one another.
- The sixth research focus, Goldhaber's definition implies, is “environment”. An employee is affected by the internal and external environment. This means that research examines in depth how employee's behavior emerges from structures in an organization. Internally, the organization's culture is very formative, and the external environment shapes an employee's behavior based on factors such as industry, segment, and embedding of the organization into its environment. These environmental influences on the individual are also analyzed by Mead (see chapter 2.4.3).
- The last concept is the perpetual “uncertainty” in the world. This uncertainty should be reduced through communication. Goldhaber defines it “as the difference between information available and information needed” (Goldhaber, 1986, p. 26). Mead also alludes to this fact that a successful communicative match requires the sender's and receiver's common understanding of message's content, meaning, and intention – the harmonization of the availability and the necessity of information (see chapter 2.4.2 and 2.4.3).

Goldhaber's definition of organizational communication demonstrates the heterogeneity of organizational communication. In general, the conceptual parts “process” and “message” follows the content in the key findings 2 and 3. The parts “relationship”, “interdependence”, and “uncertainty” reflect aspects of the fourth key finding. Therefore, there are content-related theoretical overlaps between Mead and Goldhaber. These will be now analyzed in

detail with further modern, specialized theories to concretize the role of organizational communication in employee identity processes.

### 3.2 Evaluation of the key findings by Mead and their applicability in the organizational context

#### 3.2.1 Key finding 2: Message transfer in sender-receiver models

To return to Mead's theory, the initial spark of an identity process is the interaction of defined individuals to gain a mutual understanding of the interpretation of the exchanged significant symbols. This point of view is summarized in the key finding (2) "Communication processes are multi-layered and need senders and receivers". According to Mead, language is in the foreground as a channel, but he also includes non-verbal aspects. Are his thoughts also relevant in an organizational environment? Goldhaber's topics of "process" and "message" as two of the sub-concepts of the entire organizational communication definition also emphasize these aspects as being important to examine and they can be summed up in four questions:

- How does a message emerge?
- To whom is the message to be addressed?
- Which channel is used to transport the message?
- Why is this message created and what is its aim or function?

To answer these questions, modern sender-receiver models will be introduced in the following. Then, discussions on the key finding (2) can be led.

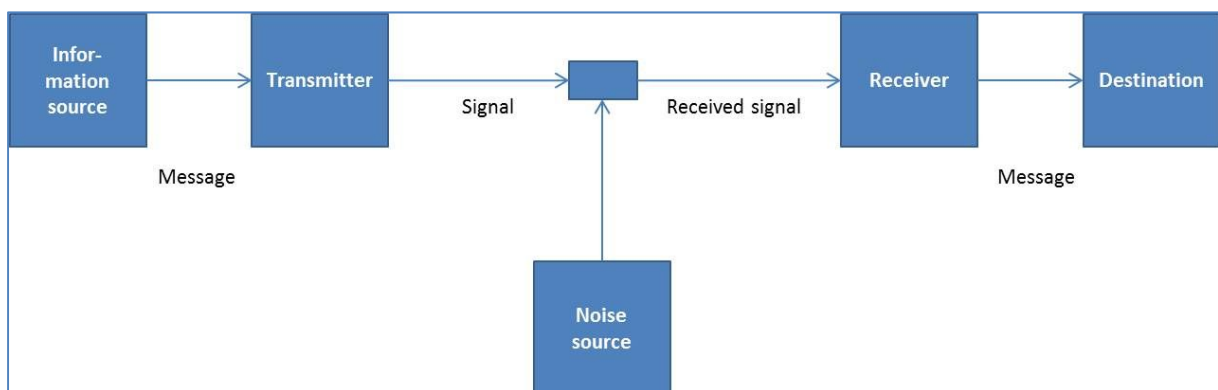


Figure 3: Shannon-Weaver communication model (Weaver, 1964, p. 7)

The Shannon and Weaver model from 1949 explicitly analyzes the emergence of a message (relates to the first question one paragraph above). It compares human communication with

a technical interaction process (Weaver, 1964). The transfer of signs forms the center of this theory. At the beginning of this concept is an information source. From this information pool, certain sign combinations are chosen according to pre-defined rules. The transmitter encodes these signs, gives a signal and transfers them to the receiver via a “communication channel”. Once they have reached the receiver, the signals must be decoded and will then be forwarded to the envisaged destination (see Figure 3). To illustrate this concept, the two researchers give a simple example (Weaver, 1964): In an oral conversation, the sender’s brain is the information source and the transmitting channel is split into the signal, represented by the voice, and the channel, is in this case the air. The receiver is illustrated by the ear and the eighth cranial nerve. Shannon and Weaver also considered the case of a “noise source” when the intended message cannot be correctly transferred. Message transmission can be interrupted on three different levels (Weaver, 1949): On the one hand, it can be a “technical” problem like telephone line disturbances or problems with the different languages that the sender and the receiver are speaking. On the other hand, Weaver also expanded the original theory to communication problems which do not affect the syntactic level of communication. He mentioned that the meaning of the sender’s message can be interpreted completely in another way by the receiver.

While drawing on Weaver’s problems that are not technical issues, the semiotic model shows different levels how to receive the receiver. It consists of three levels, whereby the first level is the syntactic one focusing on signs, signal combinations and their correct and full transmission (Picot et al., 2008). This level is comparable to Shannon and Weaver’s focus of their communication model. Moreover, the semantic level concentrates on the meaning of each single sign or sign combination. If the sender and the receiver “(...) attribute an identical meaning to the transmitted sign” (Picot et al., 2008, p. 77), the sign is mutated into a message. Although the sender and the receiver have the same understanding of the meaning, the intention of the communication is not necessarily interpreted in the same way. The significant effect on the communication process is to match the sender's and receiver's communication process correctly. A message with an intention gets then a new substance, namely, to lead to action, and is called information. This is examined in the third rubric, the pragmatic level (Picot et al., 2008). The fact that a communication has a purpose and is embedded into an individual context makes it relevant to name messages “information”. In consequence, the second question can be answered that a message shall be addressed to receivers who enhance the probability to get a successful match on the three levels.

The third questions “Which channel is used to transport the message?” can be analyzed by the communication axiom by Watzlawick, Beavin and Jackson, and Schulz von Thun’s model.

The popular axiom “One cannot communicate” (details see Watzlawick et al., 1990, but English translation used from Picot et al., 2008, p. 79) is frequently cited. It describes that irrespective of whether you communicate via language, gestures, facial expressions, behavior or do absolutely nothing, it is still a kind of communication sending out a message. Following this, the communication terminus is obviously extended and enables an overall view that besides transmission of information the involved individuals play a big role as communicative influencing factors. Schultz von Thun (2016) picks up both the individuals’ importance in communication exchanges by Watzlawick et al.’s first communication axiom and the pragmatic level of the semiotic theory. Although it is a socio-psychological model, the message is the focus of the theory. Every message has four sides - content, relationship, appeal and self-revelation (Schulz von Thun, 2016, p. 15ff) which is received by the receiver with four “ears”. To be concrete: These four sides are transferred with verbal or non-verbal communication channels and are also perceived by the receiver. Sender and receiver come together by using the level of meta-communication, which means informing each other how the message with its four sides is meant. This alludes also to the second question again, to whom the message should be addressed.

#### **Discussion of the four models’ relevance to employee identity formation based on Mead**

The four introduced sender-receiver models study the transmission process of a message. Shannon and Weaver’s concept allows to portray and to structure the different theoretical components involved in a communication process. Nevertheless, the theory is too technical and rather neglects the persons and the individual behaviors behind these constructs. In contrast, Mead’s theory is based on “significant symbols” that have to be physically transported but not exclusively (in this paragraph, discussion on Mead’s theory refers to chapter 2.4). According to Mead, the action-reaction process can be successfully transported when there is a shared understanding of the intention. However, the Shannon-Weaver model and Mead’s statements show parallels with regard to the structure of the communication process between the sender and the receiver. Although the Shannon-Weaver model only has a very technical focus on the principal structure of a communication process, it is an important theory because it is the basis for further thoughts on developed communication theories, which add the semantic and pragmatic levels to the syntactic level. The semiotic model reflects the different levels of a message and seizes on an important aspect: Illustrating the complexity of Mead’s “significant symbols” including their meaning and intention.

The socio-psychological theories by Watzlawick, Beavin and Jackson, and Schulz von Thun expand the view of communicative interactions by important human behaviors, human relationships, and the aspect of self-appeal. Consequently, the transmission of a message, its meaning, and its intention becomes multi-layered and includes more communication

problems, also often called noises, than the technical communication model by Shannon and Weaver. These socio-psychological approaches show similarities to Mead's theory, because Mead recognizes a complete individual reaction based on the individual's background of experiences. This background is also reflected in these theories – above all in Schulz von Thun's model. Schulz von Thun's "ears" allow for the possibility that the receiver misunderstands the transmitted message because of his experiences with the sender or similar experienced situations in the past. Furthermore, for Mead a symbol becomes significant when there is an overlapping understanding of the sent symbol and as causality the action-reaction process corresponds to this understanding. This includes the individual's individual experiences.

### **Adaptation of key finding (2) for the organizational environment**

In the last paragraphs, the key finding 2 from Mead's theory was analyzed regarding its relevance today in research and its applicability in the organizational context. Thereby, Mead's assumption of a sender-receiver exchange was compared with a modern organizational communication theory by Goldhaber and modern theoretical sender-receiver approaches. Overlaps were found and Mead's theory is accordingly still relevant.

Nevertheless, every theory has its own core theme that is canvassed and has its own relevance. The three questions of "How does a message emerge?", "To whom is the message to be addressed?" and "Which channel is used to transport the message?" from Goldhaber's sub-concept of "message" as part of his definition of organizational communication, were in the foreground of further human communication models to discuss Mead's thoughts on the emergence of communication processes with modern theories. These models are general ones and therefore valid for the organizational environment as well. The sender and receiver can be external stakeholders or internal company members.

However, the fourth question "Why is this message created and what is its aim or function?" was still addressed by sometimes introducing the term "information". However, up to his paragraph the technical term has not been examined in detail yet. This will be done in the next chapter by introducing in-depth the term "information" followed by an extensive discussion about the communication/ information satisfaction with respect to content and climate demands.

In summary: The key finding (2) "Communication processes are multi-layered and need senders and receivers" has its relevance for the organizational context. Extended to some more details, it can be adapted for the organizational environment.

#### **Adapted key finding:**

The communication process can be described via sender-receiver models which reflect its complexity: Transmission of verbal and non-verbal signals, meaning, intention, and socio-psychological aspects.

### 3.2.2 Key finding 3: Information – definition, value, purpose, meaning, and intention

The significant symbols are Mead's approach in a communication process (in this chapter, discussion on Mead's theory refers to chapter 2.4). Therefore, the last chapter analyzed the communication process how symbols are exchanged and can become significant. The reason of the communication process and its aim, meaning or function has not been clarified yet; it was just mentioned while slightly introducing the technical term "information" in the modern sender-receiver theories. This will be now examined in-depth and is also summarized in the key finding (3) "'Significant symbols' are transported messages with a purpose, meaning, and intention". Besides Mead, Goldhaber also address this aspect: "Why is this message created and what is its aim or function?" In this context, the term "information" in the organizational environment plays an important role. Therefore, the technical term "information" is now analyzed to receive an understanding if there are overlaps between "information" in the organizational context and Mead's technical term "significant symbols". These deliberations are in turn necessary to discuss communication satisfaction in the next step (see fourth key finding).

#### Definition of information and its attributes

In general, the term information is widely used in our society but nevertheless, a consistent and general definition and interpretation of information is not circulating, although many different sciences, from mathematics to philosophy carry out research on information. This leads to different views on what information is and is not. Losee (1997) made an attempt to define information in a comprehensive way including all broad research trends. "Information may be understood in a domain-independent way as the *values within the outcome of any process*" (Losee, 1997, p. 254; cited from Losee, 1990). In detail, this means: "Information is produced by all processes and it is the values of characteristics in the processes' output that are information. (...) Information may be understood as the value attached or instantiated to a characteristic or variable returned by a function or produced by a process. We note that the value returned by a function is informative about the input to the process and about the process itself" (Losee, 1997, p. 256f).

According to Losee's definition, information is linked to the term value in sciences. Research fields on information can be categorized in i) being valuable for the receiver, ii) enhances "knowledge", and iii) fulfills the sender's purpose. Fitting to these research approaches, Losee describes information mostly with four attributes (Losee, 1997): First, information has to "be something (...) (substance, energy, or abstract concept)" (Losee, 1997, p. 255). Second, information must be in any form new for the receiver. Third, it should not be a lie, it must be



true. The fourth attribute is that it must “be ‘about’ something” (Losee, 1997, p. 255). Especially the fourth attribute refers to content and the “(...) result of a process or function producing the representation of the input, which might, in turn, be the output of another function (...)” (Losee, 1997, p. 258).

The first research field “information is valuable for the receiver”: This conceptual approach was picked up to focus on the usefulness of information and consequently the value for the receiver and its meaning (Belkin and Robertson, 1976; Farradane, 1980; Harmon, 1984; Levine, 1977; Machlup and Mansfield, 1983) or the intertwining with the term knowledge (Peters, 1988; Pratt, 1982). In the second research field, the human sciences frequently concentrate on the information’s attributes and the newly conveyed knowledge (Harmon, 1984; Levine, 1977). Tackling all three research fields, Niklas Luhmann, a German sociologist, developed a prominent theory, called the “systems theory” (Luhmann, 1984). For him, the three selections of information, message and comprehension form a unity and are the “synthesis” of communication (Luhmann, 1984, p. 203). Communication has no explicitly described transmitting process between the sender and the receiver; it is a closed system.

### **Information and its value for the sender: Purpose and function in the organizational context**

The various research topics about information in the business context show that economic literature’s current trend is to define information as “purpose-oriented knowledge” (Wittmann, 1999, p. 14). In detail, this means that the knowledge is used to reach a certain aim: Information thus has a value and is evaluated by its usefulness – by the sender and the receiver. The purpose of information leads to usage and so to action – that is the intention by the sender when sending out information. Losee’s general definition of information also contains the aspect “value” of information, but primarily not as economic value than rather a “variable's attribute or characteristic” (Losee, 1997, p. 254) of the output due to the communication process itself. Based on Wittmann’s definition in the economic research, the term information is expanded to the view that it has an economic value: Information is perceived as a production factor (Pietsch et al., 2004) – it has a purpose, e.g. for the production of goods. Consequently, decisions are made on the basis of information. Information is also fundamental for collaboration in an organization, which again leads to a conceived information supply (Pietsch et al., 2004). Furthermore, “the collection, transformation, storage and transmission of information [are] production costs” [author’s translation into English] (Pietsch et al., 2004, p. 39). Following his argumentation and Wittmann’s definition, Pietsch et al. (2004) expand Gutenberg’s basic concept, well-known in business theory, of the three elementary production factors – working capital, material, and work performance (Gutenberg, 1979) by adding information as production factor. In Gutenberg’s concept, dispositive factors such as management, organization, planning, and controlling are also

included. In the standard reference of business management, Wöhe and Döring pick up this idea of dispositive factors (Wöhe and Döring, 2002). However, they remain in the middle with their classification of information and define information not as a production factor but rather as a condition for executing the dispositive factors. Here, information (exchange) also has a value for the sender to reach the intended purpose; in particular, to enable operating the production and dispositive tasks in organizations. Busse von Colbe and Laßmann (1991) also do not explicitly equate information with a production factor, instead defining it as potential factor that cannot be consumed, in contrast to factors such as materials.

#### **Intangibility of information: Value risk for the sender and the receiver**

Addressing information as production factor or not, Krcmar (2015) stresses the duality of information: On the one hand, information is an “abstract model”, and on the other hand it always requires “physical signals” to be transferred (Krcmar, 2015, p. 17). In contrast to tangible production factors, information is intangible (Picot et al., 2008) and has special characteristics. Hence, information can be consumed as often as a person would like – it cannot be spent (Krcmar, 2015). Its value depends on the context and time (Krcmar, 2015) for the sender and the receiver and on the user’s application of the information. The duplication of information - in comparison to a tangible asset - has low costs and the distribution is easier (Pietsch et al., 2004). The information paradox is a very important factor for information as an intangible asset in contracts or all other business-related activities: “(...) its value for the purchaser is not known until he has the information, but then he has in effect acquired it without cost. Of course, if the seller can retain property rights in the use of the information, this would be no problem, but given incomplete appropriability, the potential buyer will base his decision to purchase information on less than optimal criteria” (Arrow, 1962, p. 615). Once the decision to buy information has been made, in a first step the information supply and demand has to be consistent with the purchaser’s (= the receiver) subjective information need.

#### **Information and its value for the receiver: Recognizing the meaning of information and its effects in the organizational context**

Following the thoughts about information as “purpose-oriented knowledge” (Wittmann, 1999, p. 14) and Losee’s second attribute, the effects of information play an important role. For that, the sender and the receiver must have the same understanding of a message’s meaning (pragmatic level in the semiotic communication model) in order to utilize information as “purpose-oriented knowledge” (source, see above) in organizations. Ernst und Christine von Weizsäcker (1974) examined these effects with their novelty-confirmation model of pragmatic information. They postulate a deep relationship between the effect and the

context, especially the receiver's personal horizon of experiences. A 100% new information for a receiver has no effects because he cannot structure this information into his own context and cannot conceive the meaning. Contrarily, information with a 100% confirmation character also does not have any effects. It is rather a pure message but without any novelty. According to von Weizsäcker, the mix of novelty and confirmation is the best ratio of effectual information. The information can be used in a personal contextual manner and at the same time the receiver increases his knowledge. While the mix does not have to exhibit the 50:50 ratio; it should be complementary. Figure 4 illustrates von Weizsäcker's model.

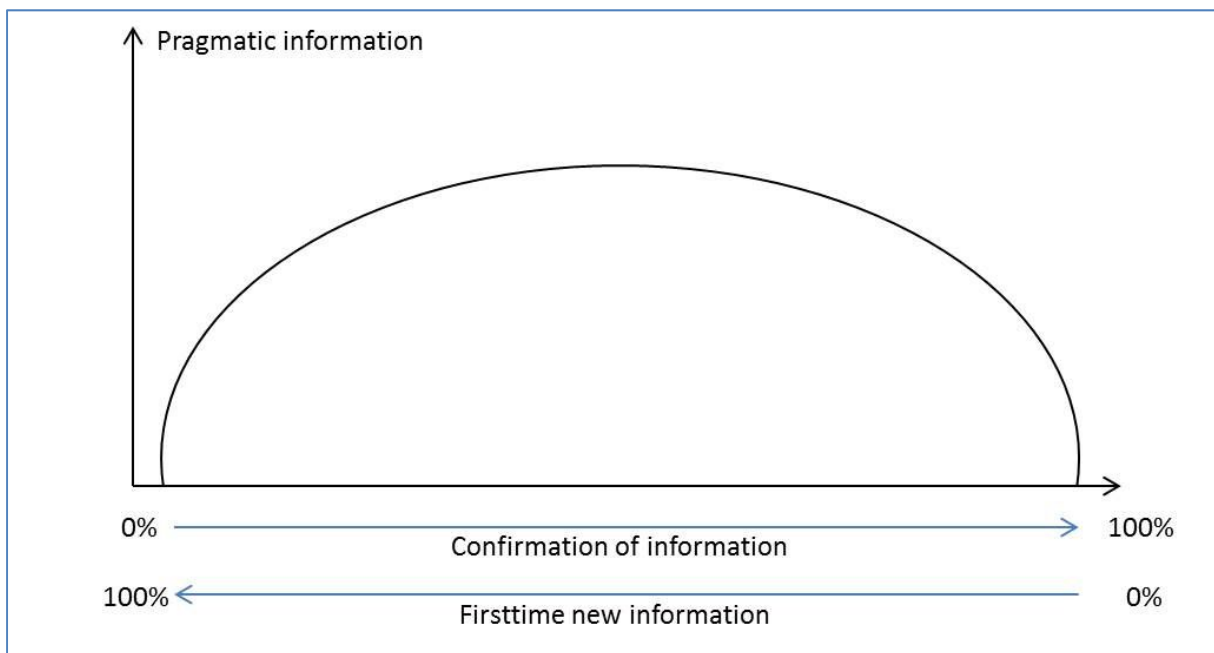


Figure 4: Pragmatic information and its confirmation or degree of newness (related to Picot et al., 2008, p. 70)

### Adaptation of key finding (3) for the organizational environment

To briefly summarize: The third key finding of Mead's theory (in this paragraph, discussion on Mead's theory refers to chapter 2.4) and also the relevant aspect in Goldhaber's state-of-the-art organizational communication theory were discussed. Goldhaber's query about the purpose of a message in an organizational environment "Why is this message created and which aim or function does it have?" was answered with respect to different perspectives from the senders and the receivers regarding the value of information. Mead's introduced term "significant symbol" as the key for a fruitful communication was compared with the modern technical term "information" – above all in the organizational context. This term allows the following aspects of a message to be included: The value, function, and intention to give the communication exchange a meaning and to reach a certain purpose or aim – according to Wittmann "purpose-oriented knowledge" (Wittmann, 1999, p. 14), or according

to the discussion of Wöhe and Döring, Gutenberg or Busse von Colbe and Laßmann which status information has either as production, dispositive, or potential factor. But these desired effects depend strongly on the sender's and receiver's personal backgrounds, which influence how the information is perceived and adopted (to compare the discussion on effects of information) in an organization. According to von Weizsäcker's model, this means that information should have the correct mix between confirmation of existing information and new information in order to adequately reach the receiver and consequently the sender's attention. Based on the information's characteristic "intangibility", the sender and the receiver have value risks.

Mead's term "significant symbol" (see chapter 2.4.2) shows many parallels to the current discussion about the technical term "information" and its purpose and meaning. Based on Losee's definition, the attributes were examined as well. The statement of the third key finding "'Significant symbols' are transported messages with a purpose, meaning, and intention" is still applicable for the organizational context. Key finding (3) is thus slightly adjusted as follows.

**Adapted key finding:**

The technical term "information" includes the aspects purpose, value, intention, and meaning of a transferred message.

### **3.2.3 Key findings 4: Communication satisfaction – definitions regarding content and climate for a satisfying communication supply and demand**

#### **Communication and information supply and demand**

With regard to Mead's theory, the fourth key finding addresses the modern technical term "communication satisfaction": "Communication processes are successful when the sender and receiver have a common understanding of the "significant symbols", which induces an "intelligent conduct" of action-reaction processes based on an individual's background of experiences and expectations."

Mead does not mention the technical term "communication satisfaction", but he paraphrases relevant aspects while mentioning that every person receives and perceives information with a completely personal background (in this chapter, discussion on Mead's theory is based on the output of chapter 2.4). This has to be considered to achieve a successful mutual exchange of meaning and intention and the consequences for the identity formation. For him, the transmission was successful when the symbols become significant for both which means a mutual understanding regarding the transmitted content, meaning, purpose, and intention. Significant symbols play a crucial role in enabling role-taking and identification effects in order

to understand the “others”. In this situation, the sender and the receiver make a completely individual experience during this communication process due to their respective characters, personal history, and background, unless more persons participate in the exact same communicative situation. Then, the individuals evaluate this experience for themselves. In a wider sense, they are satisfied or not with this communication process. Therefore, it is necessary to use modern theories to examine what communication satisfaction means in the organizational context. In Goldhaber’s (1986) organizational communication concept, relevant aspects of communication satisfaction are already addressed: The part “uncertainty” focuses on the right balance between information supply and demand and his sub-concept “network” contains aspects of a successful communication match based on information supply and demand.

### **Definition of satisfaction**

In general, satisfaction is simply defined as a “fulfillment of a need or want” (N.N., Merriam Webster’s online encyclopedia: satisfaction, n.d.). This means a satisfied person’s needs, expectations, and desires have been met, aspects that marketing consumer research examined in-depth over time (Spreng et al., 1996; Keith, 1960). In consequence, however, satisfaction is accompanied by a process and then the outcome of evaluating the personal expectations with the experienced perception (Oliver, 1980 and 1981; Tse and Wilton, 1988; Day 1984; Halstead et al., 1994).

Management can perceive an employee as a very special kind of internal consumer regarding required internal information for building up a relationship to the organization. Consumer satisfaction exists of three aspects which were summarized by Giese and Cote (2000), p. 1: “1) consumer satisfaction is a response (emotional or cognitive); 2) the response pertains to a particular focus (expectations, product, consumption experience, etc.); and 3) the response occurs at a particular time (after consumption, after choice, based on accumulated experience, etc).” While consumer satisfaction cannot be adopted 1:1 for the term communication satisfaction, it does convey a good first impression of what satisfaction is and that it is a response of an upward interaction process between the sender and the receiver.

### **Definitions of communication satisfaction regarding content and climate**

Deriving from the general understanding of the term satisfaction, communication satisfaction demands presume a successful communicative exchange considering the content, meaning, and intention of a message and a successful perception between sender and receiver about the climate for communication. Otherwise, the sender, the receiver, or both are left dissatisfied. Communication satisfaction can be defined as “unidimensional, generalized feeling which an employee has towards his total communication environment” (Downs and

Hazen, 1977, p. 64). Smidts et al. (2001) categorize communication satisfaction i) with content and ii) with climate.

With regard to the content aspect, communication satisfaction is achieved when there is a successful match between the sender's and the receiver's communication activities. They have to agree on the purpose, meaning, and intention of the exchanged message. Ernst and Christine von Weizsäcker's (1974) novelty-confirmation model of pragmatic information offers one possibility to evaluate the received information based on an individual background of knowledge and experience (model introduction see previous chapter). Following this, Goldhaber's (1986) mentioned balance between information supply and demand plays an important role (see chapter 3.1.2). Generally, it means for the organizational context that the content of information has to be adapted to an employee's respective functionality and professional background, in order to enable a fruitful communicative exchange of information.

Employees can also be satisfied or dissatisfied with the communication climate. Thereby, communication climate is both a facet of the psychological climate and of the organizational climate (Jones and James, 1979). The psychological climate is the "individual perception of the work environment" (Jones and James, 1979, p. 201) and its individual interpretations. "Organizational climate thus emerges from the shared, homogeneous perceptions that organization members have of the psychological climate" (Smidts et al., 2001, p. 1053). Similar definitions of organizational climate can be found, for example, in Eisenberg and Riley (2001): "(...) most conceptions of organizational climate are best viewed as phenomena caused, changed, or managed by the organization's culture" (Eisenberg and Riley, 2001, p. 308). Fink and Chen (1995) argue that organizational climate closes the cognitive gap between an individual's feelings and affections (psychological climate) and the shared perceptions of other members of the group. A definition that picks up three perspectives, namely Eisenberg and Riley's argument of organizational climate as phenomena and the relation to organizational culture as well as Fink's and Chen's (1995) and Smidts et al.'s (2001) argument of the individual perception, is the following: "Climate is a relatively enduring quality of the internal environment of organization that (a) is experienced by its members, (b) influences their behavior, and (c) can be described in terms of the values of a particular set of characteristics (or attributes) of the organization" (Tagiuri, 1968, p. 27). Ehrhart et al. (2013) define organizational climate as "(...) the shared meaning organizational members attach to the events, policies, practices and procedures they experience and the behaviors they see being rewarded, supported and expected" (Ehrhart et al., 2013, p. 69).

However, some researchers define communication climate and organizational climate as separate constructs (Welsch and La Van, 1981), instead of defining communication climate as

a facet of the psychological and organizational climate. In general, however, only a few research publications exist that address the interactions and limitations between both constructs as well as the communication climate construct itself (Keyton, 2014). Therefore, this thesis treats the communication climate as part of both the psychological and the organizational climate, and this is reflected in an often-cited definition of communication climate by Dennis (1974): "(...) a subjectively experienced quality of the internal environment of an organization: the concept embraces a general cluster of inferred predispositions, identifiable through reports of members perceptions' of messages and message-related events occurring in the organization" (Dennis, 1974, p. 29, cited in Guzley, 1992 and Bartels et al., 2007). This definition leans on Tagiuri's definition of an organizational climate. Although little research has been done on the communication climate, in 1992 Guzley examined some relationships between the communication climate and organizational commitment. There was a positive correlation.

Communication climate as the shared and/ or individual perception of the communication environment can be expressed by an open climate, having the opinion to participate in decision making processes and to be recognized seriously in the organization (Dennis, 1974 cited in Guzley, 1992; Redding, 1972). "A positive communication climate is not only rewarding in itself but may also provide information about whether a member is accepted as a valued coworker in an organization" (Smidts et al., 2001, p. 1051).

### **Communication satisfaction is influenced by different factors**

After having explained that employees can be satisfied with communication regarding the communication content and the communication climate which in turn is a special facet of the psychological and organizational climate, some studies already examined the influence of both. While the separation into the two categories was not done explicitly; it can be discerned. For example, influencing factors on communication satisfaction are internal communication (Jacobs et al., 2016) or the supervisor's communication to the subordinates (Steele and Plenty, 2015; Mueller and Lee, 2002). Thereby, a high level of the supervisor's communication competence also positively relies on communication satisfaction of the employees (Madlock, 2008). A rarely examined aspect – but a very practical finding for organizations - is a new office layout and its implications for communication and communication satisfaction (Inamizu, 2015). White et al. (2010) studied information satisfaction of university members and stated the relationship between high satisfaction and a personal contact or even a perceived personal contact due to the direct working environment with the chancellor.

Within a single organization, the perception of communication satisfaction can vary from group to group. Contrary to first assumptions, the employees in a virtual office are more satisfied with communication than their colleagues in a conventional office atmosphere –

especially in the tested personal areas like personal feedback (Akkirman and Harris, 2005). Other examinations' results revealed a higher communicative dissatisfaction of part-time employees in comparison with full-time employees (Walther, 1988; Gray and Laidlaw, 2002).

#### **Adaptation of key finding (4) for the organizational environment**

This chapter analyzed the statements of the fourth key finding in Mead's theory: "Communication processes are successful when the sender and receiver have a common understanding of the "significant symbols", which induces an "intelligent conduct" of action-reaction processes based on an individual's background of experiences and expectations." Although Mead does not explicitly mention the technical terms satisfaction with climate and content, he was aware that receiving information and perceiving the communication climate have a very individual basis in an individual's personal former experiences and level of information. The new communication theory by Goldhaber picks up the aspect of balancing sender and receiver supply and demand. This can be examined with the construct of communication satisfaction. In consequence, the chapter defined and discussed based on concepts and empirical studies that communication satisfaction is related to information content and climate, that it is a predictor of communication and information demand and its met expectations by the receiver, and that is also a predictor of the reception of the meaning and intention of a message and information.

In consequence, the fourth key finding is adapted for the organizational environment, while directly mentioning the technical term communication satisfaction.

#### **Adapted key finding:**

Communication satisfaction is...

- related to information content and climate
- a predictor of communication and information demand and its met expectations by the receiver
- a predictor of the reception of the meaning and intention of a message and information.

### **3.2.4 Key findings 5 & 7: Impacts of communication satisfaction on identification**

Key finding 4 clarified the technical term communication satisfaction with content and climate and how it can be evoked based on the results of empirical studies. According to Mead's "significant symbols" in a successfully and intelligently conducted communication process play a crucial role in enabling role-taking and identification effects. Then, the individual can understand the "others" and start role-takings. Deriving from his viewpoints, the new introduced term communication satisfaction should have impact on role-taking and identification processes. Therefore, the contents of key finding 5 "Communication enables and influences the identification process" and the key finding 7 "Role-taking is enabled and



based on “significant symbols” are compared with modern organizational theories to evaluate their applicability in the organizational environment.

Recent studies show for the identification process, especially role-taking, that it is necessary to transport the content about the organization’s targets, missions, visions, and strategic direction to the employees according to their roles in the organization: An employee can only weigh whether he agrees with them, and internalizes with the organization, if he receives this information (Cheney, 1983a). Smidts et al. (2001) also find an effect between the communication content and identification effects. Moreover, for employees it is important to get to know the “other”, in particular the organization, in order to perceive the organization as a single unique construct distinguishing it from other companies (Dutton et al., 1994). The employees will then have a stronger feeling of belonging to the organization.

Downs and Hazen (1977) also discovered that the communication climate influences identification with an organization as a latent factor behind some identification indicators.

Nakra (2006) concentrated on communication satisfaction and employee identification and discovered a significant relationship. For the similar psychological construct of “employee commitment”, significant correlations were also validated (Varona, 1996). Organizational citizenship behavior as one possible way of expressing identification with an organization can also be predicted by communication satisfaction (Kandlousi et al., 2010). In another study, a high degree of communication satisfaction and identification is related to a low turnover rate (Scott et al., 1999). Moreover, it was examined that the communication climate has impacts on the identification during a merger of two companies (Bartels et al., 2006). The already introduced study by Smidts et al. (2001) also indicates a relationship between the climate and identification.

The “classic” implication of communication satisfaction is for job satisfaction (Downs and Hazen, 1977; Goris, 2007; Walther, 1988; Gregson, 1990). Tsai et al. (2009) did not relate to it to job satisfaction, but to job performance, and can also approve the implications of communication satisfaction on job performance as well as the contrary effect: High job performance leads to a low turnover rate. Pincus (1986) and Goris (2007) validated both the effect of communication satisfaction on job satisfaction and on job performance; in Pincus’ study the first relationship is stronger. Iyer and Israel (2012) gave the recommendation to have a greater attention on employee engagement as a form of organizational commitment which potentially fosters the achievement of the organizational goals. The influencing factor of employee engagement is communication satisfaction.

**Adaptation of key finding (5) and (7) for the organizational environment**

In this chapter, the role of communication satisfaction and its impacts was analyzed based on empirical studies carried out in organizations. The successful exchange of communication (“significant symbols”) is closely related to communication satisfaction. Therefore, in general, communication (content and climate) – in particular communication satisfaction - enables the identification process based on role-taking. Therefore, the contents of key finding 5 “Communication enables and influences the identification process” and the key finding 7 “Role-taking is enabled and based on “significant symbols”” are still applicable in the organizational environment.

**Adapted key finding:**

Communication satisfaction is...

- a factor influencing role-taking and identification processes.

### 3.3 Conclusions and the adapted key findings in the organizational context

The discussed facts show that Mead's postulated relationship between communication and identity formation and his statements (summarized in key findings) are generally adaptable for organizational needs – especially to adequately cover the concept employee identity. Based on similar findings the modern communication approaches for organizational communication also confirm the relevance and actuality of Mead's mentioned aspects in his theory and they can complement and extend some of Mead's basic ideas which he did not discuss in detail.

Altogether, in this chapter, based on contemporary theories and empirical studies the key findings 2-5 and 7 were qualitatively discussed and consequently the theoretical relationship between organizational communication and an employee's identification process as one central dimension of employee identity with the organization can be upheld. The relevant adapted key findings for the concept employee identity are summarized in the following.

**Adapted key findings A for the organizational environment:**

Derived from Mead's basic theory, organizational communication enables the employee's identification process with the organization. This contributes to an employee identity as a third dimension next to identity components and continual development of identity.

- A1** The communication process can be described via sender-receiver models which reflect its complexity: Transmission of verbal and non-verbal signals, meaning, intention, and socio-psychological aspects.
- A2** The technical term "information" includes the aspects purpose, value, intention, and meaning of a transferred message.
- A3** Communication satisfaction is...
  - related to information content and climate
  - a predictor of communication and information demand and its met expectations by the receiver
  - a predictor of the reception of the meaning and intention of a message and information
  - a factor influencing role-taking and identification processes.

#### 4. Evaluation of organizational culture as second influencing factor for employee identity formation: Mead in comparison with current theoretical and empirical approaches

According to Mead, communication and culture, above all the aspect recognition, are the central influencing factors in human identity formation processes. Therefore, organizational communication and its influence on an employee's identity were already extensively discussed. This chapter entails a comprehensive view of organizational culture, above all the cultural aspect recognition, as an influencing factor of employee identity and its relationship to organizational communication. Mead's defined relation between culture and recognition is shortly reviewed (details see chapter 2.4.4): For Mead an adult's identity is fully developed if he is able to identify with general targets and purposes of the social orders in which he is embedded. This also means that he actively takes part in the activities of the social group and that he is aware of the group's norms, rules, values, attitudes, and behaviors. To internalize these, the "generalized other", though, is an essential factor that can be recalled in the different situations and phases of one's life that an individual goes through within a social system. Furthermore, the mutual recognition of individuals in societies is an essential factor on both levels: In their role and function in a society with its rules and norms, and as individuals with a value for society. Consequently, identifying with a social order to gain membership or to retain one's membership provides an individual with a framework for how to behave. But due to the individual's reactions and his personal experiences in the past, a social order does not only shape an individual, because he also shapes the community's system.

Therefore, this chapter examines the key findings 7-13. However, key finding 7 was already addressed in the previous communication chapter, but it is officially summarized in the key findings "role-taking" based on Mead's explications on role-taking. Key finding 6 is not relevant for the organizational environment because Mead's "play" and "game" phase refers to the identity development of children.

##### **Key findings – role-taking and culture:**

- (6) The evolution of role taking has two main steps, the "play" and "game" phase.
- (7) Role-taking is enabled and based on "significant" symbols in communication processes.
- (8) Culture is represented by - above all - shared basic attitudes, beliefs, values, norms, behaviors and functions as a guardrail how to act as individual in a social order.
- (9) Culture is expressed by communication, which enables role-taking with the social order – this means that an individual's identity formation is influenced by the group's culture, but he as an individual with his own identity can also influence the group with his convictions.

**Key findings - recognition:**

- (10) Being part of a social group is related to recognition on the social role and appreciation.
- (11) Recognition is expressed through cultural features by the social order and has an essential function in the process of human identity formation.
- (12) In a social order, the individual must be recognized as a legal person who understands his rights and obligations.
- (13) The individual can be recognized as valuable for the social order based on his performance.

## 4.1 Evaluation of the key findings by Mead and their applicability in the organizational context

### 4.1.1 Organizational culture

#### 4.1.1.1 Theoretical attributes of organizational culture

First of all, it has to be discussed what organizational culture is and then the different lines of thoughts in research can be deduced. Merriam-Webster's online encyclopedia illustrates different descriptions of the term "culture". To name just one general lexical definition: "the customary beliefs, social forms, and material traits of a racial, religious, or social group; also: the characteristic features of everyday existence (as diversions or a way of life) shared by people in a place or time" (N.N., Merriam Webster's online encyclopedia: culture, n.d.). In 1982, Peters and Waterman from McKinsey published the very popular book "In Search of Excellence" with the suggestion of attending more to the human behavioral topics in organizations (Peters and Waterman, 1982). In this time period, economic research also jumped on the bandwagon and strongly intensified working on cultural topics. Consequently, many different concepts and definitions of organizational culture emerged and were deeply validated. Despite all discussions about the heterogeneity and different foci of the respective theories, one concept has been widely accepted for many years: In 1985, Edgar Schein published a comprehensive theory in his book "Organizational Culture and Leadership". In the next chapter, his concept will be examined in detail. For now, however, the following core attributes of different organizational culture theories are summarized below, because they are reflected in most various organizational culture concepts. These attributes give a comprehensive understanding of how organizational culture is generally defined.

“Organizational culture...  
is shared.  
is stable.  
has depth.  
is symbolic, expressive, and subjective.  
is grounded in history and tradition.  
is transmitted to new members.  
provides order and rules to organizational existence.  
has breadth.  
is a source of collective identity and commitment.  
is unique.” (Ehrhart et al., 2013, p. 132)

- “Shared” means that a community shares its thoughts, attitudes, values, rules, and behaviors which are directly or indirectly passed to their old and new members (Schein, 2004; Gagliardi, 1986; Smircich, 1983). Every member in this group has his own experiences, but so do all further persons – including, for example, those who refuse to be part of this community. They experience the relationship as an outsider towards the community.
- “Stable” reflects the character of culture. It is a continuous construct and consequently, it cannot be created or changed on a daily basis (Gagliardi, 1986; Hofstede et al., 1990).
- “Depth” alludes to the fact that culture is expressed in different levels (Schein, 2004). Values and assumptions are culture’s deepest layer and have to be internalized in the unconsciousness by an organization’s members. In contrast, visible symbols can be conveyed consciously.
- “Symbolic, expressive, and subjective” reflects the meaning and interpretation of culture by employees in an organization. Culture, however, is expressed to the employees in many forms, such as symbols or behaviors (Smircich, 1983; Trice and Beyer, 1993). Furthermore, the sense-making aspect is also often stressed in definitions and norms (Alvesson and Sveningsson, 2008; Hatch and Schultz, 1997; Ravasi and Schultz, 2006). Based on the personal background as well as former and current experiences, every employee interprets individually the common understandings of the organization’s culture and acts or reacts in a completely unique way.
- “Grounded in history and tradition”: This description expresses the emergence of culture (Hofstede et al., 1990; Prettigrew, 1979). An organizational culture is not established from one day to another. It is a process from the beginning of an organization and is deeply influenced by its members and its environment over time.

- “Transmitted to new members” is a further important aspect for adopting and internalizing organizational culture. Symbols and consistent behavior give a guideline to get to know the shared understandings and how to best fit into the organization (O’Reilly et al., 1991).
- “Provides order and rules to organizational existence” means to give employees a helpful orientation which decreases insecurities (O’Reilly et al., 1991; Van Maanen, 1979).
- “Has breadth” means that culture can be expressed in different forms, but in each situation with a “breadth” (Schein, 2004).
- “Is a source of collective identity and commitment” reflects the aspect that was already described in chapter 2.2.2. The organization’s identity is essentially influenced by its culture. The employees influence the organizational culture and their identity is shaped by that culture. It is “(...) an emotional connection to the culture and a commitment to the group” (Ehrhart et al., 2013, p. 134). For further details, see Hatch and Schultz (1997) and Ravasi and Schultz (2006).
- “Is unique” means that every organization has its own culture (Cooke and Rousseau, 1988), which can never be adopted completely by another organization due to a unique constellation of members, stakeholders, and industry.

The core attributes of “organizational culture” reveal the heterogeneous perspectives of this technical term. However, these attributes shape the interface for commonalities of the different organizational culture concepts.

#### **4.1.1.2 Key Finding 8: Different levels of expressing culture - Edgar Schein’s concept**

Mead did not create a culture theory but described intensively the role of culture for human identity formation processes (see chapter 2.4). In his theory, he also alludes to the different aspects of culture, above all norms, attitudes, behaviors, and beliefs. Furthermore, the “shared” understanding of culture in societies, the process how such beliefs and norms becomes shared and the implications of shared cultural guardrails for individuals, are topics which are extensively reflected in Mead’s theory. Therefore, the eighth key finding summarizes those aspects as follows: “Culture is represented by - above all - shared basic attitudes, beliefs, values, norms, behaviors and functions as a guardrail how to act as individual in a social order.”

Edgar Schein succeeded in creating a conceptual bracket between the already introduced single attributes (see previous chapter) representing different foci of the various trends in organizational culture research and his wide-spanning theory. Therefore, his theory is introduced in the following. Moreover, Schein includes the construct organizational climate

into his organizational culture theory. In consequence, the logical integration of both constructs is possible. Organizational climate was already deeply examined in chapter 3 for discussing its role with regard to communication climate and then communication satisfaction.

According to Schein, organizational culture is “(...) a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems” (Schein, 2004, p. 17).

Schein’s theory has one unique characteristic: He conceptualizes three different levels of culture, “(...) meaning the degree to which the cultural phenomenon is visible to the observer” (Schein, 2004, p. 25). His three-level conceptualization is based on the two general attributes “shared” and “is unique” by Ehrhart et al. (2013). Therefore, these are not assigned to one specific level by Schein. An organizational culture can only emerge by a shared community process. Additionally, the constellation of persons embedded in their industry environment as well as their personal and professional background and the corresponding process of creating culture for their organization are so unique that an organization’s culture is not imitable.

Levels of Culture		
Levels	Explications	
1	Artifacts	Visible organizational structures and processes (hard to decipher)
	↓↑	↓↑
2	Espoused Beliefs and Values	Strategies, goals, philosophies (espoused justifications)
	↓↑	↓↑
3	Basic Underlying Assumptions	Unconscious, taken-for-granted beliefs, perceptions, thoughts, and feelings (ultimate source of values and action)

Figure 5: The levels of culture (referring to Schein, 2004, p. 26)



**Level 1: “Artifacts” incorporating the technical term organizational climate**

The first organizational culture level is called “artifacts” (Schein, 2004, p. 25ff). Under this term Schein subsumes all phenomena captured by sensory organs: This means, in an organization such phenomena can be expressed by uniform clothing styles, certain language expressions or fonts and official story telling about the history or special facts of the organization. Furthermore, Schein also includes participation in organizational rites and ceremonies or the handling of official structures, procedures, and the visible living of norms, rules, and attitudes at this level. In general, the phenomenon is observable for internals as well as externals – depending on the access to the corresponding artifacts like special ceremonies.

At this level, Schein defines the relation between the construct organizational climate and culture as follows (Schein, 2004, p. 17ff): The construct organizational climate is also an artifact, because the climate is an expression of the levels 2 and 3. This kind of integration is not a general opinion in research. There are still two established research areas that have an equal right to exist side by side – with content-related overlaps. While clarifying this discussion lies outside this thesis’s scope, it is still necessary to have a short look at the roots of both concepts. Organizational climate researchers use quantitative, psychology-related methods, examine relations between climate and output or performance, or the organization’s strategy and the climate’s spotlight are visible or observable facts/ artifacts (for further details, see Ehrhart et al., 2013, p. 204). In contrast, culture roots in anthropology, is examined by qualitative methods, and focuses on different levels of culture in an organization (for details, see Ehrhart et al., 2013, p. 204). Nevertheless, both concepts show similarities regarding the focus of “shared” contrarily to an individual focus, the “macro view” to understand the emergence of each concept, the contextual-dependent meaning for employees, and the impact of both concepts on the organizational environment (Ehrhart et al., 2013, p. 199). According to Tagiuri’s definition that organizational climate “(...) is a relatively enduring quality of the internal environment of organization (...)” (Tagiuri, 1968, p. 27 and see chapter 3.2.3) and Ehrhart et al.’s (2013) definition that climate focuses on observable aspects experienced by employees, it makes sense to follow Schein’s recommendation to see climate as an artifact that is integrated into the first level (Schein, 2004, p. 26).

*Integration into the scheme of general attributes:* Compared with the general attributes of organizational culture already described by Ehrhart et al. (2013) (see previous chapter), the attribute “symbolic, expressive, and subjective” pertains mainly to Schein’s first level: Culture is expressed in different artifacts which can be individualized by the members and function as a communicator. The attribute “has breadth” conveys that culture can be expressed by everything and everybody.

**Level 2: “Espoused beliefs and values”**

The second level can be described as “espoused beliefs and values” (Schein, 2004, p. 28). For more details to the outline offered in these paragraphs see Schein (2004): When individuals are part of a social group such as teams or departments, these groups provide guardrails and certainty as to how to behave or how to evaluate facts as right and wrong. According to Schein, norms, (moral) rules, and attitudes are produced based on “shared” understandings by the community. A single person can internalize these beliefs and values but he is also able to shape them to a certain degree through active participation. In that case, Schein’s approach is similar to Mead. Due to the heterogeneous perspectives on values and beliefs between an individual and the community, these have to be discussed from time to time and perhaps adapted to new circumstances. It is not completely fixed. Such beliefs and values emerge through a similar process (Schein, 2004): Based on the discussions of how to behave etc. the finding of solutions to a problem gives a first orientation – it is a shared process by including all members. According to him after some time, this proven guide to behavior and values becomes the standard in similar new situations. After a long time, values and beliefs are taken for granted and are naturally internalized in behavior by the community’s members. It is a learning process. So far, Schein mentions two types of beliefs and values: The conscious ones that individuals discuss – above all at the beginning of setting-up a community with its principles and its expression in artifacts - and the unconscious ones that form the bedrock and are unconsciously adopted by the individual members. These two kinds of characteristics create the overlaps from level 2 to level 1 as well as to level 3 (Schein, 2004).

Integration into the scheme of general attributes: In comparison with Schein’s definition of the second level, the following attributes of the general description of organizational culture by Ehrhart et al. (2013) are primarily picked up in “grounded in history and tradition”, “transmitted to new members”, “provides order and rules to organizational existence”, and “is a source of collective identity and commitment” (see chapter 4.1.1.1). All four allude to the discussions and exchanges about special issues and/ or problems affecting the organization to shape the guardrails and appropriate behavior. Thereby, the members can get in close interactional contact with the organization and can internalize and identify. Existing values and beliefs can be transmitted and then adopted by new members.

**Level 3: “Basic underlying assumptions”**

The third level comprises “basic underlying assumptions” (Schein, 2004, p. 30), which “have become so taken for granted that one finds little variation within the social unit” (Schein, 2004, p. 31). This means that these assumptions hardly change or are only changeable in a long-term process that costs much effort and uncertainty for the members in an organization. Furthermore, it reveals stress situations with “anxiety and defensiveness” (Schein, 2004, p.

32). In fact, the assumptions are the basic principles of belonging to an organization and give the basic concept of how to perceive and think in a certain way – according to him.

*Integration into the scheme of general attributes:* The deepest level refers mainly to the common attributes “stable” and “depth” by Ehrhart et al. (2013). Such unconscious assumptions are manifested for long-term thinking and are deeply rooted. They provide long-term guidance and foster trust in the organization’s members and do not vary from situation to situation.

### **Adaptation of key finding (8) for the organizational environment**

The previous chapter introduced the different approaches to organizational culture, showing that they had many of their definitions of terms, values, beliefs, assumptions, and the “shared” understanding of evolving organizational culture in common. However, Schein offers a comprehensive concept for how these terms are related, identifying three distinct levels for their categorization. Furthermore, he defines the overlaps between culture and climate which is necessary for the communication satisfaction discussions in this thesis (see chapter 3.2.3) and stresses the employee’s “shared” opinions in creating culture. Mead does not develop a cultural concept for societies but his general views on how culture is expressed, are applicable to organizational culture. In particular, Mead’s “shared” approach, his descriptions of culture (beliefs, norms, assumptions, ...), and the guardrail functionality how to behave according to cultural norms, are reflected in Schein’s concept and further contemporary theories of culture in organizations. While Schein categorizes the different descriptions of organizational culture into three levels, a more structured understanding on culture is generated – in comparison to Mead. In consequence, the eighth key finding “Culture is represented by – above all – shared basic attitudes, beliefs, values, norms, behaviors and functions as guardrail how to act as individual in a social order” is extended by the three-level-approach and adapted in the following way for the application in the organizational environment:

#### **Adapted key finding:**

The three different levels of organizational culture are the guardrails for any kind of social behavior and the coexistence of individuals in organizations. The levels are “artifacts”, “espoused values and beliefs”, and “underlying assumptions”.

#### 4.1.1.3 Key Finding 9: Overview of relations between role-taking, culture, and communication

The ninth key finding addresses the relations between role-taking, culture, and communication: “Culture is expressed by communication, which enables role-taking with the social order – this means that an individual’s identity formation is influenced by the group’s culture, but he as an individual with his own set of characteristics can also influence the group with his convictions.” Therefore, the theoretical concepts by Goldhaber and Schein are discussed with regard to the statements in Mead’s theory (theories see chapters 2.4, 3.1.2 and 4.1.1.2). Empirical examinations show the interdependent relationships as well.

Comparing Schein’s statements with Mead reveals many similarities regarding the process of the individual’s identification with a community. Both perceive culture as guardrails for values and beliefs which have to be transmitted and internalized by its members and new or soon-to-be members, but which can also be shaped by the individuals. The guardrails shape a group’s “shared” self-understanding. Furthermore, both stress the various possibilities of expressions regarding the cultural phenomenon – from visible artifacts to the common understanding of basic assumptions that have to be transmitted through verbal or non-verbal communication and any kind of transmission channel. This heterogeneity of communicating the organizational culture is not only reflected in content aspects but also reflected in the communication climate which both in turn affects communication satisfaction. Regarding the climate aspect: Tagiuri’s already introduced argument is that climate “(...) can be described in terms of the values of a particular set of characteristics (or attributes) of the organization” (Tagiuri, 1968, p. 27). To review as Cheney (1983a) found out: Transmitting the content and hence also the corporate culture aspects, such as goals and values, support the identification process because the employees have the chance to confront with this topic.

However, Mead does not explicitly outline three levels and does not create a human culture concept. With respect to the process of a group’s culture formation, Mead has the communication process at the center stage and its relevance for role-taking effects as well as the related importance to recognition, whereas Schein’s initialization is a new issue or problem arising that has to be solved. Schein does not discuss communication processes in detail; he rather treats them as a basic prerequisite for identifying processes with the organization’s culture (Schein, 2017).

Goldhaber also addresses the relation between organizational culture and communication as well as further empirical studies: The communication between different levels of hierarchy varies (means sub-cultural differences) and is based on the respective job roles (Bisel et al., 2012; Madlock and Kennedy-Lightsey, 2010). Goldhaber’s theory summarizes this phenomenon in his sub-concept “network”. Moreover, Goldhaber’s sub-concept

“interdependences” includes communication between different parts of the organization and their sub-cultural behavior. Pinto and Pinto’s (1990) empirical study examined this relation that highly cooperative teams show communicative behavior regarding their reasons and their informal ways of communication that differ from those teams that are less cooperative. These findings also show an impact on the different team performances. Goldhaber’s definitional section of “environment” also explicitly mentions the relationship between culture and communication.

Further researchers also focused on relationships between communication, organizational culture, and the employee’s identification and role-taking effect and carried out studies. Hogg and Reid (2006) examined how a group’s norms are transferred through communication and how these norms are expressed through verbal and non-verbal communication. Research on the heterogeneity of norm expressions was for example also done by Bendor and Swistak (2001) or Rimal and Real (2003). Furthermore, Hogg and Reid (2006) discovered a relationship between the communicated norms and social identity: “The fundamental insight of this approach is that individuals cognitively represent group norms as category-defining group prototypes that capture meaningful context-dependent similarities within and differences between groups. (...) By definition, group norms are elaborated, maintained, and changed through communication about, and contextualized by, group prototypes” (Hogg and Reid, 2006, p.23). Amongst other criteria, Eisenberg and Riley (2001) also confirm the role of communicating norms and values in a group, enabling group members familiarize themselves with them (role-taking). Smith and Keyton (2001) focused on special communicated symbols and information charged with the organization’s cultural symbolism. Internalizing these ones led to an acceptance of the norms reflected in communication processes. This can be also interpreted as one kind of identification effect. Wines and Hamilton (2008) and Driscoll and McKee (2006) as well as Boje and Baskin (2011) examined different aspects of communicative storytelling as one phenomenon of expressing culture. Jung et al. (2009) also verified that organizational culture is expressed by organizational verbal and non-verbal communication to the members and amongst them.

#### **Adaptation of key finding (9) for the organizational environment**

In comparison to Mead, Goldhaber and Schein as well as with other empirical research studies the key finding 9 “Culture is expressed by communication, which enables role-taking with the social order – this means that an individual’s identity formation is influenced by the group’s culture, but he as an individual with his own set of characteristics can also influence the group with his convictions” was analyzed. The relation between organizational culture and organizational communication, the role-taking effects and the influence of organizational

culture on identification can be found in new theories and empirical studies, too. Therefore, key finding (9) is applicable in the organizational context and only slightly adapted.

**Adapted key finding:**

The organizational culture is expressed by organizational communication.

Organizational culture contributes to the employee's identification process.

### 4.1.2 Recognition as part of organizational culture

The term recognition has already been introduced by Mead (details see chapter 2.4.4). However, Schein also covers this important aspect and he relates this term to the construct organizational culture. This intertwining between the term recognition and culture are deeper discussed in the next chapter. First of all, it must be clarified which further theoretical approaches on the technical term recognition were developed based on Mead's ideas.

#### 4.1.2.1 Key Finding 10: Different levels of expressing recognition - Axel Honneth's concept

In Mead's theory, key finding 10 summarizes his basic ideas: "Being part of a social group is related to recognition on the social role and appreciation." This means that he differentiates between the aspects of recognition i) an individual's rights and duties in a society and ii) the recognition of his value for the society. After having discussed the term recognition and its relation to culture, the succeeding step is to examine the single aspects of recognition based on empirical studies in the organizational context (see chapter after next). In Merriam Webster's encyclopedia, the technical term recognition is amongst others described according to the already mentioned aspects: "The act of accepting someone or something as having legal or official authority" and "special attention or notice especially by the public for someone's work or actions" (N.N., Merriam Webster's online learner's dictionary and encyclopedia: recognition, n.d.).

#### Introduction to Honneth

The German social philosopher Axel Honneth developed a theory of recognition which is explained in his book "Struggle for Recognition". His theory is based on a threefold concept of recognition (Honneth, 1995, p. 92): Love, rights, and solidarity. These three aspects emerged from Georg Hegel's and George Mead's thoughts who both discussed those different aspects of recognition. Although Honneth argues that Hegel's thoughts were outlined with "brilliant

primitivity" (Honneth, 1995, p. 92) in his Jenaer writings, only the linkage to Mead's social psychology arguments enables the establishment of the substantial social theory (Honneth, 1995, p. 92) that Honneth developed in his book. From his point of view, the origins of such a social theory lie in Hegel's and Mead's understandings of the same fundamental principle:

"the reproduction of social life is governed by the imperative of mutual recognition, because one can develop a practical relation-to-self only when one has learned to view oneself, from the normative perspective of one's partners in interaction, as their social addressee. Admittedly, this general premise has explanatory power only when it includes a dynamic element" (Honneth, 1995, p. 92).

This means that the process of mutual recognition is only possible in a social environment which has norms, rules, values, and different attitudes. These reflect a society's culture and its moral standards, and are adaptable for various kinds of social environments, like the culture of an organization or country, or special community of shared values. Honneth explains that through mutual recognition, the continual growth of the personal demand to be perceived as an individual subject can be met. In the face of this constantly extending human demand, the different kinds of struggles are unavoidable in order to obtain interpersonal or inter-group recognition which consequently triggers societal and moral changes. Such struggles are also mentioned in Hegel's and Mead's thoughts, but they were not specified, clustered and systematically evaluated with regard to the societal impacts (Honneth, 1995). Honneth (1995), p. 131 extends these struggles and differentiates them into three parts, reflecting the contrast of the three recognition aspects: "the violation of the body, the denial of rights, and the denigration of ways of life".

### **Level 1: "Love"**

The first aspect of recognition is "love". Honneth limits the term "love" between "primary relationships" corresponding to Hegel's understanding that love is "(...) the first stage of reciprocal recognition, because in it subjects mutually confirm each other with regard to the concrete nature of their needs and thereby recognize each other as needy creatures. In the reciprocal experience of loving care, both subjects know themselves to be united in their neediness, in their dependence on each other" (Honneth, 1995, p. 95). Emotions, sympathy, and attractiveness are essential for such primary social relationships. For an individual, self-confidence emerges from the recognition in primary relationships (Honneth, 1995, p. 118).

Mead, however, did not relate the emergence of self-confidence when perceiving recognition in primary relationships; he just focused on the "play" and "game" phases and its importance for internalizing the rules and norms of a "generalized other". For the organizational context this level is not in the focus.

**Level 2: “Rights”**

Through conceiving the security of being reciprocally recognized as an independent and loved individual, the next human demand emerges: Being recognized as a legal person. This reflects the second aspect of Honneth’s recognition of “rights” (introduction to this level is based on Honneth, 1995). It is not possible to build up only primary relationships, because humans come into contact with many other humans. Therefore, Mead introduced the term the “generalized other” in order to categorize further relationships to other individuals (see chapter 2.4). This is necessary so that an individual can take the measure of others through awareness of his role and function. It organizes both the legal and informally grown constellation of individuals and groups who all have different intentions in societies. Such defined roles in societies have assigned duties and rights. Hegel and Mead stress an advantage for the individual (Honneth, 1995): He and the other individuals in a society are mutually recognized as members of a social order with pre-defined rights and duties for every member. However, Hegel’s and Mead’s theses differ in detail: Hegel alludes to the “(...) specific constitution of modern legal relations, because it is only their claim that inherently applies to all people as free and equal beings” (Honneth, 1995, p. 108). Mead (1978), however, does not relate his arguments to political systems and humans who can live in them with personal freedom. His arguments are more abstract and less concrete and can therefore be applied to various social environments: Norms and rules and the corresponding rights and duties exist in each social order. However, Mead does not fully separate between rights based on social role and those based on equal rights for each human (see chapter 2.4.4), he focuses on the first one – role and function in a society. Furthermore, he mentions sometimes arguments of rights in a social order and an individual’s value appreciation for the social order at the same time. Honneth clearly differs between the two, though his level of “rights” and his level of “solidarity” and categorizes different kinds of rights in a social order. Honneth clarifies the characteristics of recognition to make sure that personal freedom can be lived. Additionally, he stresses the impact when one’s “status as morally responsible” (Honneth, 1995, p. 110) in a modern legal relation has been mutually recognized by every human to be an equal individual. Then it must be assumed that the individuals with equal rights have the capacity to decide independently regarding moral issues (Honneth, 1995, p. 114). Modern legal studies differentiate between three different levels of individual rights: Civil rights protect personal liberty for one’s own life and property; political rights guarantee “(...) the opportunity to participate in processes of public will-formation; and the third category, finally, refers to the similarly positive rights that ensure a person's fair share in the distribution of basic goods” (Honneth, 1995, p. 115). In fact, being perceived and accepted as a legal person offers an individual the possibility to develop self-respect (Honneth, 1995, p. 118).



**Level 3: “Solidarity”**

Honneth calls the third and last aspect of recognition “solidarity” (introduction to this level is based on Honneth, 1995). Both Hegel and Mead elaborated this facet (Honneth, 1995). The first and second recognition levels focus on the human as such on the one hand, every individual’s intuitive need for interpersonal affection, and on the other hand, the legal reciprocal recognition as a free and still individual person in every kind of society with equal rights. The third level aims at putting in the foreground the individual performance based on the unique set-up of his characteristics and skills. This is reflected in mutual esteem. Embedded into an organization with many other employees, these individual skills and characteristics aid performance, but the individual performance must be congruent with the performance of the others for the overall vision and targets to be reached (Honneth, 1995, p. 122ff). The presumption of esteem is the same understanding of values and targets in societies (Honneth, 1995, p. 122). Otherwise, the performance cannot be evaluated by the others and is consequently not esteemed – either due to the lack of the other’s expertise or due to the missing relevance of the skill or another horizon of values. Especially, esteem acts as a guide as to how much the individual performance helps to fulfill the society’s targets and “to realize the cultural defined values; this form of mutual recognition is thus also tied to the presupposition of a context of social life, whose members, through their orientation towards shared conceptions of their goals, form a community of value” (Honneth, 1995, p. 122). Thereby, the social esteem is often expressed through the prestige a person has in a society. Comparing the value of characteristics and skills between different societies means evaluating the hierarchy between the groups. This hierarchy is based on the value, in turn, of how the other group contributes to their own targets and shared values. If the repetition is successful in giving a value to the society to which the individual belongs, and if the individuals symmetrically recognize each other with their various ways of thinking and acting, then personal self-esteem is created. This argument especially leads to Honneth’s explication why he called the third recognition aspect not “esteem” but “solidarity”: If every member is able to self-esteem himself, then “the state of societal solidarity” is eventuated (Honneth, 1995, p. 129).

**Adaptation of key finding (10) for the organizational environment**

Mead differentiates between recognition based on the social role and appreciation of the individual performance in a social order. In the last paragraphs, it was clarified that Mead’s statements on recognition are still valid, even more: The recognition theory of Honneth is based on Mead, but extended to a systematical relation between recognition and the relation to the self and to modern views on the recognition levels love, rights and solidarity. The

applicability of the respective levels, their relation to organizational culture and identification, and their characteristics for the organizational context is followed in the next chapters.

Table 1 summarizes Honneth's different levels of recognition. Thereby, he also targets the struggles for recognition which are also addressed in this summary. These emerge when one of the three aspects is impacted. When the aspects "violation of the body, the denial of rights, and the denigration of ways" (Honneth, 1995, p. 131) of life dominate, then these three aspects lead to struggles while reflecting the contrast of love, rights, and solidarity.

Mode of recognition	Emotional support	Cognitive respect	Social esteem
Dimension of personality	needs and emotions	moral responsibility	traits and abilities
Forms of recognition	primary relationships (love, friendship)	legal relations (rights)	community of value (solidarity)
Developmental potential	-	generalization, de- formalization	individualization, equalization
Practical relation-to-self	basic self-confidence	self-respect	self-esteem
Forms of disrespect	abuse and rape	denial of rights, exclusion	denigraton, insult
Threatened component of personality	physical integrity	social integrity	honor, dignity

Table 1: The structure of relations of recognition (Honneth, 1995, p. 129)

So far, the tenth key finding on recognition is relative generally verbalized "Being part of a social group is related to recognition on the social role and appreciation". However, based on newer insights from recognition research, this key finding has to be adapted by including the different levels.

**Adapted key finding:**

Recognition is split into three different levels - "love", "rights", and "solidarity".

#### 4.1.2.2 Key Finding 11: Relations between communication, culture, and recognition

Key finding (11) addresses the relation between recognition, culture and in consequence communication: "Recognition is expressed through cultural features by the social order and has an essential function in the process of human identity formation." For examining this

relation, the conceptual basis is again the theory by Mead. Therefore, the common ground between Mead and Schein as well as Mead and Honneth was already outlined in-depth in the previous paragraphs.

Organizations have visions, targets, and serve a purpose (Hodge et al., 2003). To fulfill them, the collective comprehension of organizational culture, reflected in a common basic behavior and thinking, has to be committed and internalized by the organization's members to have an identification effect (details see Schein, 2017, p. 127ff) – enabled by organizational communication. This is accompanied by a feeling of recognition as an equitable individual as well as a member of the group (the organization) – referring to different levels of recognition according to Honneth's (1995) approach and Mead's explications. In Schein's overarching concept for organizational culture, he also refers to employees who need mutual recognition for internalizing organizational culture (Schein, 2017, p. 127ff). Following this, in an organization, Honneth's (1995) recognition elements "rights" and "solidarity" are mainly intertwined with Schein's levels of organizational culture whereas the part "love" does not play a prior role because the relationship between loved persons or to the parents is not relevant in the organizational context. The recognition aspect of "rights" has two main impacts in organizations. First, an employee has to be recognized as an equal member of the organization. Second, deduced from Honneth's (1995) and Mead's thoughts, as a member of the organization "recognition" presumes to accept the freedom of every individual and to allocate individual duties and rights for every organizational role and function but based on the common, equal rights. In an organization, such defined roles are consciously lived (recognized) through rules, tasks, structures, processes, rights, duties, and hierarchies, which can be subsumed into Schein's first level of organizational culture (see chapter 4.1.1.2). These examples directly express the culture and therefore they belong to the first level illustrating all kinds of organizational communication forms through language or indirectly through behavior, gestures and facial expressions, and emerging from level 2 and 3.

In the organizational context, Honneth's (1995) element "solidarity" can be described as the employee's value for the organization which is for example possible to measure on the basis of his performance. Schein also reflects this recognition topic in his theory by mentioning rewarding systems for employees (Schein, 2017, p. 175ff). For example, they get rewards when achieving a good performance. These rewards are expressed with respective cultural behavior (level 1 in Schein's theory). However, this behavior is grounded in beliefs and opinions on the organization itself, its targets and missions (level 2 and 3 in Schein's theory) and which employee's performance contributes to the organization's setup and goals.

Based on the defined cultural norms and rules (Schein's level 1), the community should give the freedom as to how the employee reacts and attends to his tasks within his function because every individual has a unique set of characteristics and experiences as background

which is described as “I” in Mead’s theory embedded into the organization. Otherwise, the employee does not perceive himself as being accepted as an individual. As a consequence of feeling recognized, the employee will identify with the organization and begins to format an employee identity with a balance of “I” and “me”.

To transport recognition, organizational communication plays an important role because recognition is one aspect of organizational culture which is expressed by communication (see chapter 4.1.1.3). The ways of communicating recognition are as diverse as those already described in the previous chapter or simply stated as: “One cannot not communicate” (Watzlawick et al., 1990, but English translation used from Picot et al., 2008, p. 79). Nevertheless, the demand for and the supply of recognition have to be balanced and can be transferred to the information supply and demand level because recognition is information on the employee’s observance of cultural norms, behaviors, and beliefs in the organization and recognition is information on his value contribution to the company’s existence.

#### **Adaptation of key finding (11) for the organizational environment**

Key finding (11) “Recognition is expressed through cultural features by the social order and has an essential function in the process of human identity formation” is still valid for the organizational context and can be applied without adaptations. This shows the discussed overlaps between the theories by Mead, Honneth, and Schein. However, the empirical relations between recognition of “rights” and “solidarity” and identification have not been presented yet. This is now done for the organizational context in the next two chapters.

#### **4.1.2.3 Key Findings 11 & 12: Recognition of “rights” in organizations**

In relation to key finding 11, this chapter examines the empirical relations between recognition of “rights” by Honneth (1995) and identification and this is discussed for the organizational environment. The key finding (12) address this topic: “In a social order, the individual must be recognized as a legal person who understands his rights and obligations”. In addition to the previous analysis, the quantitative aspect will now be discussed how empirical studies show a relation between recognition of “rights” and identification.

Recognition as member of a group can be reflected in access to special rights that are denied to externals. In general, however, membership in a group means possessing equal basic rights like every other member to guarantee the individual freedom and equality (see Honneth, 1995). The special rights represent outwardly that an employee is member of the group. Both employees as well as externals interpret these exemplary facts as obviously signaling an employee’s membership in an organization: Having access to only internal communication

(channels), having a company's email address, having access to the office rooms, and possessing membership identity card. Consequently, there is at least an official information exchange between the organization and all its employees at a minimum level, namely membership in the group. Though, there are also information flows to special employee groups within the company based on the employee's role and function (see chapter 3.1.2 and 3.2.3). According to that, Welch and Jackson (2007) categorize internal communication into four different clusters: "internal team peer communication", "internal line management communication", "internal project peer communication", and "internal corporate communication" (Welch and Jackson, 2007, p. 193). For an employee, being in a special cluster means receiving adapted information. For example, no employees can participate in management meetings (confidentiality aspects). Elsner (2013) categorizes exclusivity of information as "social appreciation" which is based on trust which is related to this role. Violations of the exclusivity of information can lead to a missing perceived respect of the employee's role.

Consequently, for receiving internal and/ or confidential information as "purpose-oriented knowledge" (Wittmann, 1999, p. 14), an individual's membership has to be recognized as to that of all other members with an individual task, role, and function for an organization – being employee of the company as well as being group members of a special department or work group. This membership is represented in rules determining which information cannot be sent to whom which are well clustered in Welch and Jackson's approach in 2007 (confidentiality aspects). Though, taking the aspect information is a good to supply individual wants, employees can satisfy their individual urge for recognition, e.g. "I am only getting this information due to my personal function in the company".

Organizational climate research as expression of Schein's first level culture theory (introduction see chapters 4.1.1.2) also tackles respect topics related to the employee's role within the company (James et al., 2008). Respect as organizational value can be assigned to Schein's second level of culture. James and James (1989) categorize role conflict, role ambiguity, and role overload as a subcategory of organizational climate. Role conflicts can threaten the demanded respect for a special role within the company, although it can be possible that the person who threatens the colleague's role has a good private and personal relation to him (Sickendiek, 2009, p. 472). Therefore, it can be derived that the role in an organization and personal acceptance can be separated.

Tyler and Blader (2002 and 2003) investigated the effect between respect and identification aspects such as group behavior and self-esteem. They also differentiated between two kinds of respect that are similar to Honneth's level 2: "For example, employees may evaluate their status in their work organizations (respect) by judging whether they are treated according to what they regard as the group's typical standards or whether their treatment meets their

internal sense of what is appropriate. If so, they may then feel included within the group” (Tyler and Blader, 2002, p. 814). In two examinations, Fuller et al. studied the employee’s perceived respect and status in relation to identification (Fuller et al., 2006 and 2009). Feeling respected in a group is often examined with the construct “organizational justice” which has the following dimensions: “(...) (1) distributive justice, referring to the perceived fairness of the outcomes and the allocation of resources in the workplace, (2) procedural justice, referring to the perceived fairness of the formal decision-making procedures used in the organization, and (3) interactional justice, referring to the perceived fairness of the interpersonal treatment received from the supervisor” (Olkkonen and Lipponen, 2006, p. 204). The dimensions thus show some parallels to Honneth’s level 2 with regard to be an equal, free member, unless this second level is not restricted to supervisors, but to all actors in an organization. Besides Tyler and Blader, there are some studies which also show effects between the different dimensions of organizational justice and identification (Lipponen et al., 2004; Olkkonen and Lipponen, 2006; Tyler et al., 1996). Moreover, the already introduced SIT and SCT theories by Tajfel and Turner in chapter 2.2.1 address main points of group behavior and being recognized as member of an organization: The identification with a group, when group is perceived as such, and the feeling about membership in the group compared to not-members being out of the group and its relation to identification.

#### **Adaptation of key finding (11) and (12) for the organizational environment**

Based on the current empirical studies and Honneth, the aspect free and equal membership is relevant in organizations besides the recognition of the different roles and functions in a social order, respectively in an organization. Mead only refers to the last aspect. Therefore, the key finding (12) “In a social order, the individual must be recognized as a legal person who understands his rights and obligations” is adapted. Moreover, the empirical studies also show a correlation between the aspect “rights” and identification. This was also added to the existing key finding.

#### **Adapted key finding:**

Recognition is the essential leverage to identity with an organization – above all due to the level of “rights”: Recognition of equal, free membership and different roles and functions in an organization.

#### 4.1.2.4 Key Findings 11 & 13: Recognition of “solidarity” in organizations

In relation to key finding 11, this chapter shows the empirical relations between recognition of “solidarity” and identification. Key finding 13 in Mead’s theory “The individual can be recognized as valuable for the social order based on his performance” is reflected in Honneth’s (1995) third level “solidarity”. This recognition aspect refers to the individual contribution a member makes to the organization towards reaching the overall vision, targets, and purpose. Thus, the work performance is measured and compared with other members and also with the role description of the member’s job. Honoring the performance of a member can be expressed in various ways such as award ceremonies, personal promotion, higher salaries, or personal greetings from the boss. These artifacts belong to level 1 in Schein’s culture theory (see chapter 4.1.1.2). To assess and rank the performance and the value for the group, the benchmark is based on the organization’s community of values. This emerges from the “pattern of shared basic assumptions” (Schein, 2004, p. 17). In her publication, Katrin Elsner showed the different possible kinds of esteem or appreciation for employees (Elsner, 2013, p. 63). She differentiates between the employee as a unique person and his performance. Performance in turn can be rewarded for both the output and the input, whereby the input can be measured either according to the resources/ qualification or according to the effort made. Table 2 gives an overview of the different kinds of appreciations in a company. The second category of “organization” plays an essential role in examining the value of an employee for an organization. In this category, an employee’s skills and performance take center stage which and are both applied to reach the organization’s targets, forming an individual value contribution. Chapter 6.1 and 8.3 will explain which facets of this category are used in the study. Besides the obvious sub-category of performance, the sub-category of human manpower within the official organization’s framework should not be neglected (what is allowed, fostered to do in order to control the human manpower).

Furthermore, in organizational climate research rewarding aspects for appreciating the employee are also examined (James et al., 2008). Typical measured climate aspects in the innovation area are idea time and idea support (Ekvall, 1996). Both aspects can be categorized into “human’s manpower” by Elsner (2013). A further aspect of appreciating human’s manpower is also a perspective on career options (Kotthoff and Wagner, 2008, p. 123). Another example of the category “measurable performance” are trainings for the employee in order to appreciate him. Tracey and Tews (2005) developed a training climate scale that the employees perceive this kind of appreciating training environment. Thereby, as already discussed climate is a 1<sup>st</sup> level expression of organizational culture (see chapter 4.1.1.2).

Who appreciates?	Objective of appreciation	Means of appreciation
<b>Society</b>	Having a job, company reputation	Integration, prestige, reputation
<b>Organization</b>	Educational and professional background	Position, salary, status symbol
	Membership	Gifts, anniversaries
	Human's manpower	Company's framework conditions
	Measurable performance	Boni, Incentives, trainings
<b>Colleagues</b>	Type of job, position, discretionary competence, person, performance	Integration, support, community, information, gifts
<b>Manager</b>	Person, performance	<b>Real:</b> career support, trainings, salary rise, enhancement of responsibilities
		<b>Symbolic &amp; explicit:</b> praise and criticism, gifts
		<b>Symbolic &amp; implicit:</b> recognition, interest, trust, implementation of suggestions, respect, freedom

**Table 2: Overview of appreciation (Elsner, 2013, p. 59). Translation into English by this thesis's author.**

Stephan Voswinkel, however, set the focus of recognition in the organizational environment on collective identities, especially, those of labor unions. For him labor unions are "organizations of recognition" (Voswinkel, 2001, p. 157). Studying these means discovering changes of recognition in the organizational environment (Voswinkel, 2001, p. 157). They act as a point of attachment between the labor union's members and the rest of the organization and gain recognition as a consequence of i) loyalty and ii) reputation (Voswinkel, 2001, p. 174): Based on the individual identification effect, loyalty is expressed through the relationship between the member and the collective, whereas reputation is based on "admiration" of the targets the labor union reaches and the advantages the individual gains through membership. Therefore, the successes must be communicated constantly.

Returning the esteem of individual employees, Jacobshagen and Semmer empirically examined the fact that the sources of feeling esteemed are ranked as follows: Managers first play a significant role, but customers also contribute through their orally commendations (Jacobshagen and Semmer, 2009). Furthermore, appreciation has a mediator effect on the relationship between long working hours and job satisfaction, and the recommendation was given to include recognition into the organization's culture (Stocker et al., 2010). This topic



was already discussed in this chapter 4 that recognition belongs to organizational culture. Appreciation has a positive influence on the employee's well-being and health – above all when the employee is esteemed by his manager (Stocker et al., 2014).

Being recognized as value for the organization and its implication on the identification effect is studied, too (Stürmer et al., 2008; Al-Atwi and Bakir, 2014). Fuller et al. examined this relation in two studies (Fuller et al., 2009; Fuller et al., 2006). In 2006, they studied on the one hand the understanding of perceived respect which is “visibility within the organization, perceived opportunities for growth, and participation in decision-making” (Fuller et al., 2006, p. 815). On the other hand, they found a correlation between respect (= value for the organization) and identification. Elsner calls that appreciation and the categories show similarities on her one (compare Table 2). Bartel et al. (2012) also confirm the relation between being recognized as value for the organization and identification. Furthermore, they showed a negative effect when an employee is not physically present in the office (virtual employee).

#### **Adaptation of key finding (11) and (13) for the organizational environment**

The key finding “The individual can be recognized as valuable for the social order based on his performance” is similarly defined by Mead and Honneth. Based on current theories and empirical studies, the employee can contribute as value to the organization and there are categories how to recognize this value (to compare Elsner). Furthermore, it was also examined that there are correlations between being recognized as value and identification (content of key finding 11). To sum up: Mead's key finding is applicable for the organizational context. The key finding is slightly new worded to be consistent with the adapted key finding (12).

#### **Adapted key finding:**

Recognition is the essential leverage to identify with an organization – above all due to the level of “solidarity”: Recognition of the unique value for the organization.

## **4.2 Conclusions and the adapted key findings in the organizational context**

To sum up the last considerations, Mead's main theses on culture in a society can be discovered in Schein's modern organizational culture theory. Furthermore, the way of how culture is transmitted is not diametrically different in both theories. In Goldhaber's communication theory, these principal argumentations can also be found. Even Mead's thoughts on recognition are picked up in the modern philosophical recognition theory by Honneth. As a consequence, using Mead as a basic theory for identity formation is still justified – in particular for organizations. Consequently, after slightly adapting some key findings, the

key findings in Mead's theory are applicable for the organizational context. The adapted key findings in the organizational context are summarized in the following. Organizational culture, above all recognition as cultural part, contributes to the employee's identification effect.

**Adapted key findings B for the organizational environment:**

Derived from Mead's theory, organizational culture contributes to the employee's identification process with the organization. This contributes to an employee identity as a third dimension next to identity components and continual development of identity.

**B1** Organizational culture is expressed by organizational communication.

**B2** The three different levels of organizational culture are the guardrails for any kind of social behavior and the coexistence of individuals in organizations. The levels are "artifacts", "espoused values and beliefs", and "underlying assumptions".

**B3** Recognition is...

- one important facet of organizational culture
- split into three different levels - "love", "rights", and "solidarity"
- the essential leverage to identify with an organization - above all due to the levels of "rights" and "solidarity": Recognition of equal, free membership and different roles and functions in an organization and the unique individual value for the organization.

## 5. Summary of the theoretical framework: The applicability of Mead's theory for the concept employee identity and its formation

Understanding the formation process of employee identity enables the principal to evoke and foster effects of the employee identity supplementing or even substituting monetary incentives in order to reduce information asymmetries between the manager (principal) and the employee (agent). Therefore, a theoretical examination was made to clarify identity formation processes of employees in an organizational environment. It became obvious that in economic research a comprehensive theoretical construct of the factors influencing the employee's identity formation, has not been extensively studied yet (see chapter 2.2). Therefore, the theoretical insights were deduced by Mead's socio-psychological identity approach according to 16 key findings and then transferred to employee identity in the organizational context. The main influencing factors and their interdependences were then worked out and concluded in the adapted key findings A and B for the organizational environment. Thereby, theories that are new and relevant for this topic were compared with Mead's basic social-psychological identity theory, in order to find out whether this theory has approaches parallel to the state-of-the-art organizational theories and empirical research, whether it is still applicable, and whether it is suited to the organizational environment. In general, Mead's theory serves as suitable basis for the construct employee identity. The major theoretical finding was that organizational communication and organizational culture are the main influencing factors. Above all, the culture's aspect recognition contributes essentially to identification as one dimension of employee identity. The three dimensions of identity which are necessary to study to make statements on identity formation processes, are: i) identity components, ii) continual development of identity, and iii) identification through communication, role-taking, and recognition. This thesis has not explicitly transferred the first and third dimensions for employee identity because they are always context-independent applicable (details see chapter 2.5). Nevertheless, only the discussion of all three identity dimensions allows to answer the question "Who am I as employee in the organization?".

Communication is the key for an employee's identifying process with an organization. Consequently, the term "organizational communication" was defined and analyzed according to Goldhaber's concept. Many parallels could be emphasized between Goldhaber's and Mead's theories, especially in relation to the focus topics "message" and "communication satisfaction". Both focus topics were deeply analyzed with further contemporary, theoretical approaches and in the end, these approaches have similar basic statements, but they are also able to extend Mead's thoughts. The central aspect was to understand how communication emerges. To do so, the message exchange was concretized by examining different sender-receiver models. Additionally, the meaning and intention of a message represented by the

technical term “information” was then analyzed from various research approaches – ranging from the natural sciences to social and economic sciences in order to achieve a comprehensive view. Furthermore, the attributes, characteristics, and effects of information were discussed. The correct balance between information supply and demand also had to be studied, as well as which information can be well received in principal – apart from communication-channel aspects. Both arguments are associated with how receivers, especially employees, can be satisfied with communication in organizations. In general, it must be considered that communication satisfaction is influenced both by the transmitted content and by the communication climate which is also represented in many empirical studies. Communication satisfaction is always an evaluation between one’s own expectations and real-life experience and is also related to role-taking facets. In the end, it is possible that Mead’s statements on the communication processes with significant symbols as the initial spark of identity formations are adaptable for the organizational environment and that every communication exchange is perceived individually by its participants on the basis of their personal backgrounds and experiences. It must be a successful communication between the sender and the receiver. Following these analyses, it can be said that communication is an influencing factor and even the enabler for an identification effect leading to identity formation.

After addressing communication, the next step consisted of analyzing the further two aspects of role-taking and recognition in an identification process. Mead’s view on society and its implication for the identification process was linked to Schein’s organizational culture concept consisting of three levels: “Artifacts”, “espoused values and beliefs”, and “basic assumptions”. It was examined that culture is expressed through any kind of verbal or non-verbal communication. The term “recognition” as one aspect of organizational culture was introduced by Honneth’s approach, but directly linked to Mead’s theory. Honneth’s theory is based on Mead and Hegel and the similarities, differences, and further theoretical developments were therefore discussed. Honneth called the three parts of his recognition theory: “love”, “rights”, and “solidarity”. An employee needs the feeling of belonging to the organization and of membership. It has to be guaranteed that every member is equal and has an autonomous freedom – see details by Honneth. Transferring Mead’s arguments means that the employee needs to understand his rights and duties in his work function and as well the rights and duties of his colleagues. Role-taking aspects must be considered. Moreover, the employee needs to be appreciated for his individual performance: He should be recognized for his individual contribution to the organization. This fact is described in Honneth’s part “solidarity”. In line with organizational culture, recognition is also expressed through verbal and/ or non-verbal communication. Honneth’s theory strongly and actively refers to Mead’s basic concept. Mead’s statements on “role-taking” and “recognition” for the identification

effect based on communication processes are applicable today and adaptable for the organizational environment. The relation between culture, recognition and identification was also discussed according to current empirical research. Furthermore, based on insights of the state-of-the-art theories and empirical examinations, Mead's basic statements can be extended. This is explained in the comparative analysis of Schein's and Honneth's concepts with Mead's explications and all the conceptual intertwinings that exists between these three concepts. Following all these facets, it can be concluded that organizational culture – enabled through organizational communication - contributes to an employee's identification effect. Grounded in Mead's theory, the following adapted key findings A and B can be applied for the employee identity formation:

**Adapted key findings A for the organizational environment:**

Derived from Mead's basic theory, organizational communication enables the employee's identification process with the organization. This contributes to an employee identity as a third dimension next to identity components and continual development of identity.

- A1** The communication process can be described via sender-receiver models which reflect its complexity: transmission of verbal and non-verbal signals, meaning, intention, and socio-psychological aspects.
- A2** The technical term "information" includes the aspects purpose, value, intention, and meaning of a transferred message.
- A3** Communication satisfaction is...
  - related to information content and climate
  - a predictor of communication and information demand and its met expectations by the receiver (role taking aspects) for identification
  - a predictor of the reception of the meaning and intention of a message and information
  - a factor influencing role-taking and identification processes.

**Adapted key findings B for the organizational environment:**

Derived from Mead's theory, organizational culture contributes to the employee's identification process with the organization. This contributes to an employee identity as a third dimension next to identity components and continual development of identity.

- B1** Organizational culture is expressed by organizational communication.
- B2** The three different levels of organizational culture are the guardrails for any kind of social behavior and the coexistence of individuals in organizations. The levels are "artifacts", "espoused values and beliefs", and "underlying assumptions".
- B3** Recognition is...
  - one important facet of organizational culture
  - split into three different levels - "love", "rights", and "solidarity"
  - the essential leverage to identify with an organization - above all due to the levels of "rights" and "solidarity": Recognition of equal, free membership and different roles and functions in an organization and the unique individual value for the organization.

## 6. Development of the empirical model structure based on the theoretical framework

The first part of this work offered a deep examination of the theoretical basis of the concept employee identity. In this section, however, the focus is on a quantitative approach to empirically substantiate Mead's theory of human identity and its formation in organizations – above all the main factors influencing an employee's identity formation process, termed determinants in the empirical study. Therefore, a hypotheses system must be generated based on the theoretical adapted key findings. The study's results enable to give recommendations how to trigger and maintain employee identity and its formation from an employer's (principal's) perspective.

The study was conducted in a German DAX company. To validate empirically the theoretical interdependences of the single factors influencing employee identity in an organization, the "structural equation modeling" method – abbreviated as SEM – was applied. In contrast to regression analysis, SEMs contain latent variables that are necessary to embody organizational communication, culture, and identification. The following chapters address all relevant topics of an empirical examination, from the empirical model structure (chapter 6) to the study design (chapter 7) and results (chapter 8). Chapter 9 comprises a comprehensive summary of this thesis's second part.

### 6.1 Derivation of the hypotheses from the theoretical framework

The theory chapters extensively examined the key findings from Mead's theory in order to show that Mead's theoretical basis on identity formation shows parallels and is applicable to an organizational environment for using employee identity as monetary incentive. In the following, it is necessary to transfer these qualitative adapted key findings (see chapter 5) for the organizational environment into hypotheses to examine empirically the already theoretically explained relationships between the factors influencing an employee's identity formation, namely organizational communication and culture – in particular recognition – and their impacts on the employees' identification processes. Alongside the two other identity dimensions i) identity components and ii) continual development of identity which are also necessary to consider for identity formation, the emergence through identification is the third substantial driver in the process of employee identity formation. Speaking about identification processes means including communication, role-taking, and recognition as determinants in the empirical model.

Communication plays the central role in transferring the two adapted key findings (see chapter 5) into a system of hypotheses – on the one hand as an influencing factor and even as an enabler of the employee's identification process with the organization, and on the other hand as an expression of organizational culture. In the following empiricism, the different contents, facets, and levels of communication that were already explained in the theory chapter will be considered in the hypotheses system in order to gain a better understanding of how to enable an employee's identification process with an organization.

For the first adapted key finding A, it is necessary to think about how this influencing and enabling effect and the different kinds of communication aspects can be empirically measured and adequately covered in empirical constructs. The second adapted key finding B, meanwhile, also requires an appropriate empirical explanation of how the aspect of organizational communication can transmit and express diverse cultural aspects – above all the perception of being a member of a group and recognition of the employee's performance. This requires an understanding of the different ways of communication. Additionally, it must be determined how organizational culture contributes to the employee's identification effect in the system of hypotheses. Based on the qualitative adapted key findings A and B, the setup of the study can be developed. The corresponding theoretical constructs, their definitions and relationships, and the current status quo of research were already explained in detail from chapter 2 to 5. The following explanations are based on these findings. The theory with its corresponding citations is accordingly not repeated again.

### **Selection of the sender and receiver groups**

Sub-key finding A1 describes the communication process that must take place between the sender and the receiver to initialize a communicative exchange (for the theoretical background, see chapter 3.2.1). An organization contains many different ways of communication and there are, consequently, many different senders and receivers, for example: Vertical communication between the supervisor and the subordinates, horizontal and informal communication between the subordinates, or official communication between different teams, and between the supervisors or the organizational communication with external stakeholders. Accordingly, communication can take place between single persons, or it can take place between groups, or between groups and single persons. Nevertheless, the upcoming study requires a more abstract level in order to ensure that communication is not evaluated in reference to single individuals within the company.

Consequently, the following study will focus on different groups as senders within the organization that have communicative interactions with employees: The first sender group represents the entire organization, the second the organizational function to which the employee belongs, and the third the department level. These various perspectives are

important for gaining a broad overview of the diverse communication sender structures in a company. In the study, the communication climate is the second interesting perspective: The official communication exchange between employees and the informal horizontal communicative exchange between employees, and how both kinds of communication climate affect the identification process. Both perspectives – the formal information-oriented and the informal communication climate – are also examined from a general perspective. The term “climate” indicates that no specific sender group is defined in these two cases, but that the climate of exchange per se takes center stage.

Once again, therefore, it must be stressed that the study will not be executed on a level that enables one to track any kind of single senders’ communication skills, such as the skills of supervisors or subordinates. The more abstract perspective enables one to examine heterogeneous divisions in an organization, which may contain different communication senders. According to the senders’ treatment, the receivers’ evaluation is also examined in groups and not for single individuals. In general, however, the focus lies on the receivers’ receptions and perceptions. Why and how this is the case will be explained in the next paragraph.

### **Communication content and climate evaluated by the degree of satisfaction**

In order to evaluate how communication enables and influences the identification process, the purpose, meaning, and intention of a message plays an important role that can be subsumed under the term “information”. Additionally, the balance of the communication demand between the sender and the receiver for communication satisfaction regarding the content and the communication climate plays an essential role. This was extensively described in the theory chapters 3.2.2, 3.2.3, and 3.2.4 to explain both sub-key findings A2 and A3.

It must be examined how the sender’s transferred information is received by the receiver. This means evaluating how much the receivers – in this study the employees – are satisfied with receiving information regarding the content and the communication climate in the organization. This does not guarantee that the receiver will react in the way the sender desired, but the receiver’s communication satisfaction is an indicator of i) having received as well as ii) in any form having cognitively met the receiver’s expectations regarding the message and, consequently, the receiver’s satisfaction with this transferred information. In general, satisfaction accompanies a previous evaluation process between the employee’s personal expectation and his experienced perception. This process is a kind of role-taking and it is then possible to understand the “other” in an identification process and its transferred message, as well as to understand one’s own expectation and hence the potential similarities and discrepancies. Furthermore, a frequent interactional communication climate also supports a common understanding. Communication satisfaction produces a feeling of being



perceived by the sender as a receiver with the respective communication demands regarding the content and the climate. A high communication content and climate satisfaction shows high overlaps between the employee and the “others” regarding the information-content, above all the organization’s aim, purpose, setup, procedures, job requirements, and regarding the enduring climate-related working environment in which he works.

Therefore, this study focuses on the receiver – not on the sender – in order to answer to what degree communication satisfaction, under consideration of the content and climate, impacts the identification process. No transmitted information about the “other” and no transmitted interactional communication climate mean no possibility for an employee to start an identification process by role-taking. As already introduced, the content is deduced from the three types of senders: i) the entire organization, ii) the organizational function to which the employee belongs, and iii) the department level. The climate is clustered into the official and informal interactional communication exchange in the organization.

### **Satisfaction with the communication-oriented identification climate as indicator for identification processes**

The identification of an employee with the organization can be measured in many different ways – for example via the degree of the employees’ commitment. However, the upcoming study focuses on the degree of satisfaction with the communicated culture and climate in the organization. Furthermore, in order to give recommendations to the principals how to evoke and use employee identity as substitute for monetary incentives, it is necessary to shape a construct which is controllable for the employer.

Just to review: Communication functions as the enabler and influencer of identification processes. It is necessary to transfer content in a communication process so that the employee understands and internalizes the “other” with regard to aim or cultural aspects. Moreover, the interactional communication climate also plays a crucial role because the common understanding of organizational topics and the different functions and roles that the employees have in the company can be transferred and adapted. Both aspects have an impact on the organizational climate with regard to identification, in particular the communication-oriented identification climate that makes up the employees’ shared perception. More specifically: Referring to Tagiuri’s (1968) definition, it can be deduced that satisfaction with the communication-oriented identification climate is an indicator for the adequate internal identifying environment experienced by the employees and influences their behavior – in this case towards the organization with identification processes. Therefore, in the upcoming study the identification process respectively the adequate internal identifying environment experienced by the employee is therefore measured by the degree of satisfaction with the communication-oriented identification climate within a company. Furthermore, deriving from

Tagiuri's (1968) definition, identification climate can be described with characteristics and this is important for shaping the details in the study. This way of measuring identification through the climate facilitates the employers to get a better view of the appropriate identification climate which they would like to create and control up to a certain extend through triggering influencing factors.

On the basis of the last three sub-sections – “Selection of sender and receiver groups,” “Communication content and climate evaluated by the degree of satisfaction,” and “Satisfaction with the communication-oriented identification climate as indicator for identification processes” – it is possible to phrase the first hypothesis:

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

- 1a** the received information content regarding their organization,
- 1b** the received information content regarding their organizational function,
- 1c** the received information content regarding their job,
- 1d** the official interactional communication climate, and
- 1e** the informal interactional communication climate,

the more they are satisfied with the organization's communication-oriented identification climate.

**Recognition levels “rights” and “solidarity”**

Identifying with an organization means not only gaining information about its aim, setup, and procedures and an impression of the interactional communicational climate, but also about the organization's culture, as represented in a three-level hierarchy (adapted key finding B2 – for the theoretical background, see chapter 4.1.1). One elementary aspect of culture is recognition, which affects an employee immediately in his identification process – both on the “rights” and the “solidarity” level, according to Honneth and Mead's statements, as described in the adapted key finding B3 (for the theoretical background, see chapter 4.1.2). Organizational culture is expressed by verbal and non-verbal communication within the organization (adapted key finding B1 – for the theoretical background, see chapter 4.1.1.3). Satisfaction with the organization's cultural attitude towards both recognition levels signifies that one has actively evaluated one's own expectation of recognition and one's perceived experience with the organization's way of transmitting recognition and whether that recognition is valued in the organization. This indicates Schein's three-level construct – the cultural expression to live recognition and the company's deeper laying value to recognize.

### **Recognition level “rights” as one aspect of the “other’s” culture**

The upcoming study also includes these different levels: The cultural norm of being recognized as an equal, free member but with an individual role and function within a company can be categorized into the second level of Schein’s corporate culture theory. So far, the study has examined the recognition level of “rights” through satisfaction with information confidentiality as the upper-lying cultural “artifacts” level, in accordance with Schein’s theory. This is expressed by behavioral and processual, mainly non-verbal communication.

Externals do not receive internal information; there is confidentiality within the organization. Living this differentiation evokes an inside-outside feeling towards an organization. Being recognized as member means in principal possessing equal rights to receive information – except for the kind of information that is linked to a special role and function within a company. Therefore, this study hypothesizes that having a satisfying way for employees to handle confidential information as expression for being recognized as member leads to greater satisfaction with the received information and to a satisfying interactional communication climate. The reason is: The information can then be more structured and valued due to a consciousness of the sensitiveness towards internal and external information policies, who gets which information, and consequently who is recognized in which official function and role and to fulfill the requirements of this role. The study sets out to verify if a higher perception of being member of a group leads to higher communication satisfaction with the received information about the organization itself – more specifically, the organization, the organizational function and the job level – as well with the official and informal interactional communication climate. Adding hypothesis 2 to hypothesis 1 reveals that recognition of membership has a hypothetical indirect influence on the communication-oriented identification climate. However, in this case a direct influence does not seem to be useful because first the employee has to be perceived as member of the organization and then, he is willed to start role-taking based on the respective satisfaction with content and climate. Additionally, the “artifacts”-level of “rights” measures satisfaction with the handling of the confidentiality of information which is a logical link to satisfaction with content and climate. The second hypotheses can now be defined as follows:

#### **2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member, the more they are satisfied with...

- 2a** the received information content regarding their organization,
- 2b** the received information content regarding their organizational function,
- 2c** the received information content regarding their job,
- 2d** the official interactional communication climate, and
- 2e** the informal interactional communication climate.

**Recognition level “solidarity” as a further aspect of the “other’s” culture**

The recognition level “solidarity” expresses the recognition of the individual value an employee has for the organization (adapted key finding B3). This can be measured by the satisfaction with the recognition of job performance. It is expressed by the company - based on the corresponding behavior and offerings for the employee, in detail by verbal and non-verbal communication. If the employee receives information about topics that are related to the cultural habit of appreciating the individual value of the employee for the organization, then the value recognition is lived in the company. This represents Schein’s upper-lying level of culture, namely “artifacts”. In order to be valuable to an organization, an employee should perform according to the organization’s aim, purpose, strategy, and trends, as well as in accordance with his assigned role in the company. The employee therefore needs certain information about company’s aim and strategy: Gaining this information is a prerequisite to knowing how to act.

Following this approach of viewing information as a prerequisite, recognizing a member as valuable for the organization should have a mediating function for the first hypothesis. This means that strong satisfaction with the communication content or climate should lead to a strong satisfaction with one’s recognition as an employee with a valuable individual contribution, and this construct should lead to satisfaction with the communication-oriented identification climate. This is why knowing the “other” through adequate satisfying information content principally enables an employee to perform in a manner that is valuable to the organization. An employee unaware of his organization’s aim or strategy and his own job requirements cannot create such a value for that organization. Since he does not know the target, he also does not know what is valued in his work performance and creative contributions. The communication satisfaction on this level represents that the employees have an individual value for the group that they themselves perceive. Smidts et al. (2001) see a relationship between the communication climate and being valued as employee with his performance: “A positive communication climate is not only rewarding in itself but may also provide information about whether a member is accepted as a valued coworker in an organization” (Smidts et al., 2001, p. 1051). The official interactional communication climate, meanwhile, gives the individual an impression of other departments. Bringing also a value for these departments, there should be a high recognition of the individual value, too. The informal interactional communication climate should also play a role in being perceived as offering a valuable individual contribution, but this relationship should probably be less intensive in comparison to the official interaction climate. Being recognized as member with an individual value for the organization should have a direct influence on the communication-oriented identification climate.

The upcoming study measures recognition as a valuable member for the organization with two different constructs: First, job performance and second, a certain aspect of job performance, namely the employee's contribution based on creative work. On the basis of Elsner's (2013) theoretical findings, both constructs can be related to the category "of organization" – above all to the sub-categories "human manpower" and "measurable performance" (see Table 2). This specific aspect is useful to examine based on the characteristic of the survey participants. The details will follow in chapter 7. The survey participants work in an R&D function.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

- 3a** the received information content regarding their organization,
- 3b** the received information content regarding their organizational function,
- 3c** the received information content regarding their job requirements,
- 3d** the official interactional communication climate, and
- 3e** the informal interactional communication climate,

the more they are satisfied with the recognition of being a member with an individual value for the organization

- 3f** through their personal job performance and
- 3g** through their personal job performance contribution based on creative work.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the organization

- 4a** through their personal job performance and
- 4b** through their personal job performance contribution based on creative work,

the more they are satisfied with the organization's communication-oriented identification climate.

## 6.2 Aggregation to a hypotheses system: The empirical model structure and its model variations I-X

As already indicated in the previous paragraphs, the respective developed hypotheses show some overlaps with regard to single dependent and independent constructs. Some constructs have a dependent function and in parallel, they have an independent one in another hypothesis. This network of relationships must now be formally created and illustrated. The logic between the relations was also already explained and derived from the theory. It is now time to briefly forge a bridge to the theoretical framework:

- The hypotheses system illustrates the determinants organizational communication and culture as well as their mutual relationships with regard to the employee's identification process.
- Mead's role-taking has a direct influence on the identification formation. It is illustrated by five different constructs of satisfaction: i) company information, ii) information about the organizational function, iii) job information, as well as iv) the official and v) informal interactional communication climate.
- The recognition level of "rights" (Honneth's 2<sup>nd</sup> level) is prerequisite to receiving internal information with which an employee can be satisfied. This level of "rights" has no direct relation to the communication-oriented identification climate because first of all, the employee needs the recognition to be recognized as member of the organization and then, he starts role-taking which can lead to identification processes. Furthermore, the "artifacts"-level of "rights" is illustrated in a manner that makes a direct relation useless (confidential handling of information).
- Honneth's recognition level of "solidarity" is dependent on the received information in order to know how value can be achieved for the company. Yet it also directly influences the identification climate.
- The identification process only emerges in an internal satisfying identifying environment. Therefore, the identification process respectively the adequate internal identifying environment experienced by the employee is measured by the degree of satisfaction with the communication-oriented identification climate within a company.

### **Making the hypotheses system measurable**

The defined constructs recognition as a member of the organization, recognition as valuable to the organization, the communication-oriented identification climate, and satisfaction with the information content and climate are all measured on a satisfaction scale. Thereby, verbal and non-verbal communication aspects are integrated into the different constructs, which all influences satisfaction with the communication-oriented identification climate. Following this, the importance of communication – above all communication as an influencing factor/determinant and enabler for the identification process and communication as expression for culture – can be now adequately described and examined in the study. The characteristics of the different levels of culture – represented in the two kinds of recognitions "rights" and "solidarity" – are explained in detail in chapter 8. The different constructs reflecting various communication contents and climates and the two variants of member-value recognition are covered in various model variations.

### Setup of the hypotheses system: The empirical model structure

Figure 6 shows all hypotheses subsumed in one hypotheses system. After creating all possible combinations of the hypotheses, ten model variations emerge. The models I-V include the mediation factor 7, “recognition as a member with a value for the organization regarding job performance”, while the models VI-X have the mediation factor 8, “recognition as a member with a value for the organization regarding the contribution based on creative work”. Comparing the results between the first five variants and the last five variants with their respective, but different, mediation factors enables to discover if such a change implies completely new strengths between the factors or if the developed model structure (hypotheses system) is relatively stable. Furthermore, it is extensively discussed how different role-taking aspects – which are covered in the different empirical model variants – affect an employee’s identification process.

Up to now, no detailed view on how exactly the constructs can be measured has been offered. This will be explained in the following chapter. To outline the figure at this point, however, one can say that the constructs are latent factors that cannot be measured directly. They are behind the observable indicators, which are observable and measurable.

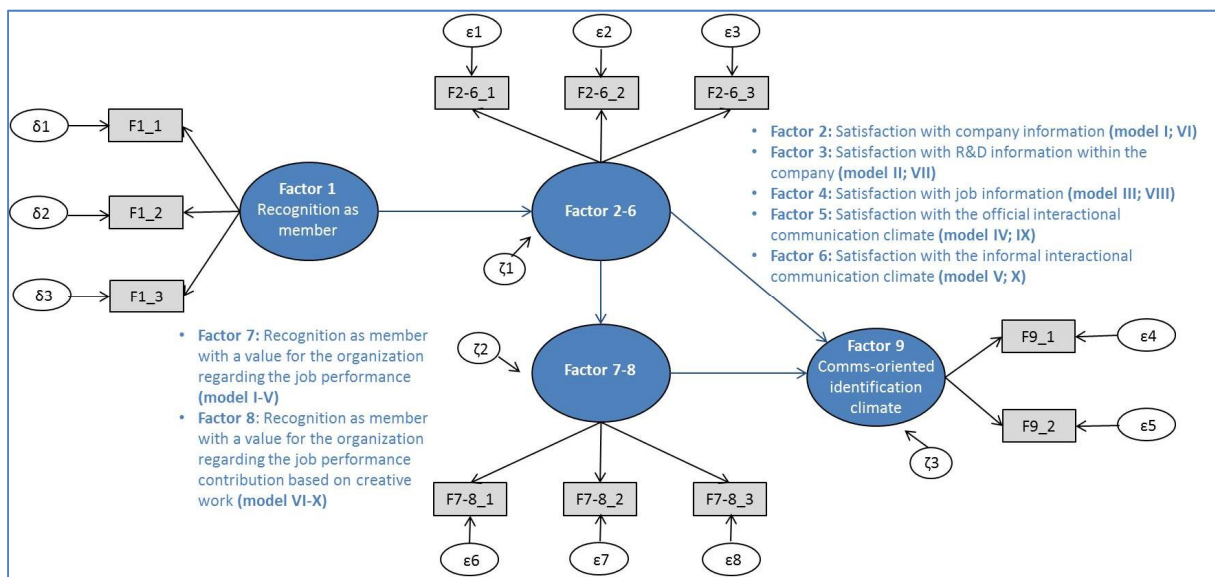


Figure 6: Overview of the model variations in the study (own figure)

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1a** the received information content regarding their organization (factor 2)

**1b** the received information content regarding their organizational function (factor 3)

**1c** the received information content regarding their job (factor 4)

**1d** the official interactional communication climate (factor 5)

**1e** the informal interactional communication climate (factor 6),

the more they are satisfied with the organization's communication-oriented identification climate (factor 9).

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member (factor 1),

the more they are satisfied with...

**2a** the received information content regarding their organization (factor 2)

**2b** the received information content regarding their organizational function (factor 3)

**2c** the received information content regarding their job (factor 4)

**2d** the official interactional communication climate (factor 5)

**2e** the informal interactional communication climate (factor 6).

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3a** the received information content regarding their organization (factor 2)

**3b** the received information content regarding their organizational function (factor 3)

**3c** the received information content regarding their job (factor 4)

**3d** the official interactional communication climate (factor 5)

**3e** the informal interactional communication climate (factor 6),

the more they are satisfied with the recognition of being a member with an individual value for the organization...

**3f** through their personal job performance (factor 7)

**3g** through their personal job performance contribution based on creative work (factor 8).

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the organization...

**4a** through their personal job performance (factor 7)

**4b** through their personal job performance contribution based on creative work (factor 8),

the more they are satisfied with the organization's communication-oriented identification climate (factor 9).



## 7. Study design

### 7.1 Study characteristics

#### 7.1.1 Motivation for this study

As discussed, it is of interest to empirically examine the developed hypotheses system representing factors influencing employee identity formation which were derived from Mead's theory. The empirical deep dive is now set on Mead's third identity dimension identification through communication, role-taking, and recognition, but the dimensions identity components and continual development of identity are not neglected in this thesis's discussion to fully understand the concept employee identity (see chapter 10).

Therefore, a study was conducted in a German DAX company. The focus is on employees in the research and development working area with its different departments. In particular, for this company research and development (R&D) is a fundamental building block to gain profitable and sustainable growth and to tackle the changing market environments and customers' demands. Furthermore, based on the company's long history of groundbreaking innovations, research and development has been deeply embedded into the company's DNA. However, to bring ideas to the level of innovations, the human factor plays a crucial role. In consequence, it is important for a company to be attractive for employees in order to retain bright minds while motivating them to work for the company. One important approach is strengthening the employee's identity ("who am I as employee in the organization?") in order to supplement monetary incentives (see chapter 1). On the basis of these facts, investigating the influencing factors for the formation of employee identity was highly relevant. Then, the company's employers know how to trigger these influencing factors and to foster employee identity formation processes. The assumption that communication could be an important influencing factor was pursued, discussed, and examined right from the beginning of this thesis. In the DAX company, it has become obvious that communication is not simply communication. It differs from various perspectives, and many employees and supervisors have different concepts of and expectations about communication – what it is, how it works, how it emerges. Yet each day, all members of an organization communicate verbally and non-verbally, and not always in a conscious way. Missing sensitiveness on communication per se and the variability of expressing organizational culture with communication can have unintended (negative) consequences. The thesis shall offer a deeper consciousness of the heterogeneity of communication, taking into account the content, the climate and how it expresses organizational culture, and what kinds of communication and culture impact on the identification process of staff members. Therefore, this heterogeneity is represented in the study in model variants. Besides covering this heterogeneity in the study, it is demanded to

get a comprehensive overview of the general relations between these factors which is valid for all variants. The reason is that such a systematical relation shall give guidance for the employers how to enable identity formation in a daily changing organizational environment. Without such a logical system, it is difficult for employers to successfully use employee identity as supplement or even substitute of monetary incentives. This also reasons the deep examined theoretical background in this thesis to strengthen the knowledge of a general relation and not a specific one-case situation. The outcome is of high interest for both the supervisors and the subordinates.

### 7.1.2 General framework and pre-conditions

Before this study was conducted, representatives of the employers as well as representatives of the employees had to approve the examination in the company. In the course of these discussions, some restrictions were formulated that played a crucial role for the final questionnaire and the data collection.

First of all, the study must guarantee the anonymity of single senders, notably supervisors and subordinates. In the company, the different works councils only approved the evaluation under the condition that the communication processes are investigated from a broad perspective and independently from an employee's and a supervisor's work and communication performance. From the beginning, these restrictions have fitted into the study's theoretical developed scope. Therefore, the study's research focus is set not on the senders but on the employees, who are the receivers of communication.

Second, the questionnaire shall not contain direct questions about employees' satisfaction with a) the company, and b) their job, nor direct questions about the employees' commitment or degree of identification. This is because an anonymous internal global employee survey was already conducted on a regular basis every three years, covering similar questions. To avoid similar results based on overlaps between both surveys and to not irritate employees by requiring them to fill out similar questions, the company demanded a different focus. Various aspects of internal communication have never been examined in recent years and were of high interest for the representatives of both employers and employees. Therefore, the study was welcomed.

Third, due to the fact that the majority of employees in the research and development working area are men, the employees' anonymity could be breached by asking for their gender. As a consequence, no question about gender was included in the questionnaire. Additionally, many personal details should also be avoided to guarantee anonymity, or at least the questions about age etc. should have broadly defined ranges.

The fourth restriction was that the survey must be conducted on paper because the company did not approve the university's computer-based standard software.

Based on these presets, the questionnaire could guarantee the company's requirements of anonymity. Other data collection methods such as interviews prerequisite that at least the interviewer and the interviewed person get to know each other. To develop the questionnaire, some expert interviews were conducted to make sure that the theoretical basis would be applicable to the company.

## 7.2 Methodology selection: The Structural Equation Modelling

In the previous chapter, the hypotheses system was developed. To validate such a system with various relationships and levels of measuring observable and latent variables, an appropriate method must be selected. Conventional regression analysis cannot handle latent factors but the method structural equation modeling (SEM) is applicable for such a specific requirement. Moreover, SEMs are used to prove if the theoretical relationships go hand in hand with the empirical data (Backhaus et al., 2013, p. 65). This chapter offers an introduction to the general setup of SEMs, followed by the practical application in the study in chapter 8.

### 7.2.1 Structural Equation Models (SEM): Application area

As already described, the main target of the upcoming study is to empirically test the theoretical relationships that were developed in the theory chapters and summarized in the two adapted key findings A and B. To meet this target, an adequate statistical method has to be selected that allows to prove theoretically examined relationships in advance and to cover the heterogeneity of communication satisfaction, identification, culture, and its aspect recognition in the examination. These mentioned constructs have a special characteristic in common: They cannot be measured directly, they are latent but there are various variables that can be observed and related to the constructs.

Structural equation models belong to the group of statistical methods testing constructed hypotheses based on theoretical considerations of different relationships that are made in advance before starting the empiricism (Backhaus et al., 2013; Anderson and Gerbing, 1988). This means that in a very first step based on logical findings from practice and literature, a hypotheses system is theoretically constructed. Such a theoretical system is then empirically reproduced by the obtained data material. In general, SEMs can solve the challenge of empirical constructs that cannot be directly measured, in fact: The specialty of SEMs is the

existence of underlying latent variables for measurable indicators (MacCallum and Austin, 2000; Backhaus et al., 2013). SEMs are therefore classified into a structural model – representing the relationship between the latent variables - and the measurement models including the indicators. The following illustration (Figure 7) shows an overview of the general possibilities for making different analyses with or without latent variables. The latent variables are the decisive reason for using a method for a causal analysis; otherwise, multiple regression analysis and the path analyses would be adequate methods.

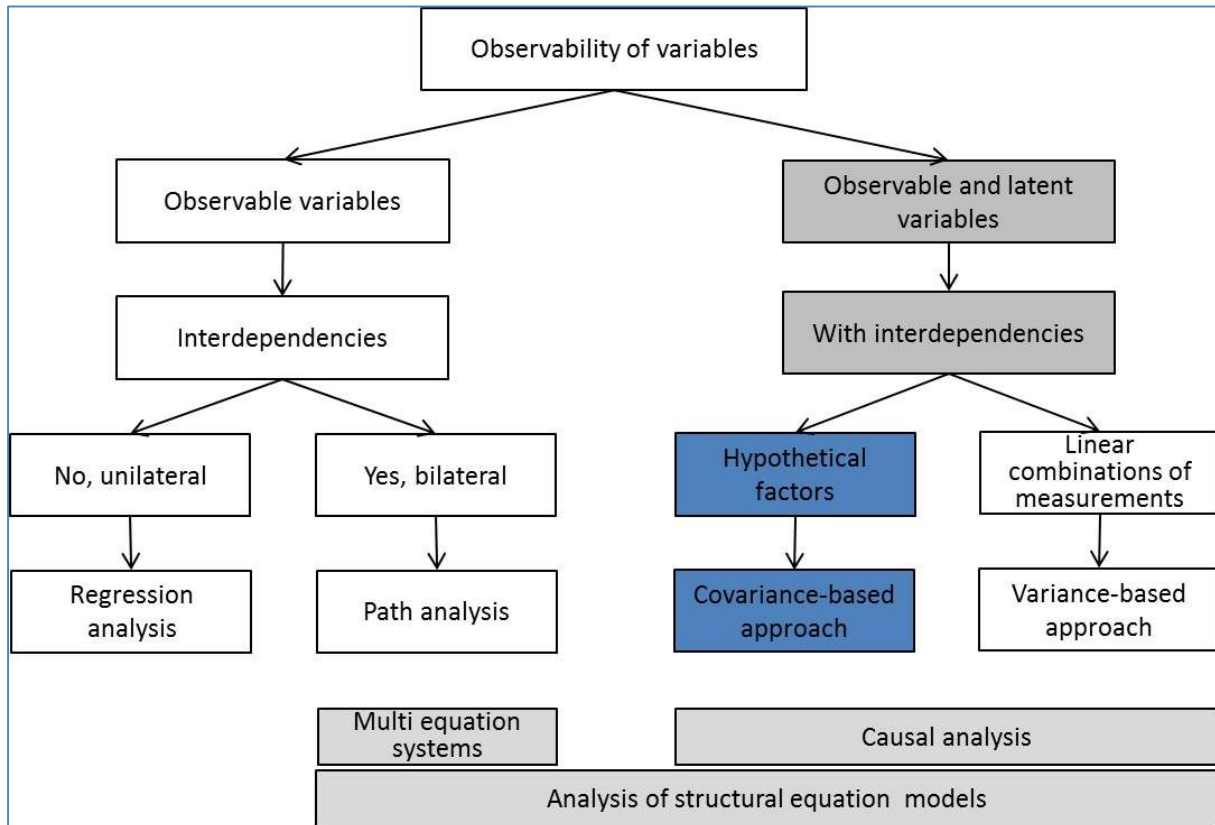


Figure 7: Overview of different analysis possibilities with or without latent variables  
(own figure; based on Weiber and Mühlhaus, 2014, p. 25)

## 7.2.2 Characteristics of covariance-based SEMs

### 7.2.2.1 General structure of SEMs: The structural and measurement models

Every SEM consists of a structural model and two kinds of measurement models, one for the latent exogenous variables  $\xi$  and the one for the latent endogenous variables  $\eta$  (see Figure 8). In the structural model the relationships between the different latent variables are discovered based on the constructed hypotheses. Thereby, the latent exogenous variables  $\xi$  are the

independent ones impacting the latent endogenous and dependent ones  $\eta$  (see Figure 8). Until now, the term “latent variable” has not been specified in detail. However, this is now necessary in order to understand the entire structure of SEMs and their measurements. Latent variables cannot be measured directly; they are constructs reflected by indicators (Urban and Mayerl, 2014, p. 15). Just a few examples of latent variables are: Emotion, intelligence, satisfaction, fear, motivation, and reputation. The latent variables are defined when the verbal hypotheses are transformed into the structural equation model. To complete the latent constructs, the indicators of each latent variable has to be determined. This again requires logical relations between the latent variable and its indicators.

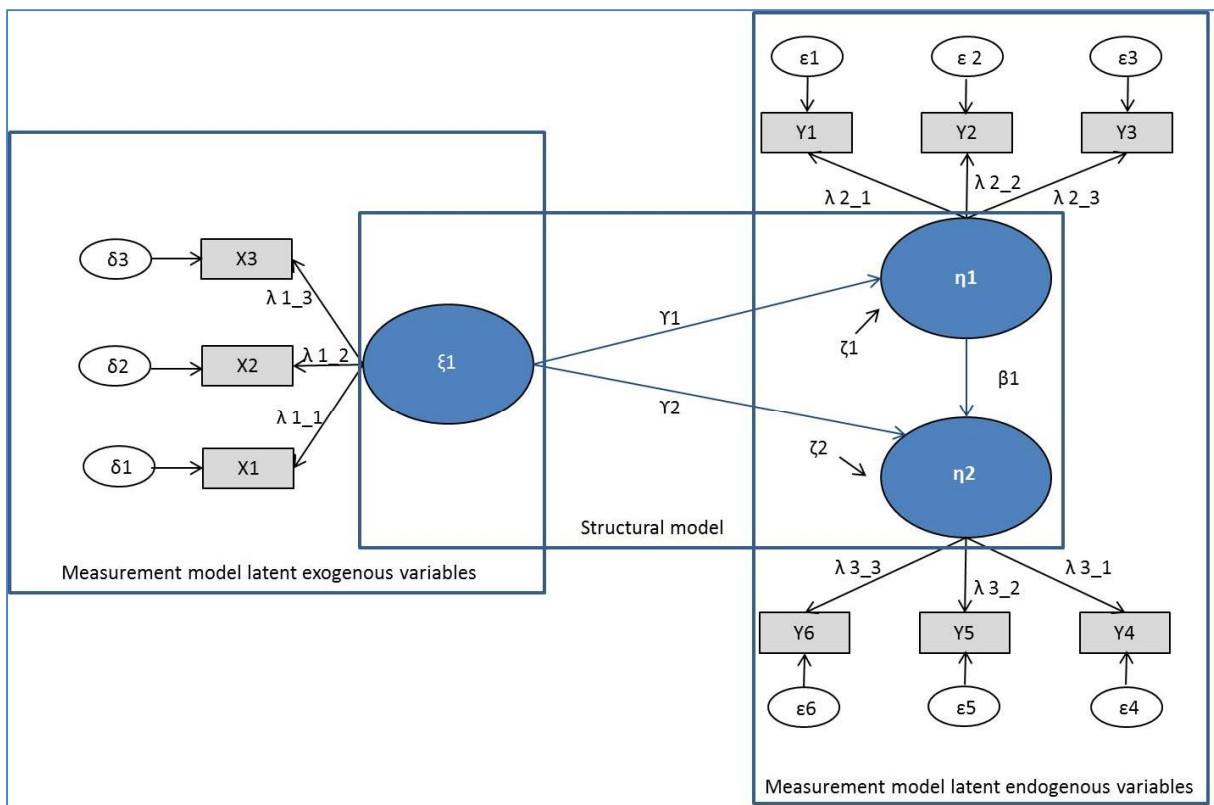


Figure 8: Structure of a structural model (own figure; based on Backhaus et al., 2013, p. 77)

### 7.2.2.2 Reflexive measurement model

Contingent on the theoretical reasons and relationships worked out (see chapter 6) before the study was conducted, the latent variable is independent in relation to its respective indicators. This is called a reflective measurement model (Backhaus et al., 2013, p. 122; Jarvis et al., 2003), which means that it is the causing effect on the indicators. The indicators have high correlations amongst themselves and should be selected in such a way that they express the

entire latent variable construct in the best possible way (Backhaus et al., 2013, p. 123). If the conditions of the latent variable change (e.g. a depression is cured by doctors), this has a strong impact on the correlated indicators (e.g. the symptoms of a depression such as crying, bad mood, or insomnia disappear). Formative measurement models are the other way round: Here, the latent variable is dependent and the indicators are the prevailing factors that influence the latent variable construct (see Figure 9).

According to Backhaus et al. (2013) p. 82, there are four prerequisite assumptions when using SEM analysis with reflexive measurement models (see structural model in Figure 8): First, in a latent variable construct the respective error terms do not correlate with the latent variable, only with the indicators. Second, the error terms of different latent variable constructs also do not correlate among themselves. Third, the error terms of the endogenous latent variable do not correlate with the exogenous latent variable. Fourth, the error terms  $\epsilon$  of the indicators in the latent endogenous constructs, the error terms  $\delta$  of the indicators in the latent exogenous constructs, and the error term  $\zeta$  of the latent endogenous factor do not correlate among themselves.

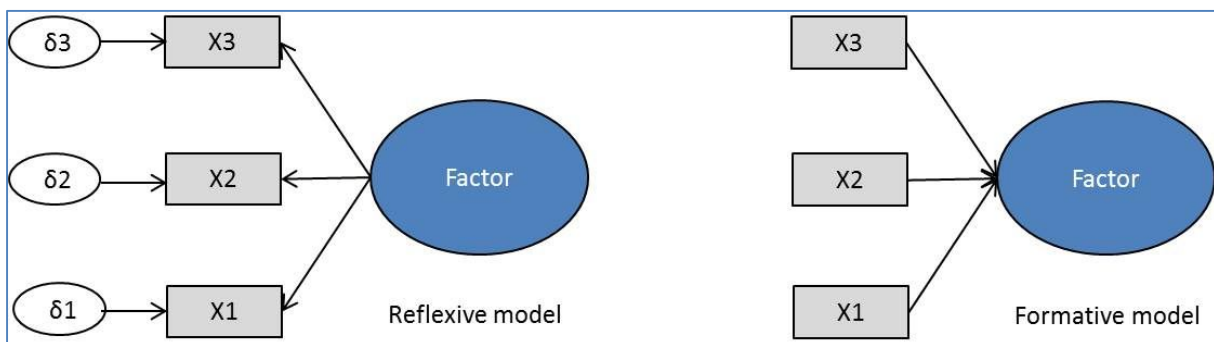


Figure 9: Structure of a measurement model (own figure; based on Homburg and Giering, 1996, p. 7)

### 7.2.2.3 Different estimation approaches in SEMs

For causal analysis, there are two different methods to estimate the model (see figure in chapter 7.2.1): The covariance-based analysis (CB) and the variance-based approach, also called partial least square analysis (PLS). The covariance method is based on general thoughts of the confirmatory factor analysis with a simultaneous estimation of the measurement and the structural model, whereas the PLS is based on a regression analytical approach with a two-step estimation of measurement and structural model (Weiber and Mühlhaus, 2014, p. 74). In general, the CB approach is applicable for testing theories (“hard modelling”) and the PLS approach is more a data predictive method (“soft modelling”) (Weiber and Mühlhaus, 2014,

p. 74). This means, the PLS method is used for new relationships without deeply examined theoretical constructs as a background, predictions play an important role, and the sample size is low (Weiber and Mühlhaus, 2014, p. 74). According to Weiber and Mühlhaus (2014) p.74, the CB approach, however, is applied to examine existing theories that can be globally evaluated by fit criteria, is intended for bigger sample sizes and only applicable for reflexive models. In general, it requires a multi-normal distribution of the variables. For the CB method, the most common algorithm is that of maximum likelihood, which requires a multi-normal distribution, special requirements for the sample size (see next paragraph), and the possibility of applying interference statistics (Weiber and Mühlhaus, 2014, p. 64).

This thesis's aim is to evaluate empirically the already theoretically developed influencing factors. In consequence, the empirically testing of the hypotheses - based on the theoretically explained relations and having the possibility to include latent variable constructs into the model - are the main drivers for using covariance-based structural equation models in the upcoming study. Using the covariance-based approach, the SEM analysis estimates the unknown parameters by adapting the theoretical covariance matrix to the empirical covariance matrix in the best manner (Schermele-Engel et al., 2003, p. 23). The general structure of SEMs with its two different kinds of models, the structural and the measurement model, is also reflected during the estimation process when pursuing the covariance-based approach (for details, see chapter 7.2.3).

### **Bootstrap estimation in covariance-based SEM analysis**

In particular, the requirements for maximum likelihood estimations are often not fulfilled in covariance-based SEM studies, either because the sample size is too low or because the sample is not multi-normally distributed. Fulfilling both criteria are often not realizable in practice. Therefore, a new evaluation technique was demanded and finally developed by Efron (1979). This technique is called "bootstrap" and functions "(...) as a resampling procedure by which the original sample is considered to represent the population. Multiple subsamples of the same size as the parent sample are then drawn randomly, with replacement, from this population and provide the data for empirical investigation of the variability of parameter estimates and indices of fit" (Byrne, 2010, p. 330). The most attractive advantage of using this method is that in practice the sample sizes do not have to be as large as the maximum likelihood method requires (Yung and Bentler, 1994 and 1996; Ichikawa and Konishi, 1995): Even small sample sizes between 20 and 80 are possible to estimate but with a bias-corrected bootstrapping variant – for details, see chapter 7.2.4 (Efron and Tibshirani, 1993; MacKinnon et al., 2004; Shrout and Bolger, 2002). The reason behind this is "(...) its 'automatic' refinement on standard asymptotic theories (e.g., higher-order accuracy)" (Yung and Bentler, 1996, p. 223).

In general, the sample size plays an important role during the estimation process. One reference of an adequate sample size is the ratio between the sample size and the number of indicators in a structural equation model. According to Kline (2011), the ratio should be at least 5:1 or better 10:1 (sample size : numbers of indicators). According to Backhaus et al. (2013), the sample size should be five times higher than the numbers of estimated parameters or the difference of both should be higher than 50. Having a too small sample size during a maximum likelihood estimation process runs the risk of getting inflated global fit indices to evaluate SEM models such as the  $\chi^2$ -values (Byrne, 2010; Marsh et al., 1988) (see chapter 7.2.3.1.3 for an introduction to the global fit indices). Bootstrapping avoids this (Byrne, 2010) and therefore, bootstrapping offers an advantage of handling small sample sizes in SEMs. Moreover, further global fit indices are also not calculated in a correct way with the maximum likelihood estimation, when the variables have no multivariate distribution. In particular, the global fit indices TLI and CFI are underestimated (Byrne, 2010) (details of both global fit indices see chapter 7.2.3.1.3). In this case, bootstrapping also provides a solution to estimating a non-normal distributed data set to get correct global fit indices and standard errors. This is a further advantage of bootstrapping (see Byrne, 2010; West et al., 1995; Yung and Bentler, 1996). Bootstrapping enables one to get more accurate standard errors at a non-multinormally distributed sample than with the maximum likelihood method (Ichikawa and Konishi, 1995).

It must be tested if the data set is multivariate distributed or not. Pre-requisition of a multivariate normality in the data set is a univariate distribution of the variables. While measuring the univariate normality, this means that the skew and the kurtosis range between -1 and 1 (Temme and Hildebrandt, 2009). In contrast, Kline (2011) defines a critical value higher than three for the skew and a critical value higher than ten for the kurtosis. Another range for the results is revealed by West et al. (1995): Skew values  $\leq |2|$  and kurtosis values  $\leq |7|$  are acceptable. After checking the univariate normality of the data set, multivariate normality has to be examined. A common method for this is the Mardia index. In literature, the cutoff values for the Mardia index are the same as for univariate normality; yet Bentler's (2006) examination proved that the multivariate distribution is still valid below three. Byrne (2010) enhanced the cutoff and postulated the critical ratio at five. Boosma and Hoogland (2001) discovered that the maximum likelihood algorithm is robust unless there is a little deviation from the normal distribution.



### 7.2.3 Evaluation of covariance-based SEMs

#### 7.2.3.1 Evaluation of the measurement models

Considering that a structural equation model consists of two different kinds of models, the structural and the measurement model, both must be evaluated. Therefore, on the one hand the measurement models are in the foreground to examine because each latent construct has to be evaluated. One important aspect is thereby if the respective indicators of each latent variable are in fact influenced by the latent variable. On the other hand, in the structural model the hypothesized relations between the single latent variable constructs are tested.

Evaluating measurement models requires an examination at the level of the indicator and the latent measurement construct to verify reliability and validity. Reliability indicates the consistency of a measurement. This means that under consistent conditions repeating the measurement various times, the results should not differ and contain no error (Backhaus et al., 2013, p. 90). Thereby, the reliability is a "(...) necessary (but not sufficient) condition (...)" for validity (Peter, 1979, p. 6). "In a general sense, validity refers to the degree to which instruments truly measure the constructs which they are intended to measure" (Peter, 1979, p. 6). In the best case, the validity has no random error. According to Homburg and Giering (1996), Hildebrandt (1984), Weiber and Mühlhaus (2014), and Hildebrandt and Temme (2006), validity has various aspects:

- **Content validity:** Ascertains if all relevant facets for a factor are represented in the indicators; it can be evaluated by experts (Weiber and Mühlhaus, 2014, p. 157).
- **Criterion validity:** Reflects if there are overlaps between the measured construct and an external criterion (Weiber and Mühlhaus, 2014, p. 157).
- **Construct validity:** Consists of three aspects, the discriminant, convergence, and nomological validity (for definitions, see Homburg and Giering, 1996, p. 7; Weiber and Mühlhaus, 2014, p. 159). Discriminant validity indicates if the various constructs (factor and respective indicators) are significantly different. Convergence validity illustrates if the measurements of a construct agree with different methods that have an extreme different methodological focus (e.g. quantitative vs qualitative). Nomological validity informs if the relationships between the constructs can be explained based on theories.

In order to prove the reliability and validity of measurement models in SEMs, different statistical methods have been developed over the last decades. The content validity is examined through a qualitative analysis. Additionally, a general logical scheme for quantitatively testing reliability and validity was developed for SEMs. Thereby, psychometrical measurements and the explorative as well as the confirmatory factor analysis are applied (see

Weiber and Mühlhaus, 2014 for the following summary): The first step of the analysis aims at evaluating, for each single construct, the relationship between the factor and the indicators. In consequence, unfitting indicators can be eliminated. Moreover, psychometrical measurements and explorative factor analysis are the methods to use for gaining a first indication of the reliability and validity. These evaluative criteria can be summarized as first-generation criteria. The second step includes the second-generation evaluation criteria, which are received by the application of the confirmatory factor analysis. The aim is to get final results regarding the reliability and validity of each construct and the model fit itself. The third step is the causal analysis, essentially the evaluation of the SEM, to evaluate the relationships between the latent constructs and the model fit itself. Figure 10 summarizes the testing scheme.

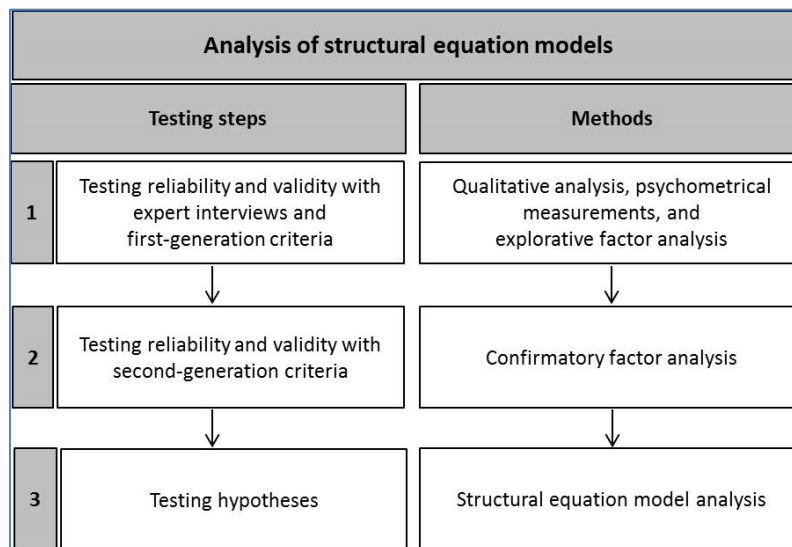


Figure 10: Testing scheme for covariance-based SEMs (own figure)

### 7.2.3.1.1 Content validity of the measurement models: Qualitative analysis

The qualitative analysis's purpose is to discover which indicators are influenced by the latent factors and which are applicable for the survey environment (e.g. special requirements to examine an organization in a certain industry). For example, guided expert interviews are selected as the appropriate qualitative methodology (Weiber and Mühlhaus, 2014, p. 157). In general, qualitative instruments for data collection have a more explorative character than quantitative examinations (Mey and Mruck, 2010). Qualitative research utilizes various methodologic approaches, such as interviews or participatory observations and field studies (Przyborski and Wohlrab-Sahr, 2014). In particular, how an interview is conducted varies

broadly – just to introduce three contrary approaches: A complete narrative style, in which the interviewee speaks while the interviewer is initially more in the background; and a systemic interview, in which the interviewer guides the interviewee to take on different roles to relate how a situation was perceived by different attendees; and the expert interview (Mey and Mruck, 2010).

The expert interview is as such a guided interview openly conducted but with a determined order of questions (Helfferich, 2014). Thereby, the peculiarity is that the expert is only an expert for the research area, not an overall or general expert (Littig, 2008). The expert's knowledge is linked to his official function, not to his private opinion (Wassermann, 2015). There are two different interests of expert knowledge: Either the expert belongs to the target group or he belongs to a complementary group that understands the target group (e.g. a teacher understands the behavior of pupils) (Meuser and Nagel, 1991). Being an expert in the first category means informing the interviewer about one's own sphere of activity, whereas being in the complementary group the expert shall give information about the target group's context (Meuser and Nagel, 1991). Examining the target group to which the expert belongs serves to generalize the received knowledge (Meuser and Nagel, 1991). A guided interview should find an appropriate balance between openness and determined structure: On the one hand, the interviewed person should have the chance to express himself in various ways in order to reveal his way of thinking and range beyond strict answers to the questions asked, and on the other hand the focus of the interview and the research aim must be met as well (Helfferich, 2014). Therefore, it is recommended to begin the interview as openly as possible, followed by targeted requests and follow-up questions about the interviewee's statements in order to fulfill the research's purpose, and finally moving on fixed questions (Helfferich, 2014).

#### **7.2.3.1.2 Testing measurement models – Part I: First-generation criteria**

First-generation criteria are calculated and evaluated with the methods of explorative factor analysis and psychometrical measurements. In this paragraph, the description of the explorative factor analysis is based on Weiber and Mühlhaus (2014): The aim of the first-generation criteria is to evaluate which indicator-factor combination fits (e.g. to determine the number of indicators and factors). The purpose of the exploratory factor analysis is to discover factors influencing a bundle of correlating indicators. However, testing a measurement model as part of a covariance-based SEM means preceding an *ex ante* approach that defines the factor-indicator relationships because of theoretical insights (Weiber and Mühlhaus, 2014). Consequently, in this case using the explorative factor analysis means proving that the *ex ante*-defined single factor is the factor influencing the set of predefined

indicators (one-dimensionality) (Weiber and Mühlhaus, 2014, p. 132). Furthermore, indicators that are not sufficiently loading to the factor are noticed and can then be eliminated. The discovering functionality of the explorative factor analysis per se is not relevant because the relations between indicator and factor are theory driven. In order to test the one-dimensionality of each latent factor, it is possible to examine each one separately (Weiber and Mühlhaus, 2014, p. 132). There are two assumptions underlying explorative factor analysis: That the measurements can have measurement errors and that the correlations between the indicators and the factor are caused by the factor (Weiber and Mühlhaus, 2014, p. 133). Therefore, the estimation technique “principal axis factoring” is recommended with a PROMAX rotation during the explorative factor analysis (Weiber and Mühlhaus, 2014, p. 133).

### **Testing the set of indicators regarding its structure**

Based on the explorative factor analysis, the correlation matrix informs about the single correlations between the indicators. However, the Kaiser-Meyer-Olkin criterion (KMO) – also called the measures of sampling adequacy (MSA) criterion – indicates to which extent the right set of indicators bundled to execute a factor analysis (Backhaus et al., 2011, p. 342). In consequence, it will become clear whether it makes sense to apply a factor analysis. The KMO should have a minimum value of 0.6 (Kaiser and Rice, 1974). Values  $\geq 0.6$  are mediocre, values  $\geq 0.7$  middling, values  $\geq 0.8$  meritorious, and values  $\geq 0.9$  marvellous (Backhaus et al., 2011, p. 343).

Besides examining the selection of indicators and their bundling, it is also relevant to prove if one or more factors influence the bundle. To gain more information in this area, the Kaiser criterion calculates the number of factors. More factors mean splitting the bundle of indicators. Kaiser refers to the eigenvalues of the correlation matrix being adequate to the sum of the squared factor loadings; the amount of eigenvalues greater than 1 represents the recommended number of factors (Kaiser, 1974).

### **Testing reliability**

Different methods can be applied to test the measurement equivalence to get results of reliability. One important criterion is Cronbach’s alpha; another relevant one is the item-to-total correlation. Cronbach’s alpha proves the reliability at the construct level, whereas the item-to-total correlation proves it at the indicator level.

The Cronbach’s alpha measures “the internal consistency of a multi item scale” (Peterson, 1994, p. 382). It is often used as “the” method to measure reliability and is praised as “(...) the first measure one calculates to assess the quality of the instrument” (Churchill, 1979, p. 68). Alpha can range between 0 and 1, whereby a minimum value of 0.7 is recommended (Nunnally

and Bernstein, 1994, p. 252). Yet just two items relating to a factor have a lower Cronbach's alpha value than more items (Peterson, 1994, p. 382).

### Cronbach's alpha:

$$\alpha = \frac{k}{k-1} \left( 1 - \frac{\sum_{i=1}^k \sigma_i^2}{\sigma_t^2} \right)$$

$k$  = number of parts (usually items) in the scale

$\sigma_i^2$  = variance of item  $i$ , and

$\sigma_t^2$  = total variance of the scale

(formula and index: Peter, 1979, p. 8)

The item-to-total correlation measures the correlation between one single indicator and the total score of all indicators of a factor. Consequently, it can be ascertained if one item is not consistent and should be eliminated (Churchill, 1979). When one possesses a little sample of indicators for one factor, it is recommended to interpret the corrected item-to-total correlation. The examined indicator is then not included in the sum of the variable  $x_s$  (Weiber and Mühlhaus, 2014, p. 139). Both criteria can reach a value between 0 and 1. The threshold is at least 0.5 (Weiber and Mühlhaus, 2014, p. 139).

### Corrected Item-to-Total Correlation:

$$\text{Corrected Item - to - Total Correlation } (x_i, x_s) = \frac{\text{cov}(x_i, x_{s*})}{\sigma_{xi} \sigma_{xs*}}$$

$x_{s*}$  = sum of the variables,  $j= 1, \dots, l$  for  $l \neq j$

$\sigma_{xi}$  = standard error of variables  $x_i$

$\sigma_{xs*}$  = standard error of the scale  $x_{s*}$

$\text{cov}(x_i, x_s)$  = covariance between the variable  $x_i$  and the scale  $x_{s*}$

(formula and index: Weiber and Mühlhaus, 2014, p. 139; based on Nunnally, 1967, p. 262)

### **Testing validity**

As already introduced, different aspects of the validity of latent constructs must be considered in order to judge in a valid way, whether the instruments in fact measure the constructs. The content validity should be approved by experts (Cronbach and Meehl, 1955, and see chapter 7.2.3.1.1). There are no statistical measurements. In particular, the item-factor relationship should be examined by experts.

First indicative results on the discriminant and convergence validity can be received by factor loadings but both validities can only be adequately proved with the second-generation criteria. Each indicator shall have a minimum loading of 0.4 (Homburg and Giering, 1996, p. 12), in which case an indicator can be explicitly associated with a factor. Additionally, the variance explained by the factor is a further criterion for validity. The variance should be at least 50% (Homburg and Giering, 1996, p. 12).

Table 3 shows a summary of the first-generation evaluation criteria.

First-generation criteria	Evaluation standard	Sources
<b>Indicator set</b>		
Kaiser-Meyer-Olkin-criterion (KMO or also called MSA)	$\geq 0.6$ mediocre $\geq 0.7$ middling $\geq 0.8$ meritorious $\geq 0.9$ marvellous	Backhaus et al., 2011
Kaiser criterion	eigenvalue > 1 indicating a more than one-factor structure	Kaiser, 1974
<b>Reliability</b>		
Cronbach alpha	0.7	Nunnally and Bernstein, 1994
Corrected-Item-to-Total-Correlation	0.5	Weiber and Mühlhaus, 2014
<b>Validity</b>		
Content validity	approved by experts	Cronbach and Meehl, 1955
First impression of discriminant and convergence validity:		
Indicator factor loading	0.4	Homburg and Giering, 1996
Factor variance	0.5	Homburg and Giering, 1996

Table 3: First-generation evaluation criteria (own table)

### 7.2.3.1.3 Testing measurement models – Part II: Second-generation criteria

The first-generation evaluation criteria cannot produce valid results of error terms and the different aspects of validity (Weiber and Mühlhaus, 2014, p. 143). An additional measurement is necessary. Developed by Jöreskog (Jöreskog, 1967 a and b), the confirmatory factor analysis is the method to get answers on the second-generation evaluation criteria. Consequently, final results are received regarding the reliability and validity of each latent construct and the whole model fit itself. Reflexive models are the pre-requisite; it is not possible to prove formative models with this method (Backhaus et al., 2013, p. 123). In general, the purpose of a confirmatory factor analysis is to evaluate latent variable constructs, meaning – amongst other things – testing their measurement models (Backhaus et al., 2013, p. 120). As a logical consequence, the confirmatory factor analysis is an integral part of evaluating structural equation models.

The fundamental theorem of the confirmatory factor analysis determines a relationship between the empirical correlation matrix ( $R$ ) and the factor loading matrix ( $A$ ):  $R = A \Phi A'$ . The aim is to estimate the factor loading matrix in such a way that the empirical correlation matrix of the indicators is optimally reproducible (Backhaus et al., 2013, p, 125). Figure 11 gives a general overview of the structure and the terminology of a confirmatory factor analysis. The setup and terms are very similar to the already introduced terminology of SEMs (compare Figure 8 in chapter 7.2.2.1).

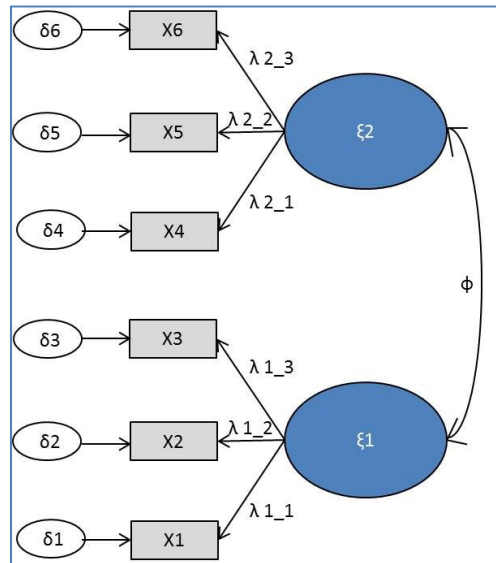


Figure 11: Overview of an exemplary, generic confirmatory factor analysis construct (own figure)

The indicator variables are largely, but not fully, explained by the latent variable. This is illustrated by error variables  $\delta$ . In Figure 11, the  $\phi$  represents the correlation between the two latent factors. Successfully calculating the equation system requires the identifiability of the model. This is assumed when the amount of estimating parameters  $t$  is equal to or less than  $\frac{1}{2} p(p + 1)$ , with  $p$  = number of observable variables (indicators) (Backhaus et al., 2013, p. 133).

### Reliability

Confirmatory factor analysis enables to target three different aspects of reliability (Weiber and Mühlhaus, 2014, p. 150): Indicator reliability, factor reliability (also called composite reliability), and the average variance extracted (AVE).

The indicator reliability is proved and interprets the indicator's variance explained by the construct. It is also called "squared multiple correlations" (SMC) and is calculated as follows:

Indicator reliability:

$$\text{indicator reliability } x_i = \frac{\lambda_{ij}^2 \phi_{jj}}{\lambda_{ij}^2 \phi_{jj} + \theta_{ii}}$$

$\lambda_{ij}$  = estimated factor loading

$\phi_{jj}$  = estimated variance – latent variable  $\xi_j$

$\theta_{ii}$  = estimated variance of the error term (when considering standardized solution =  $1 - \lambda_{ij}^2$ )

(formula and index: Weiber and Mühlhaus, 2014, p. 150)

Values of at least 0.4 indicate a good reliability (Bagozzi and Baumgartner, 1994, p. 402). If the threshold of an indicator variable is not reached, before eliminating this indicator, a significant relation to the factor can be interpreted as the minimum requirement (Weiber and Mühlhaus, 2014, p. 150; Hildebrandt and Temme, 2006, p. 629).

The reliability must be checked even at the construct level. For each latent variable construct, the factor reliability and the average variance extracted (AVE) indicate how well a latent variable is reflected by their indicators (Zinnbauer and Eberl, 2004, p.7). The factor reliability measures the systematical common variance of an indicator set used for the estimation of a latent construct (N.N., Hogrefe – online Lexikon der Psychologie: Faktorreliabilität, n.d.). “The AVE estimate is the average amount of variation that a latent construct is able to explain in the observed variables to which it is theoretically related” (Farrell, 2010, p. 324). Both criteria are calculated as follows:

Factor reliability:

$$\text{factor reliability } \xi_j = \frac{(\sum_{i=1}^k \lambda_{ij})^2 \phi_{jj}}{(\sum_{i=1}^k \lambda_{ij})^2 \phi_{jj} + \sum_{i=1}^k \theta_{ii}}$$

$\lambda_{ij}$  = estimated factor loading

$\phi_{jj}$  = estimated variance – latent variable  $\xi_j$

$\theta_{ii}$  = estimated variance of the error term (when considering standardized solution =  $1 - \lambda_{ij}^2$ )

(formula and index: Homburg and Giering, 1996, p. 10)



Average variance extracted:

$$AVE \xi_j = \frac{\sum_{i=1}^k \lambda_{ij}^2 \phi_{jj}}{\sum_{i=1}^k \lambda_{ij}^2 \phi_{jj} + \sum_{i=1}^k \theta_{ii}}$$

$\lambda_{ij}$  = estimated factor loading

$\phi_{jj}$  = estimated variance – latent variable  $\xi_j$

$\theta_{ii}$  = estimated variance of the error term (when considering standardized solution =  $1 - \lambda_{ij}^2$ )

(formula and index: Homburg and Giering, 1996, p. 11 and compare Fornell and Larcker, 1981, p. 46)

The most common cut-off values in the literature are values of at least 0.6 for the factor reliability (Bagozzi and Yi, 1988, p. 82) and values of at least 0.5 for the AVE (Fornell and Larcker, 1981, p. 46). According to Homburg and Giering (1996), the factor reliability and the AVE are more important for evaluating the model per se than the indicator reliability.

**Validity**Criterion validity:

Considering the criterion validity: In practice, measuring this kind of validity is relatively complex because external criteria are missing (for details see Weiber and Mühlhaus, 2014, p. 168). Therefore, this validity is not measured.

Construct validity:

Different approaches may be pursued to evaluate the construct validity and its aspects i) the discriminant, ii) convergence, and iii) nomological validity. Comparing the AVE of two factors with the squared multiple correlations (SMC) between those two factors enables one to obtain information about the discriminant validity. This comparison is called the Fornell-Larcker criterion and indicates that the AVE values of both latent variable constructs are higher than the squared multiple correlation between them (Fornell and Larcker, 1981).

In practical applications it is not easy to find two extremely different measurement methods to measure convergence validity. Therefore, Fornell and Larcker (1981), p.46 made use of an auxiliary tool: An AVE of at least 0.5 implies convergence validity.

The nomological validity informs about the theoretical relationships between the latent constructs. This can only be proved by calculating the structural equation model. A good model fit, the hypothesized paths between the latent constructs and the estimates of the parameters indicate nomological validity (Weiber and Mühlhaus, 2014, p. 161).

The following table gives an overview of the reliability and validity criteria – evaluated with the confirmatory factor analysis. According to Fritz (1992) and Homburg and Baumgartner

(1995), it is not necessary to reject a model if not all criteria exceed the threshold. At least half of the variables should do so.

Second-generation criteria	Evaluation standard	Sources
<b>Reliability</b>		
Indicator factor loading	at least significant and/ or $\geq 0.6$	Weiber and Mühlhaus, 2014; Hildebrandt and Temme, 2006
Indicator reliability	$\geq 0.4$	Bagozzi and Baumgartner, 1994
Factor reliability	$\geq 0.6$	Bagozzi and Yi, 1988
Average variance extracted (AVE)	$\geq 0.5$	Fornell and Larcker, 1981
<b>Validity</b>		
Convergence validity	AVE criterion	Fornell and Larcker, 1981
Discriminant validity	AVE > squared correlations between the latent factors	Fornell and Larcker, 1981

**Table 4: Summary of relevant second-generation evaluation criteria (own table)**

### Global fit indices

After identifying the reliability and validity of the measurement models, the model fit has to be determined by the confirmatory factor analysis. Thereby, the global fit indices evaluate how the estimation of the parameters leads to a best possible adaptation of the theoretical variance-covariance matrix to the empirical variance-covariance matrix. The goodness of fit statistics has different key approaches and key indicators.

Global fit indices evaluate the whole model to test whether or not it is acceptable. They can be differentiated into inference-statistical and descriptive-statistical evaluation methods (criteria). The most common inference-statistical method is the likelihood-ratio-test, also called  $\chi^2$ . It "(...) represents the discrepancy between the unrestricted sample covariance matrix  $S$ , and the restricted covariance matrix  $\Sigma(\theta)$  (...)" (Byrne, 2010, p. 75). The smaller the difference is, the lower the  $\chi^2$  value will be. This test can be compared with the Chi-square goodness of fit test; consequently, the null hypothesis is tested against the alternative hypothesis (Weiber and Mühlhaus, 2014). However, the test output can only be adequately applied all the time if (Weiber and Mühlhaus, 2014, p. 204): (1) the sample is multivariate distributed and the estimation is a variance-covariance based, and (2) the sample size is large but not too large (Jöreskog and Sörbom, 1993; MacCallum et al., 1996). Another inference-statistical evaluation criterion is the Root-Mean-Square-Error-of-Approximation (RMSEA) by Steiger and Lind (for more details, see Steiger, 1990).

In order to tackle these requirements, there are some different solutions: On the one hand, the "Hoelter test" indicates how big the sample size can be at the maximum value where the model is still accepted based on the  $\chi^2$  statistic at the significance level  $\alpha = 0.01$  and  $0.05$

(Hoelter, 1983). On the other hand, the  $\chi^2$  statistic itself can be changed slightly and used as a descriptive-statistical evaluation criterion: The  $\chi^2$  value is divided by the degrees of freedom (Wheaton et al., 1977). An indication of a good model fit is a calculated ratio of lower than or equal to 2.5 (Homburg and Baumgartner, 1995, p. 172) or, less restrictively, lower than or equal to 3.0 (Homburg and Giering, 1996, p. 13).

Chi-Square as descriptive criterion (CMIN):

$$\frac{\chi^2}{d.f.}$$

$\chi^2$  = Chi-Square value of the model (CMIN)

d.f. = number of degrees of freedom

(formula and index: Weiber and Mühlhaus, 2014, p. 205)

The descriptive-statistical evaluation criteria's purpose is to evaluate if it is possible to neglect the existing differences between the empirical and the model-theoretical variance-covariance matrix (Weiber and Mühlhaus, 2014, p. 208). Simulations discovered the cut-off values of the different criteria for a good model fit but it must be noted that they are not inference-statistical tests and consequently they are independent from sample size and the requirement of a multivariate distribution (Weiber and Mühlhaus, 2014, p. 208). Descriptive criteria are the  $\chi^2/d.f.$  and the Standardized Root Mean Square Residual.

The Standardized Root Mean Square Residual (SRMR) is an absolute criterion that focuses on the empirical and the theoretical variance-covariance matrices:

Standardized Root Mean Square Residual:

$$SRMR = \sqrt{\frac{2 \sum \sum \frac{(s_{ij} - \sigma_{ij})^2}{s_{ii} s_{jj}}}{p(p+1)}}$$

$s_{ij}$  = empirical variance-covariance of the variables xij

$\sigma_{ij}$  = model theoretical variance-covariance of the variables xij

p = number of indicators

(formula and index: Weiber and Mühlhaus, 2014, p. 210)

An acceptable cut-off value is lower than 0.1 (Backhaus et al., 2013, p. 148). According to Hu and Bentler (1999), the value has to be lower than 0.8.

In contrast to the SRMR, the Normed Fit Index (NFI), Tucker Lewis Index (TLI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and the Relative-Noncentrality Index (RNI) are comparative criteria. They compare the structural equation model with the independence model, which is an extreme model, namely: It “(...) is one of complete independence of all variables in the model (i.e., in which all correlations among variables are zero) and is the most restricted. In other words, it is a null model, with nothing going on here as each variable represents a factor” (Byrne, 2010, p. 73). Consequently, these indexes shall indicate a great difference between the independence model and the examining (structural equation) model (default model) to verify that the (structural equation) model offers a strong improvement regarding the model fit. Cut-off values are at least 0.9 for an acceptable model fit (Weiber and Mühlhaus, 2014, p. 215; Homburg and Baumgartner, 1995, p. 168). In the following, the formula of the CFI (Comparative Fit Index) and IFI (Incremental Fit Index) are presented. Unless the comparative criteria are generally more robust towards the sample size, Hu and Bentler (1999) discovered that besides the RMSEA the TLI also shows a limited sensitivity towards it.

#### Comparative Fit Index:

$$CFI = \left| \frac{(\chi_0^2 - d.f._0) - (\chi_k^2 - d.f._k)}{(\chi_0^2 - d.f._0)} \right|$$

$\chi_0^2$  = Chi-Square of the independence model

d.f.<sub>0</sub> = number of degrees of freedom (independence model)

$\chi_k^2$  = Chi-Square of the default model

d.f.<sub>k</sub> = number of degrees of freedom (default model)

(formula and index: Urban and Mayerl, 2014, p. 95)

#### Incremental Fit Index:

$$IFI = \frac{\chi_B^2 - \chi^2}{\chi_B^2 - d.f.}$$

$\chi_B^2$  = Chi-Square of the independence model

$\chi^2$  = Chi-Square of the default model

d.f. = number of degrees of freedom (default model)

(formula and index: Weiber and Mühlhaus, 2014, p. 215; and see Bollen, 1989)

The following table gives an overview of the main global fit indices. In light of the fact that there are many different global fit indices, which one is the right one to use? Hu and Bentler (1999), for example, recommend using the CFI, IFI, or RNI in combination with the SRMR when the sample size is small,  $n \leq 250$ . In contrast: A combination of the TLI and RSMEA “(...) is tended to reject more simple and complex true-population models under the nonrobustness condition” (Hu and Bentler, 1999, p. 28).

Moreover, it must be emphasized that the cutoff values for the fit indices are rules of thumb (Marsh et al., 2004), not inference statistical tests.

Global fit indices	Evaluation standard	Sources
Chi-Square / d.f. (CMIN / d.f.)	$\leq 2.5$	Homburg and Baumgartner, 1995
	$\leq 3.0$	Homburg and Giering, 1996
SRMR	$\leq 0.1$	Backhaus et al., 2013
CFI	$\geq 90$	Homburg and Baumgartner, 1995
IFI	$\geq 90$	Bollen, 1989

Table 5: Summary of relevant global fit indices (own table)

### 7.2.3.2 Evaluation of the Structural Equation Model

After evaluating the measurement models of the latent constructs in an SEM, it is necessary to evaluate the entire structural equation model. Therefore, the relationships between the single latent variable constructs must be changed from correlative (double arrow) relations in the confirmatory factor analysis to explicit, causal directions and causal relations in the SEM. The influences of the exogenous latent variables on the latent endogenous variables can then be measured and the theoretical relationships can be confirmed or negated. To interpret the results of a calculated SEM, the following details must be considered (Weiber and Mühlhaus, 2014, p. 227ff):

- The relationship (plus or minus signs) between the latent exogenous and the latent endogenous constructs should be coincident with the relation hypothesized in advance.
- The standardized regression weight between a latent exogenous and a latent endogenous construct must be significant.
- Moreover, it is recommended that the standardized regression weights should be higher than 0.2 for a meaningful interpretation (Chin, 1998a, p.8)
- The direct, indirect, and total effects that were also postulated in advance should be significant in order to confirm relations in the SEM model (for details on these effects, see the next chapter).

- The variances of the latent endogenous factors (comparable with the coefficient of determination in regression analysis) are higher than at least 0.19 for a weak explanation, at least 0.33 for a moderate one, and equal or greater than 0.66 for a substantial one (Chin, 1998b, p. 323). These recommendations were originally for PLS approaches, but can be applied to covariance-based models as well (Weiber and Mühlhaus, 2014, p. 230)
- Beyond these criteria, the global fit indices must also be interpreted in order to confirm a good model fit. The fit indices are the same as for the confirmatory factor analysis and are therefore not introduced again (see previous chapter).
- Based on the global fit indices and the verified hypothesized relationships in the model, the nomological validity can then be proven.

#### 7.2.4 Mediation in SEMs

In SEMs, mediator effects are very often of interest to analyze. In general, mediator variables mediate a relationship between an independent variable and a dependent variable (Iacobucci, 2007). Or, to use Baron and Kenny's wide-spread definition: "(...) the mediator function of a third variable, which represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest" (Baron and Kenny, 1986, p. 1173). In an SEM, the mediators are also latent variable constructs. There are different ways to ascertain if a true mediation effect exists. One very well-known and very often used method is the step-by-step method by Baron and Kenny (Baron and Kenny, 1986) and the Sobel test (Sobel, 1986). During the last decades measuring the mediation effect, in particular the significance of the indirect effect, uncovered some weaknesses in Baron and Kenny's method (Shrout and Bolger, 2002): On the one hand, there has to be a significant relationship between the independent and the dependent variable without taking into account the mediator (see Figure 12). On the other hand, in the mediator model the paths  $a$  and  $b$  must be significant as well; if path  $c'$  is still significant, they call it a partial mediation – if not, a total mediation. The indirect effect is calculated as  $a \times b$ , and just calculating the results of  $a$  or  $b$  produces in the so-called direct effects. The total effect is the sum of  $c' + a \times b$  (Shrout and Bolger, 2002).

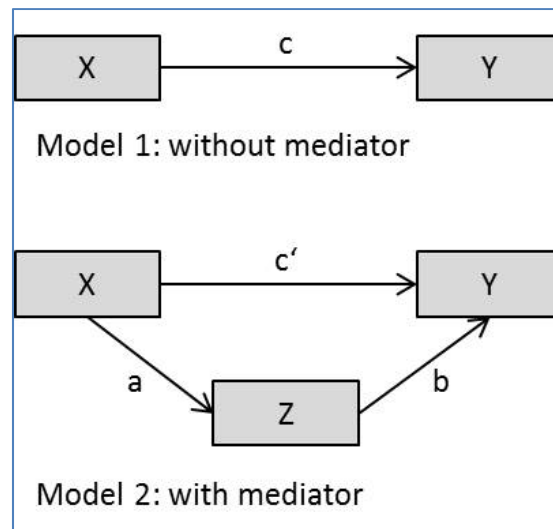


Figure 12: Mediation analysis

(own figure, referred to Shrout and Bolger, 2002, p. 423, and Baron and Kenny, 1986, p. 1176)

Furthermore, this method assumes a normal distribution of the sample. However, recent studies showed that this characteristic is often violated – either from the beginning or at the latest after calculating  $a \times b$ : MacKinnon et al. (1995) frequently discovered non-normally distributed results from  $a \times b$ . Additionally, this product “(...) rather is often asymmetric with high kurtosis” (MacKinnon et al., 2002, p. 90). This leads to a weak statistical power that is based on a normal distribution. In addition, this statistically weak power effect is strengthened by the following facts: a) small sample size and b) moderate effect size (MacKinnon et al., 2002). Consequently, further methods to examine mediation effects were developed. A comprehensive overview of several methods is given in the papers from MacKinnon et al. (2002 and 2004).

One method that is independent from normal distribution assumptions and is applicable to small to large sample sizes is bootstrapping (for the functionality of bootstrapping, see chapter 7.2.2.3). It is an adequate and very often used method of investigating mediator effects (Preacher and Hayes, 2004 and 2008; Shrout and Bolger, 2002; Preacher et al., 2007; Cheung and Lau, 2008). Cheung and Lau (2008) extended MacKinnon’s et al.’s (2002 and 2004) research and recommended using the bootstrapping variant “bias corrected” in comparison to the variant “percentile” to discover suppression effects in SEMs. Suppression effects emerge when single paths have an opposite sign, e.g., path  $a$  is positive and  $b$  or  $c'$  is negative. A comparison of different mediation methods also proved the quality of confidence intervals based on bootstrapping, in particular when biased corrected. Shrout and Bolger (2002) ended up preferring confidence intervals to significance tests in order to determine the significance of the direct, indirect, or total effects. To test the significance of the indirect effect, it is no longer necessary that both direct single paths  $a$  and  $b$  are significant; it is acceptable to have

only one significant path and the other part lying close to significance (Cheung and Lau, 2008) – in contrast to Baron and Kenny’s method.

Moreover, when using bootstrapping with a small sample size – meaning between 20 and 80 (Efron and Tibshirani, 1993) – it is recommended to interpret the bootstrap results in a bias-correcting way (MacKinnon et al., 2004; Shrout and Bolger, 2002) to produce valuable information about the significance by interpreting the confidence intervals. This bias correction can compensate for the lack of a normal distribution (Efron and Tibshirani, 1993). This method “corrects for bias in the central tendency of the estimate. This bias is expressed by  $\hat{z}_0$ , which is the z score of the value obtained from the proportion of bootstrap samples below the original estimate in the total number of bootstrap samples taken. In other words,  $\hat{z}_0$  is the z score of the percentile of the observed sample indirect effect. The upper confidence limit was then found as the z score of  $2\hat{z}_0 + z_{1-\omega/2}$  and the lower limit was  $2\hat{z}_0 + z_{\omega/2}$ ” (MacKinnon et al., 2004).

### 7.3 Factor measuring and data collection

#### 7.3.1 Development and validation of new measures in organizational research

In order to transfer Mead’s theory into the structural equation model, the measurements of the model must be accordingly selected. This chapter provides an overview of the development and validation of new measures in organizational research followed by the next chapter how the latent factors are measured in literature and then deduced for this thesis’s study.

The general approach to develop and validate new measures for structural equation models can be summarized in 10 steps (MacKenzie et al., 2001). First of all, each construct has to be conceptually described that its representation is clear, its type of property, its unique type of attributes, and consequently its differentiation from other related and or similar constructs (Nunnally and Bernstein 1994; MacKenzie et al., 2001; Schwab, 1980). Hinkin (1995) emphasizes the impact of the construct’s definition for all succeeding steps in the validation process. This step contains a review of literature, how the respective constructs were already measured and input from expert interviews (MacKenzie et al., 2001). For this thesis, step one is applied in chapter 6 based on the theoretical framework in the chapters 2-5. After having defined the construct, the second step encompasses the generation of items while considering all important issues for the construct and while minimizing the tackling of other constructs with the created items (MacKenzie et al., 2001). Furthermore, the factors must be defined as reflexive or formative. In this study, the process and the details are described in the chapters 7.3.3, 7.3.4, and 8.3.



The third step clarifies content validity – in particular, if the item reflects the construct and, if all items fully represent the construct (Kerlinger, 1973; Straub et al., 2004). One possibility to examine the affiliation of the item to the construct is provided by Hinkin’s and Tracey’s (1999) method: Here, the item-construct relation is weighted by test persons. Anderson and Gerbing (1991) recommend selecting these persons based on the examining population. Moreover, the method “sorting” is a further useful instrument to get information on the correct match between items and the respective constructs by test persons (Lenzner et al., 2014). For this study, the process is described in chapter 7.3.4.

In the fourth step, the measurement model is formally specified: “This is complicated by the need to set the scale of measurement and to ensure that the parameters of the model are all identified” (MacKenzie et al., 2001, p. 306f). The fifth step and the sixth step contain the psychometric evaluations to get statements on the psychometric properties of the scale, the scale purification, namely the selection or omission of items, and the factors itself via convergent, discriminant, and nomological validity as results of the developed questionnaire (MacKenzie et al., 2001). Details on these testing procedures of factor structures are theoretically described in the chapters 7.2.3.1.2 and 7.2.3.1.3 and the results of the study can be summarized in the chapters 8.3, 8.4, and 8.5. Step 7 focuses on the reestimation of the measurement model when items were added or reworded (MacKenzie et al., 2001). If items were only omitted, then data from the same test sample can be used. The eighth step of construct validation “(...) is to evaluate whether responses to the scale behave as one would expect if they were valid indicators of the focal construct” (MacKenzie et al., 2001, p. 317). This includes group-examinations of the correct reflections of the constructs, discriminant and nomological validity (for the study, see summary in chapter 9). The steps 9 and 10 focus on the cross validation of the scale that the scale can be used for different populations and the development of norms in order to facilitate the interpretation of scores (MacKenzie et al., 2001). For developing new scales these steps are can be found in further studies in organizational research (see next paragraph).

### 7.3.2 Existing measures in organizational research

Many different concepts are qualitatively and quantitatively examined regarding the employees’ attitudes, feelings, and perceptions – for example job satisfaction, commitment, job characteristics and roles, the fit between the person and the organization or about values (Fields, 2002). Moreover, how to measure communication satisfaction, identity and identification within and of organizations is also researched. Forman and Whetten (2016) review the current way of measuring the construct organizational identity while focusing on

the identity of organizations. They actively separated their study from individual identity and identification processes and how those can be measured. However, measuring identification of employees is relevant for this thesis's study.

In the field of individual identification with an organization, some scales were developed unless there is still a current inhomogeneity of defining organizational identification as a wide spanning concept (Edwards and Peccei, 2007). Pioneers were Brown (1969) and Hall et al. (1970). In 1983, Cheney published the Organizational Identification Questionnaire (OIQ) (Cheney, 1983). "In particular, the 25 items cover a very wide range of themes, though many of which (e.g., involvement, pride, loyalty, and desire to stay) are not clearly linked to Cheney's original conceptualization of the construct" (Edwards and Peccei, 2007, p. 28). This means that there are doubts on the OIQ's validity (Edwards, 2005). Furthermore, there are overlaps with the construct commitment (Miller et al., 2000). In 1992, Mael and Ashforth introduced their 6-item scale which is frequently used for measuring organizational identification (Riketta, 2005). Their intention was to shape the cognitive element of identification (especially shared common goals and self-categorization): Both distinguish between organizational identification and the concept commitment (Mael and Ashforth, 1992). Though, according to van Dick (2001) the cognitive aspects are too neglected and according to Abrams and de Moura (2001) they criticize many "public expressions of identification" (Abrams and de Moura, 2001, p. 137). Later, Mael and Tetrick (1992) extended the original 6-item scale. Their approach contains that identification is independent of evoking identification-based actions by the employee as consequence during work (Mael and Tetrick, 1992). Nevertheless, this scale is still frequently applied in the context of social identity theory and the validity of this scale was examined as follows. Based on literature research they conducted a pilot study with 161 undergraduates and shortened their original 30-item scale to 10 items. The value of the coefficient alpha estimate of internal consistency is 0.76. The oblimin and varimax rotation reveals 2 factors, one for shared experiences with 6 items and the other one for shared characteristics with 4 items. In the next step, they conducted a confirmatory factor analysis based on the responses of 235 individuals in order to analyze the two-factor versus one-factor structure. Furthermore, they quantitatively checked the differences between organizational identification and the other constructs job satisfaction, job involvement, organizational commitment and organizational satisfaction. The last step contained a model comparison analysis between different model variants. As result: Organizational commitment and organizational identification are different constructs.

Furthermore, two researchers measured organizational identification with a graphical measure (Shamir and Kark, 2004). Their intention was to integrate "oneness" between the individual and the organization into the scale (Shamir and Kark, 2004, p. 116). They tested this one item scale with different companies and university departments with approximately 2000

individuals. According to Edwards and Peccei (2007) this rather unconventional approach also suffers on reliability and validity problems due to measuring only one item. Based on the experiences and problems of the other scales Edwards and Peccei (2007) developed a 6-item scale – covering the three dimensions i) self-categorization and labelling, ii) sharing organizational goals and values, and iii) sense of attachment, belonging, and membership of the organization. They tested their scale twice within one year in NHS mental health with confirmatory factor analysis and the comparison of different models. Furthermore, they made additional confirmatory factor analyses to examine the distinctiveness between organizational identification and commitment.

### **Measuring communication satisfaction**

In literature, many studies have examined both the right methodology to measure communication satisfaction through a survey and the impact of communication satisfaction on different factors. Furthermore, the influences on communication satisfaction also take center stage. In 1977, Downs and Hazen developed the prominent communication satisfaction questionnaire (Downs and Hazen, 1977). They developed this scale with a three-step-method. Based on an extensive literature review, they created a scale of 88 items which was tested with 181 employees of different companies across the United States. Afterwards, the results were examined with a varimax rotation factor analysis and an item validity analysis. In the second step, the eight revealed factors were constructed with the respective loading items and then tested in 4 different companies by a questionnaire. Again, one factor analysis succeeded, and the results show broad agreements of the four companies regarding the factor-item combinations. The third step evaluated the correlation between these factors and job satisfaction. The eight factors by Downs and Hazen have been scrutinized from time to time. Crino and White (1981) also agreed on these, whereas Gray and Laidlaw (2002) differentiated only into two factors, covering the informational and the relational aspect. The test-retest reliability has a score of 0.94 (Downs and Hazen, 1977). Rubin et al. (1994) confirmed the construct validity of the CSQ again.

Other standard questionnaires were also developed in this decade, such as the ICA Audit Survey (Goldhaber and Rogers, 1979), the Organizational Communication Development audit questionnaire (Wiio, 1977), or the Organizational Communication Scale (Roberts and O'Reilly, 1973), which all include minor aspects of communication satisfaction in their standard questionnaires. Every questionnaire has its specific focus: Down and Hazen's questionnaire predominantly concentrates on different dimensions of communication satisfaction and additionally relates them to job satisfaction, whereas Wiio's survey relates many different aspects of communication with the reached output of the original goals. Hargie and Tourish's (2004) ICA questionnaire sets a focus on the received and desired amount of information. In

general, the developed questionnaires cover different parts of communication, which for example range from quality and climate to the right choice of channels, personal communication, hierarchical communication, and communication about the workplace, organization, and so on.

### 7.3.3 Factor measuring in this study

The quantitative analysis is primarily based on a reliable and validated questionnaire and extended to some new items that were not contained in the original questionnaire in order to fully cover the application of Mead's theory in the organizational context. The testing procedure for the new scales is oriented on the 10-step procedure.

As described in the previous paragraph, the communication satisfaction questionnaire (CSQ) by Downs and Hazen (1977) is one of the central instruments to measure communication satisfaction. This questionnaire is divided into eight different factors and their respective indicators. The factors are: General organizational perspective, organizational integration, personal feedback, relationship to superiors/ supervisors, horizontal and informal communication, relationship with subordinates, media quality, and communication climate. The purpose of this instrument is to evaluate the communication system in an organization and where organizations potentially still have room for improvements (Goldhaber and Rogers, 1979; Hargie and Tourish, 2004; Zwijze-Koning and de Jong, 2007). Consequently, "(...) it is less suitable for specific communication problems (...)" but it is "(...) an appropriate instrument for gaining overall insights into the way employees evaluate aspects of organizational communication (...)" (Zwijze-Koning and de Jong, 2007, p. 261). Many studies have already been conducted based on the CSQ (Clampitt and Downs, 2004). Communication satisfaction is measured with a 7.0 satisfaction scale ranging from very dissatisfied to very satisfied. In particular, the general approach to communication and the measuring of communication satisfaction were the decisive reasons why the CSQ served as the basis for the upcoming study to transfer Mead's theory as close as possible. Furthermore, the CSQ encompasses relations between communication and identification which is an important topic for the thesis's study. Large companies often have a more complex structure and department-specific organizational structure than smaller companies. Therefore, it was avoided to include too specific characteristics that are only relevant for one of the departments in the organizational function R&D and not valid for all the other R&D departments in the organizational function R&D. Accordingly, the setup of the questionnaire was shaped in such a comprehensive way that the specific organizational structures of each department do not tackle communication issues in order to make the results well comparable between the single departments. This means,

explicit questions about specific information channels in one department or the evaluation of single communicators such as team/ department leaders were not examined. Following this, the evaluation of the results is more situation-independent and indicates more general perceptions and satisfactions to one factor. This was strongly required by the company (survey restrictions see chapter 7.1.2). The CSQ offers an appropriate way of gaining such answers. In accordance with the company's pre-conditions (chapter 7.1.2) and the focus of this study, some factors of the CSQ cannot be applied, such as personal feedback, relations to superiors/ supervisors, or the relationship with the subordinates. Moreover, for the upcoming study the relevant aspects of recognition were not addressed in the CSQ which is one of the essential parts in Mead's theory. Therefore, to fully cover the focus of this study, other existing questionnaires were evaluated in the communication field (see previous paragraph: short introduction to other questionnaires) and in the culture and climate field (James et al, 2008; Tracey and Tews, 2005; James and James, 1989). Furthermore, in order to also comply with the company's requirements, however, communication satisfaction in relation to the "rights" and "solidarity" level of recognition as one part of organizational culture and in relation to the communication-based identification climate has also not been fully represented in other questionnaires yet. In consequence, some new items were developed to target all theoretical aspects under the premise that the focus is still communicatively expressed recognition through satisfaction with received information. The focus should be less on the generated items about the personal feelings regarding recognition (often measured with agreement scales in climate research – see a review by James et al., 2008). Additionally, the functional organizational level (R&D function) was also not included in the CSQ – just the overall company level and the job level. However, all three levels are necessary in order to reflect Mead's role-taking aspects in the study. The new created items are based on the results of the theory chapters and on the received information of the six expert interviews. Thereby, the focus was also set on measuring satisfaction with the communication content and the climate as in the CSQ – above all the official and informal interactional communication climate within the company. Moreover, high attention was operated to maintain a very similar ductus and wording style of the CSQ for the new created items. The same scale was used for all indicators. It is the 7.0 satisfaction scale in the CSQ.

### **7.3.4 Survey development and pretest**

The 10-step approach to validate the new measures was applied during the survey development (see chapter 7.3.1). Thereby, step 1 was extensively examined with Mead's theory and its adaptation for the organizational environment (see chapter 6 and the

theoretical framework). For the second step: Based on the guided expert interviews and the CSQ, a first set of indicators was created and arranged to the respective factors. The experts were employers and employees working in the R&D function and they were selected according to their R&D experience in companies to give valid expert statements. In detail: The experts cover a broad range of age, length of working in the R&D function, years of being employee in the DAX company, and are employees in one of the three main R&D areas. Mead's central argument is that significant communication is relevant for identification (see theory chapter 2). Role-taking can be empirically shaped by satisfaction (see theory chapters 3.2.3 and 3.2.4). In order to represent Mead's theory as close as possible in the empirical model in line with employee identity acting as substitute for monetary incentives, the item generation is strongly covered by satisfaction of received information and the communication climate in the company. In consequence, during the expert interviews the experts were e.g. asked about aspects of the current organizational literature - see theory chapters (communication content and climate, respect, solidarity, and identification climate). After having clarified the understanding and perspectives on these just mentioned concepts for themselves and the company, their statements were extended to questions about if, how and what is communicated in the company related to those concepts. Following this, the experts were asked about communication satisfaction and the identification climate – their perceptions and expectations. Thereby, the focus was also on the different levels – central information or person-related information in order to better classify the experts' statements. Then, it was possible to derive factor-related information topics and topics which are not in this thesis's focus. Although the experts were selected based on a wider range of characteristics (age, ...), there were many agreements with existing literature and amongst each other (summarized results of the expert interviews see chapter 8.4). As result, a first set of indicators was arranged: Besides general topics in companies, there are specific company and function-related topics to consider. Furthermore, the frequent agreements of the expert interviews with current research stress that the factors are measured with common item-topics in research but re-formulated in such a way that satisfaction communication can be measured to empirically shape Mead's theory.

The survey language is German, so a translation of the relevant CSQ items was produced and professionally checked. The structure of the questionnaire and the wording of the items was determined and adjusted according to the recommendations by Homburg (2012) and Porst (2011). The wording shall be simple, neutral, and clear (Homburg, 2012, p. 316). Furthermore, the structure of the items shall be transparent and plausible (Homburg, 2012, p. 316). The third and fourth step of the measurement validation was included into the first part of the pretest. The pretest had two parts. During the first part, a combination of the pretest methods

of “probing” (for details, see Willis, 2014) and “sorting” (for details, see Lenzner et al., 2014) was selected as appropriate, and for the second part the method was just “probing”. In order to ascertain if the indicators could be related to the respective factor, the six interviewed experts and six further R&D employees in the company were asked to structure the catalogue of items to the respective factors. The purpose of this first pretest was to find out if some indicators could not be matched correctly, which factor was not easy to understand or redundant for elimination in the final survey version, and if the six experts rediscover their original statements from the expert interview (“sorting” – Lenzner et al., 2014). This catalogue was also scrutinized regarding content, selection of the item answer, and item wording with the aid of interviews with the pretest participants. The purpose of this method is to gain more information how the survey participants evaluate the items and how they understand the items content-wise (“probing” – Willis, 2014). Furthermore, attention was still paid to the observance of the general presets (see chapter 7.1.2).

After this review, a structured questionnaire was developed and tested during the second part of the pretest, with 20 additional persons (R&D employees and university staff members) considering the item wording, response behavior, and the questionnaire design (method “probing”). In consequence, it was possible to get a further assessment of the factors and the corresponding items if these relations are also perceived by the additional pretest persons. Again, the general relations from common research between factor and related items was also approved by the further participants of the pretest. To get a comprehensive view on the designed questionnaire, the 12 persons of first step of the pretest also run through the second step. In total, 32 persons participated in the pretest to get valid statements concerning the survey.

In general, the insights of the pretest led to slight wording adjustments of some items and the sequence of items in the questionnaire. After finalizing the questionnaire, the official approval to conduct the survey in the company was then received. Then, the study was conducted in the company. Originally, it was planned to make a quantitative pretest, but it was only allowed to ask R&D people. To get an acceptable threshold of participants for a quantitative pretest, this would have led to too many overlaps between pretest participants and survey participants (190 invitees for the survey) which was problematic to motivate them twice for the pretest and the study. Furthermore, it was not allowed to make the pretest with further employee groups and, other employee groups cannot really evaluate R&D topics. Based on these restrictions the two parts of the pretest and the extensive literature research shall compensate the quantitative pretest. The steps 5-7 for validating the measurements are proceeded with the main sample and not with the forbidden test sample. All results of the validation process are provided in the chapters 8. The steps 8 and 9 were cross-checked with group examinations with the main sample. The development of this scale was clearly focused

on Mead's theory and for the DAX company. Therefore, the norm development cannot be provided (step 10).

### 7.3.5 Participants

While the company's research & development function is inter-divisional, the individual departments are either officially based in the one or the other division. The different research & development department heads informed their German-speaking employees that conducting the survey was officially approved and that participation would be absolutely voluntary and anonymous. The questionnaires were then sent out in envelopes. The average duration to fill in the questionnaire was about 20 minutes. In total, 190 employees of the research and development function received a questionnaire. 147 participants answered but as four persons only answered some of the items, only 143 questionnaires could be used for the analysis. The participation was about 77% - a noticeably high value. The details on the personal items are summarized in the following table:

<b>Data structure</b>			
<b>Number of analyzed questionnaires (1 per participant): 143 (absolute and in percentages)</b>			
<b>As employee numbers of years in the company:</b>			
0-5 years	6-15 years	16-30 years	> 30 years
48 (34%)	40 (28%)	49 (34%)	6 (4%)
<b>Numbers of years as employee in the R&amp;D function (sum of all companies an employee has worked for):</b>			
0-5 years	6-15 years	16-30 years	> 30 years
52 (36%)	57 (40%)	33 (23%)	1 (1%)
<b>Age:</b>			
25-35 years	36-50 years	51-60 years	> 60 years
35 (25%)	76 (53%)	30 (21%)	2 (1%)
<b>Educational background:</b>			
Engineering	Natural sciences	Business administration	Other
106 (74%)	36 (25%)	1 (1%)	0 (0%)
<b>University degree:</b>			
yes	no		
135 (94%)	8 (6%)		
<b>PhD degree:</b>			
yes	no		
69 (48%)	74 (52%)		

Table 6: Data structure (own table)



## 8. Results of the study

The following chapters present the results of the first-generation criteria. Subsequently, the results of second-generation criteria and the SEM analysis are illustrated, interpreted, and discussed for each model I-X.

### 8.1 Analysis approach for the tested model variations I-X

In chapter 6, the hypotheses system was developed and summarized in one structural equation model (SEM). This model has ten different variants, but the structure between the latent factors is always the same. Furthermore, in each model variant the parameter restrictions are the same. The latent construct that represents satisfaction with content and interaction climate varies from variant to variant. This means that the indicators of the respective communication satisfaction factor are adapted. In consequence, the different aspects of role-taking and their strength of the empirical effects can be examined. Moreover, these role-taking variants are tested with two different mediation factors. This enables to get an impression if whether the developed model structure is relatively stable regarding the interdependencies or whether there are many changes in the strength and direction of the relations when measurement models change. Based on the model variants, it is possible to make statements if Mead's theory is applicable in different situations in the R&D function of an organization and consequently can act as guideline how identification processes are fostered. Figure 13 gives an overview of all ten models and their variants followed by the overview of all hypotheses. The study's empirical results for these models are presented in this chapter. The findings are prepared and structured according to the step-by-step process for testing SEMs introduced in chapter 7. The first step is the analysis of the psychometrical measurements and the explorative factor analysis. The results are presented in chapter 8.3. The second step is the confirmatory factor analysis and then the third step is the analysis of the structural equation model itself. The results of both steps are presented directly in tandem for each of the ten variants of the hypotheses system in chapter 8.4 and 8.5.

Based on these results, it is possible to analyze the different models with their respective influencing factors considering the content and climate satisfaction – depending on the mediation factor 7 or 8 (see chapter 8.4.6 and 8.5.6). The interpretations to which extend the communication-based identification climate is influenced in each model, are illustrated, too.

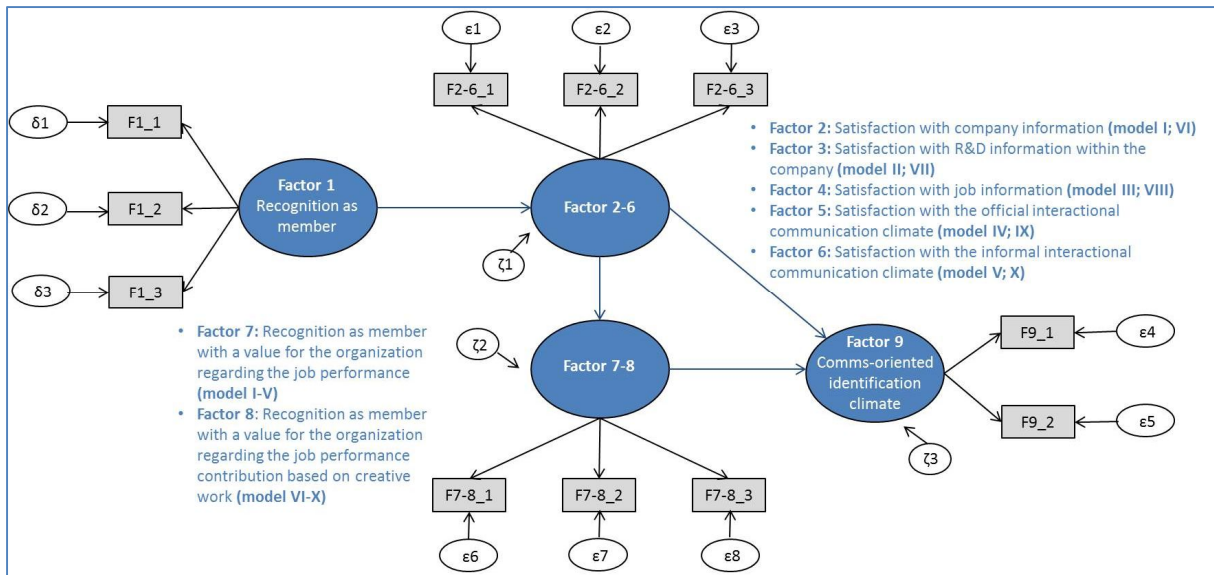


Figure 13: Overview of the analyzed models I-X (own figure)

### 1<sup>st</sup> hypothesis:

The more the employees are satisfied with...

**1a** the received information content regarding their organization (factor 2)

**1b** the received information content regarding their organizational function (factor 3)

**1c** the received information content regarding their job (factor 4)

**1d** the official interventional communication climate (factor 5)

**1e** the informal interventional communication climate (factor 6),

the more they are satisfied with the organization's communication-oriented identification climate (factor 9).

### 2<sup>nd</sup> hypothesis:

The more the employees are satisfied with the recognition of being part of the organization as a member (factor 1),

the more they are satisfied with...

**2a** the received information content regarding their organization (factor 2)

**2b** the received information content regarding their organizational function (factor 3)

**2c** the received information content regarding their job (factor 4)

**2d** the official interventional communication climate (factor 5)

**2e** the informal interventional communication climate (factor 6).

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3a** the received information content regarding their organization (factor 2)

**3b** the received information content regarding their organizational function (factor 3)

**3c** the received information content regarding their job (factor 4)

**3d** the official interactional communication climate (factor 5)

**3e** the informal interactional communication climate (factor 6),

the more they are satisfied with the recognition of being a member with an individual value for the organization...

**3f** through their personal job performance (factor 7)

**3g** through their personal job performance contribution based on creative work (factor 8).

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the organization...

**4a** through their personal job performance (factor 7)

**4b** through their personal job performance contribution based on creative work (factor 8),

the more they are satisfied with the organization's communication-oriented identification climate (factor 9).

## 8.2 Analysis details based on data structure

Chapter 7 introduced and discussed the methodology's theoretical details. At the beginning of the result chapters 8.3, 8.4, and 8.5 – for the measurement models, the confirmatory factor analysis, and the SEM analysis respectively – the details of methodological characteristics are presented. This section only mentions the common characteristics and presumptions for applying this methodological approach.

- **Software:** The analysis was done with SPSS and SPSS Amos 23.
- **Sample size:** Referring to 143 responses, the model structure has an appropriate size with a ratio of 5:1 or better 10:1 for the ratio sample size versus numbers of indicators (for more details, see Kline, 2011):  $10 \times 11$  (indicators) = 110. Consequently, the sample size should be at least 110 for model I-IV and VI-IX. For the models V and X, the requirement is similar:  $10 \times 12$  (indicators) = 120. The real sample size is 143 and the requirements are accordingly fulfilled. See chapter 7.2.2.3 for the theoretical background.
- **Multivariate distribution and estimation technique:** The dataset was examined considering the univariate and multivariate distribution. The multivariate tests for all 10 models showed that the requirement of a multivariate distribution is violated for the maximum likelihood estimation (cut off values see chapter 7.2.2.3). Therefore, the standard errors were bootstrapped and applied. Additionally, examining mediation structures and direct relations require then bias-corrected bootstrapping. This approach is executed based on the chapters 7.2.2.3 and 7.2.4.

	Model I	Model II	Model III	Model IV	Model V
<b>Skew interval</b>	[-0.334; 0.263]	[-0.334; 0.183]	[-0.797; 0.263]	[-0.334; 0.263]	[-0.967; 0.263]
<b>Kurtosis interval</b>	[-0.922; 0.562]	[-0.964; 0.562]	[-0.922; 0.562]	[-0.922; 0.562]	[-0.922; 0.562]
<b>Mardia index</b>	27.50	24.37	33.88	31.04	28.99
<b>C.R. Mardia</b>	9.72	8.62	11.98	10.97	9.46

Table 7: Models I-V – univariate and multivariate distribution of the data set (own research)

	Model VI	Model VII	Model VIII	Model IX	Model X
<b>Skew interval</b>	[-0.334; 0.394]	[-0.334; 0.394]	[-0.797; 0.394]	[-0.361; 0.394]	[-0.967; 0.394]
<b>Kurtosis interval</b>	[-0.922; 0.562]	[-0.922; 0.562]	[-0.922; 0.562]	[-0.922; 0.562]	[-0.922; 0.562]
<b>Mardia index</b>	30.75	23.61	29.98	27.09	34.25
<b>C.R. Mardia</b>	10.87	8.35	10.60	9.58	11.17

Table 8: Models VI-X – univariate and multivariate distribution of the dataset (own research)

### 8.3 Measurement models: Results of the expert interviews and the first-generation criteria

The first step is to examine the first-generation evaluation criteria with the assistance of psychometrical measurements and the explorative factor analysis (EFA). The corresponding measurements are executed for each factor.

- **Measurement models:** All factor-indicator combinations are reflexive. The factor is the deeper-laying level of culture and expressed by the first level represented in the indicators. In consequence, when a deeper layer of culture is missing, it is not possible to express it with cultural artifacts. The same is applicable to communication satisfaction representing successfully role-taking as deeper laying level of the measurable indicators.
- **Estimation technique:** For all factors the estimation technique “principal axis factoring” was used with a PROMAX rotation during the explorative factor analysis (for details, see Weiber and Mühlhaus, 2014 and chapter 7.2.3.1.2).
- **Scale:** All indicators were measured with a 7.0 satisfaction scale from the communication satisfaction questionnaire (CSQ) by Downs and Hazen (1977) – ranging from very dissatisfied to very satisfied.
- **Sample:** The 143 R&D employees of the German DAX company represent the survey sample for each factor.

#### 8.3.1 Factor 1: Recognition as member of the organization

The first factor is called “recognition as member of the organization” and was derived from theory as one of the two essential factors covering the topic recognition – in this case the recognition level “rights”. Besides other mentioned aspects of respect (see chapter 4.1.2.1), the expert interviews reveal that an information confidentiality-oriented climate is a crucial shared expression for employees of how strongly they consider themselves recognized as a member of the organization and can be actively controlled by the principals. This expression is the first level of the organization’s culture of recognizing members. Being a member means having the right to receive internal, confidential information according to their role and function in the company and that the company lives this culture to recognize its members. This climate is measured by three indicators which were also content-related approved in the pretest. Indicator F1\_1 indicates how satisfied the survey participants are with the labeling of the confidentiality level for documents. Whether the organization has standardized processes to find the right balance between discussing new ideas and preserving confidentiality was measured with indicator F1\_2. The third indicator F1\_3 points out the awareness of the topic confidentiality of information within the company.

Factor 1: recognition as member of the organization							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F1_1	0.70	0.70	1.00	0.75 (0.76)	0.59	0.71	51.49
F1_2		0.71			0.58	0.69	
F1_3		0.68			0.61	0.75	

Table 9: Factor 1 – results of the psychometrical measurements and the EFA (own research)

The results show that the factor relates to the indicators: With a value of 0.7, the Kaiser-Meyer-Olkin criterion is middling. Furthermore, the MSA values are constantly higher than 0.5 and prove that the indicators belong to one set. The Kaiser criterion recommends one factor. The internal consistency of the construct is also fulfilled with a Cronbach's alpha value of 0.7 and the corrected item-to-total correlations are higher than the threshold of 0.5. In consequence, the reliability of the construct is approved. Moreover, a first confirmation of the construct's validity is readable from the table: The construct variance is higher than 50%.

### 8.3.2 Factor 2: Satisfaction with company information

The latent factor 2 is called "satisfaction with company information" and illustrates the theoretical aspect role-taking (see chapters 3.2.3., 3.2.4, and 6.1). This construct deduces from Down and Hazen's "general organizational perspective" factor in the communication satisfaction questionnaire. The original factor has five indicators, but only three of them were used in the construct. These address the topics information about organizational policies and goals (F2\_1), information about government action affecting the organization (F2\_2), and in general received information about changes within the company (F2\_3). The experts claim that it is important to know the changes within the company in order to get a feeling of which future trends, direction, and strategies will be important for the company. The fourth indicator information about our organization's financial standing (F2\_4) of the original CSQ factor had to be eliminated due to low loadings and reliability. The original fifth indicator – "information about accomplishments and/or failures of the organization" – was not included into the questionnaire based on the expert interviews. The experts generally interpreted this topic in extremely heterogeneous ways, and the pretest also showed too many different interpretations of the formulated item. In particular, the relation to which topic (e.g., gaining new customers, new revenues, lobby work) the failures or accomplishments were associated with was not clear. An additional result of the qualitative analysis was that information on

personal news (F2\_5) and information on benefits and pay (F2\_6) are also important items for satisfaction with company information and receiving information about the market trends (F2\_7). The items F2\_5 and F2\_6 are originally related to another construct in the CSQ, namely the factor “organizational integration”. In general, the experts were interviewed regarding which information they need to get to know and identify with the organization. Nevertheless, the psychometric and the explorative factor analysis could not sufficiently confirm a relation between the last both items and the latent factor “satisfaction with company information”. In sum, three of the seven initial items remained in the final construct. The evaluation of the first-generation criteria is shown in Table 10.

Factor 2: satisfaction with company information							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F2_1	0.70	0.71	1.00	0.80 (0.80)	0.65	0.75	0.58
F2_2		0.67			0.69	0.83	
F2_3		0.74			0.61	0.70	

Table 10: Factor 2 – results of the psychometrical measurements and the EFA (own research)

Factor 2 also shows a middling Kaiser-Meyer-Olkin criterion and middling as well as mediocre MSA values. Similarly to factor 1, the eigenvalue criterion recommends one factor whereas the screeplot recommends two. The reliability of the construct is good, which is reflected in a good Cronbach’s alpha value (at least 0.7) and corrected item-to-total correlations higher than the threshold of 0.5. Furthermore, high factor loadings and an acceptable variance signal a first impression of the validity for the construct. The final confirmation of the validity will be approved in the second step with the confirmatory factor analysis.

### 8.3.3 Factor 3: Satisfaction with R&D information within the company

The expert interviews revealed that receiving information about the company’s research & development activities is highly relevant to the possibility of identifying with the company (theoretical background see chapters 3.2.3; 3.2.4 and integration into the study see chapter 6.1). It is not just the company or the direct job environment, but also information about the organizational function, namely R&D that influences an employee’s satisfaction with a communication-oriented identification climate. None of the standard questionnaires in the literature addressed this topic. The new items were very similarly related to the ductus, above

all the wording, of the CSQ. Item F3\_1 enquires after the degree of satisfaction with the received information on the innovations' focus within the company. The second item (F3\_2) addresses the topic of information received about innovations beyond the innovations' focus within the company. The third item (F3\_3) represents a rather functional, organizational aspect to which extent information about R&D activities in the other R&D departments is received. According to the expert interviews, item 1 is very important for gaining an understanding of the goals in R&D, whereas item 2 gives insights into both the upcoming future R&D trends, which are currently tested as single activities beyond the main R&D strategy focus, and openness for out-of-the-box activities. The third item relates to internal content exchange between the different R&D departments to understand the overall targets and their operations in projects in the whole R&D area. Generally, the latent construct "satisfaction with R&D information within the company" received acceptable results for the item setup, reliability, and validity. The exact measurements can be extracted from Table 11.

Factor 3: satisfaction with R&D information within the company							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F3_1	0.68	0.73	1.00	0.74 (0.74)	0.52	0.63	0.49
F3_2		0.67			0.58	0.73	
F3_3		0.66			0.59	0.74	

Table 11: Factor 3 – results of the psychometrical measurements and the EFA (own research)

### 8.3.4 Factor 4: Satisfaction with job information

Factor 4 is the logical sequel of the different levels considering communication content to illustrate the theory of role-taking processes (see theory chapters 3.2.3, 3.2.4, and 6.1). Besides the company's level and the functional area level, the job level affects an employee most directly. Originally, four items were defined as the indicators for the factor "satisfaction with job information". Two items came from the CSQ, albeit from two different CSQ factors, "communication climate" and "organizational integration". However, the pretest (method: "sorting") showed that while none of them were added to the original CSQ constructs, they were related to two other constructs for the study. Item F4\_1 originally belonged to the CSQ factor "communication climate". This original CSQ factor contains content-contrary items and thus, the respective CSQ indicator set was not identified as one set in the pretest. Therefore, the five original indicators of the CSQ factor "communication climate" were split into factor 9



of this study and the relevant item F4\_1 was related to factor 4. Furthermore, two of the original five items were not approved by the company's work council. Item F4\_1 enquires after the employee's satisfaction with the extent to which the needed information is received in time to do the job. Alongside this, the employee must also know how the work processes and the related job tasks are assigned in the team. Then, the employee knows what he must do and what not in the team. This measures the indicator F4\_2. The third item F4\_3 alludes to the degree of satisfaction with the received information about the job requirements. This item is originally from the CSQ construct "organizational integration". In general, the construct setup is acceptable, and the reliability and validity results are good.

Factor 4: satisfaction with job information							
Indicator	Construct setup			Reliability		Validity	
	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F4_1	0.68	0.65	1.00	0.83 (0.83)	0.73	0.86	0.64
F4_2		0.64			0.75	0.89	
F4_3		0.84			0.59	0.63	

Table 12: Factor 4 – results of the psychometrical measurements and the EFA (own research)

### 8.3.5 Factor 5: Satisfaction with the official interactional communication climate

Information about the company, the R&D function, and the job play a crucial role for the communication-oriented identification climate because they give answers about company facts such as purpose, aim, mission, strategy, and trends that affect an employee. Nevertheless, during the expert interviews a more social aspect, namely communication climate, came up: Role-taking effects with other colleagues are facilitated by an active communicational exchange to understand one's own perspective in relation to their point of views and their job targets and how all different views can be brought in line with the company's main goals. Then, it is possible to categorize one's own position and role in a satisfying official interactional communication climate and this affects the communication-oriented identification climate. To address this aspect, a fifth factor "satisfaction with the official interactional communication climate" was developed with five items based on the interviews and the feedback of the pretest. Item F5\_1 enquires after satisfaction with the extent of information exchange to enable synergies and teamwork in the organization. Item F5\_2 focuses on the R&D field's exchange with international colleagues, whereas item F5\_3 focuses on interdisciplinary exchange with colleagues within the R&D field. Indicators 4 and 5

addressed to what satisfying extent the job specializations are known, both regarding one's department colleagues and regarding the members of the other R&D departments. The quantitative analysis showed that both indicators could not be kept in the indicator set, and they were eliminated. Therefore, the results of the psychometrical measurements and the explorative factor analysis are only published for the first three indicators. Indicator F5\_1 has a middling MSA value. The corrected item-to-total lies under the threshold of 0.5, although the factor loading is above the lower limit of 0.4. In total, item F5\_1 is not fully optimal for the construct. However, taking into account a middling MSA value and the content aspects it makes sense to keep it in the construct. The other values of the construct setup, the reliability, and the validity are good – apart from the indicator variance. This indicator is a first orientation: It is close to 50%. The final validity tests are determined with the confirmatory factor analysis.

Factor 5: satisfaction with the official interactional communication climate							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F5_1	0.62	0.76	1.00	0.70 (0.70)	0.39	0.45	0.46
F5_2		0.59			0.58	0.81	
F5_3		0.60			0.54	0.72	

Table 13: Factor 5 – results of the psychometrical measurements and the EFA (own research)

### 8.3.6 Factor 6: Satisfaction with the informal interactional communication climate

Alongside official company information, the R&D, and the job level, informal communication exists in every organization. Factor 6 represents “satisfaction with the informal interactional communication climate” that affects every employee. Based on the results of the expert interviews and the pretest, informal communication often is an elementary information platform supplementary to the official communication that can also help employees understand “the others” – dependent on the informal content and climate. Above all, informal communication is helpful when there is a lack of official information. Therefore, item F6\_4 was included to determine to which extent informal communications helps to fill the gap left by official communication regarding the job. The other indicators were taken from the CSQ factor “horizontal and informal communication” and slightly adapted. Item F6\_1 addresses to which extent the grapevine is active in the organization. The indicator F6\_2 enquires to which extent horizontal-informal communication with other organizational members is accurate and

free-flowing, and item F6\_3 to which extent informal communication is active and free-flowing. The other two indicators that also originally belonged to the CSQ factor suffered from interpretations problems during the pretest “probing”. Most of the pretest participants did not understand the meaning and how to evaluate it. In consequence, they were not included in the survey. Table 14 gives a summary of completely acceptable or good results for factor 6.

Factor 6: satisfaction with the informal interactional communication climate							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F6_1	0.73	0.86	1.00	0.81 (0.81)	0.61	0.67	0.55
F6_2		0.69			0.66	0.76	
F6_3		0.67			0.79	0.94	
F6_4		0.79			0.50	0.55	

Table 14: Factor 6 – results of the psychometrical measurements and the EFA (own research)

### 8.3.7 Factor 7: Recognition as member with a value for the organization regarding the job performance

During the expert interviews, the experts were asked how they perceived recognition in terms of being appreciated as a value for the company with their personal skills and expertise. Whether or not someone is appreciated for their performance was related to the company’s culture (for theoretical background, see Table 2, sub-category “measurable performance” in chapter 4.1.2.4). Therefore, the cultural aspect recognition was included in the measurement model by expressing it with items which represent Schein’s first level “artifacts”, in this case the artifact “organization’s cultural climate” (see level 1 in Schein’s theory in chapter 4.1.1.2). The company’s perception of personal performance or the results of the completed work were facets mentioned in the expert interviews and these facets can be actively controlled by the principals. Moreover, being a value for the organization meant performing in a way that is useful for the company – otherwise one is not really valued, according to the experiences of most experts. Therefore, information about the possibility of attending professional training was also a substantive facet of intensifying professional knowledge. In parallel, gaining such information is perceived as the company’s cultural value to recognize an employee with individual performance value for the company. Two experts extended this facet to personal trainings such as soft skill trainings (presentation and moderation skills, etc. ...). Another training aspect was mentioned in some interviews, namely receiving individualized information about career options within the company: The company would value one’s

personal strengths and promote them with appropriate career options. This was perceived as very relevant recognition by valuing the individual value and how this value can be even increased with a new or extended position. Individual strengths are promoted. Item F7\_1 covers the career option aspect and item F7\_2 recognition of the individual research results. The indicator F7\_3 seizes on the professional training aspect. The personal training aspect was also included in the survey (F7\_4) but this item could not meet all measurement targets. Therefore, it is not part of the final indicator set for factor 7, “recognition as member with a value for the organization regarding the job performance”. The pretest also confirmed this set of indicators. All indicators have acceptable criteria values considering the construct setup, reliability, and variance. Just the corrected item-to-total value of F7\_1 does not reach the threshold of 0.5.

Factor 7: recognition as member with a value for the organization regarding the job performance							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F7_1	0.64	0.77	1.00	0.72 (0.73)	0.44	0.51	0.50
F7_2		0.60			0.62	0.84	
F7_3		0.62			0.58	0.73	

Table 15: Factor 7 – results of the psychometrical measurements and the EFA (own research)

### 8.3.8 Factor 8: Recognition as member with a value for the organization regarding the job performance contribution based on creative work

For researchers being creative during the working time is more essential within their performance portfolio than, for example, in accounting departments. In the interviews, all experts mentioned that creativity cannot be valued directly because it is a very individual process that can neither be valued nor measured in a standardized performance format and this aspect also found consensus in the pretest. Creative ideas can lead to innovations – also to innovations that have not yet been in the company’s R&D focus but will perhaps become relevant in the future. While many creative ideas do not directly lead to an innovation, they are important steps to evaluate research approaches and to bring new insights during a solution finding process. Therefore, the experts consider it absolutely necessary for the company to value individual creativity by providing employees with the possibility to be creative and by being open to the results after this creative phase – either a new innovation, perhaps for a complete new market, or a result that is not immediately visible, namely as (a

perhaps small) part of solution-finding processes. This kind of creative culture can also be controlled by the principal according to the interviews' results: If a company does not like to allow working time for creativity, then there is no cultural openness, no cultural acceptance, no cultural acting sustainability and no cultural recognition for the creative thinking that is an essential part of an R&D employee's performance. This cultural background is picked up again as an expression of the cultural climate within the company (see chapter 4.1.1.2 Schein's first level "artifacts"). In general, this factor also corresponds to the theoretical appreciation of the sub-category "human's manpower" (see Table 2) in chapter 4.1.2.4. The first item for factor 8 is "recognition as member with a value for the organization regarding the job performance contribution based on creative work". Indicator F8\_1 enquires to which extent there is openness for ideas outside of the R&D fields. Item F8\_2 address the promoted freedom by the company to occupy with ideas outside of the main company's R&D fields. In contrast to the first two indicators, item F8\_3 focuses on the promoted freedom by the company to occupy with ecological ideas. All indicators have acceptable criteria values – except the preliminary result of the variance, which lies near the 50% threshold. The final results of the construct's variance are evaluated with the second-generation criteria.

<b>Factor 8: recognition as member with a value for the organization regarding the job performance contribution based on creative work</b>							
	<b>Construct setup</b>			<b>Reliability</b>		<b>Validity</b>	
<b>Indicator</b>	<b>KMO</b>	<b>MSA</b>	<b>Kaiser</b>	<b>Cronbach <math>\alpha</math> (stand.)</b>	<b>Corr. Item- to-Total</b>	<b>Factor loadings</b>	<b>Variance</b>
F8_1	0.66	0.69	1.00	0.73 (0.73)	0.51	0.61	0.48
F8_2		0.62			0.62	0.83	
F8_3		0.69			0.52	0.62	

Table 16: Factor 8 – results of the psychometrical measurements and the EFA (own research)

### 8.3.9 Factor 9: Communication-oriented identification climate

As already mentioned during the introduction of factor 4, two indicators from the original CSQ factor "communication climate" were applied to factor 9 in this study. The organizational environment (climate), in particular the (organizational) identification climate regarding communication, is an adequate construct for measuring identification processes (details see chapter 6.1) because according to Tagiuri such a climate evokes a certain employee's behavior – in this case identification with the company. The identification climate indicates a proper identifying environment in the organization which can be controlled by the employer up to a certain degree to use employee identity as substitute for monetary incentives. Furthermore,

deriving from Tagiuri's definition, identification climate can be described with characteristics which represent the indicators of this factor in the study. The identification process experienced by the employee is therefore measured by the degree of satisfaction with the communication-oriented identification climate within a company, respectively the adequate internal identifying environment. This latent factor itself is measured by the two items from the CSQ. Item F9\_1 indicates the extent to which the communication in the organization motivates and stimulates an enthusiasm for meeting its goals, and indicator F1\_2 shows the extent to which the communication in the organization makes the employee identify with or feel a vital part of it. In consequence, the relation to the other constructs in the SEM is matched: In order to get to know and understand the company's targets, and to be recognized as a member and feel valued and a vital part of it (the cultural and climate aspect), the employee needs communicated information. This way of measuring identification through the climate facilitates principals to get a better view of the appropriate identification climate which the principals would like to create and control up to a certain extend through triggering influencing factors. It is one further outcome from the expert interviews. The values for evaluating the reliability and validity are good. Yet while the KMO and MSA values fulfill the threshold ( $\geq 0.5$ ), the value is not high. The likely reason is that there are only two indicators.

Factor 9: communication-oriented identification climate							
	Construct setup			Reliability		Validity	
Indicator	KMO	MSA	Kaiser	Cronbach $\alpha$ (stand.)	Corr. Item- to-Total	Factor loadings	Variance
F9_1	0.50	0.50	1.00	0.86 (0.86)	0.75	0.87	0.75
F9_2		0.50			0.75	0.87	

Table 17: Factor 9 – results of the psychometrical measurements and the EFA (own research)

#### Short summary of the first part of the analysis:

The content validity was tested and confirmed by the expert interviews and the pretest. The first quantitative evaluation of all measurement models shows that each factor has robust results, allowing it to be accepted as a factor with its respective indicators. Furthermore, the first results of the reliability and the validity are on average good.

#### 8.4 CFA and SEM models: Results of the second-generation criteria and of the SEM analysis for the models I-V with mediation factor 7

Chapter 8.4 analyzes the models with the mediation factor number 7. After having each latent factor and the corresponding indicators defined and evaluated with the results of the expert interviews and the first-generation criteria, the next step is to test these factors in the respective factor combination of each model. Thereby, these factor combinations have to be validated with regard to reliability, validity, and the model fit. The results of this validation are expressed by the second-generation criteria. The adequate method is the confirmatory factor analysis. Then, for each model the SEM analysis follows, and the content-related results are compared among all models. Each model has the sample size of 143 R&D employees. All ten models were additionally examined based on different employee groups – divided into the personal categories asked in the questionnaire. However, these examinations showed no significant differences between the employees' single characteristics. The next bullet points summarize the evaluation criteria of the results for each model at a glance:

- **Evaluation of all criteria:** The criteria were extensively introduced in chapter 7.2.3.1.3 for the confirmatory factor analysis and in chapter 7.2.3.2 for the SEM analysis. The models are evaluated based on these and the corresponding thresholds.
- **Thresholds for criteria fulfillment (local and global):** According to Fritz (1992) and Homburg and Baumgartner (1995), not all second-generation criteria have to be met in each model. The rule of thumb is that at least half must have acceptable values. With regard to the global fit indices, it is recommended that they all should fit. The comparative fit indices are still rules of thumb, though, and not interference statistical results (Marsh et al., 2004). The thresholds of all relevant criteria are summarized in chapter 7.2.3.
- **Combination of global fit criteria evaluation:** These fit indices CFI, IFI, SRMR, and CMIN/d.f. are evaluated. The selection was based on the recommendations of Hu and Bentler (1999). For details, see chapter 7.2.3.1.3.
- **Mediation:** The interpretation of the bias-corrected mediation results is based on chapter 7.2.4.

### 8.4.1 Model I - impact of factor 2

For Model I, it is possible to examine the influence of satisfaction with the communicated content – namely company information. These are the relevant hypotheses for model I:

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1a** the received information content regarding their organization,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2a** the received information content regarding their organization.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3a** the received information content regarding their organization,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3f** through their personal job performance.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4a** through their personal job performance  
the more they are satisfied with the organization's communication-oriented identification climate.

### Results of the second-generation criteria

The results show that all standard regression weights are equal to or higher than 0.4 and that they all have significant values (see confidence interval and p-value in Table 18). Accordingly, the criterion validity can be confirmed. The indicator reliability ( $\geq 0.4$ ) is also fulfilled except for item F7\_1. Due to content-driven aspects this item was not excluded because the standard regression weight is at least higher than 0.4. The factors' reliabilities can also be confirmed with values greater than 0.6. The average variance extracted (AVE) is also higher than 0.5 but the Fornell-Larcker criterion to evaluate the discriminant validity is once not completely fulfilled. Factor 7 has an AVE higher than 0.5 but the squared correlations with the other factors is once lower than the AVE. This one moderate violation can be accepted, though. To summarize: The convergence validity (AVE) is completely fulfilled and the discriminant validity almost so for every construct. According to Fritz (1992) and Homburg and Baumgartner (1995), at least half of the criteria have to be met. In this case, almost all criteria fit. Consequently, it is not necessary to reject the model.



According to the thresholds of global fit indices in chapter 7.2.3.1.3, this model has a good model fit indicated by all fit indices CMIN/d.f., SRMR, CFI, and the IFI.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.71	0.52	0.84	0.001	0.50	0.76	0.51	confirmed
	F1_2	0.69	0.49	0.83	0.001	0.47			
F1_3	0.76	0.60	0.87	0.003	0.57				
Factor 2	Satisfaction with company information								
	F2_1	0.75	0.58	0.85	0.002	0.56	0.80	0.58	confirmed
	F2_2	0.76	0.64	0.85	0.002	0.57			
F2_3	0.77	0.64	0.87	0.001	0.59				
Factor 7	Recognition as member with a value for the organization regarding the job performance								
	F7_1	0.56	0.40	0.69	0.001	0.31	0.74	0.50	almost confirmed
	F7_2	0.80	0.67	0.90	0.001	0.63			
F7_3	0.74	0.58	0.84	0.002	0.54				
Factor 9	Communication-oriented identification climate								
	F9_1	0.86	0.66	0.98	0.002	0.73	0.86	0.75	confirmed
	F9_2	0.88	0.72	1.04	0.002	0.77			

Table 18: CFA model I – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 1	↔	Factor 2	0.54	0.34	0.72	0.001	0.29
Factor 2	↔	Factor 9	0.69	0.46	0.85	0.001	0.48
Factor 9	↔	Factor 7	0.67	0.46	0.86	0.001	0.45
Factor 2	↔	Factor 7	0.74	0.57	0.87	0.001	0.54
Factor 1	↔	Factor 9	0.42	0.13	0.62	0.006	0.18
Factor 1	↔	Factor 7	0.59	0.40	0.76	0.001	0.35

Table 19: CFA model I – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.25	0.05	0.93	0.93

Table 20: CFA model I – model fit indices (own research)

Results of the SEM analysis

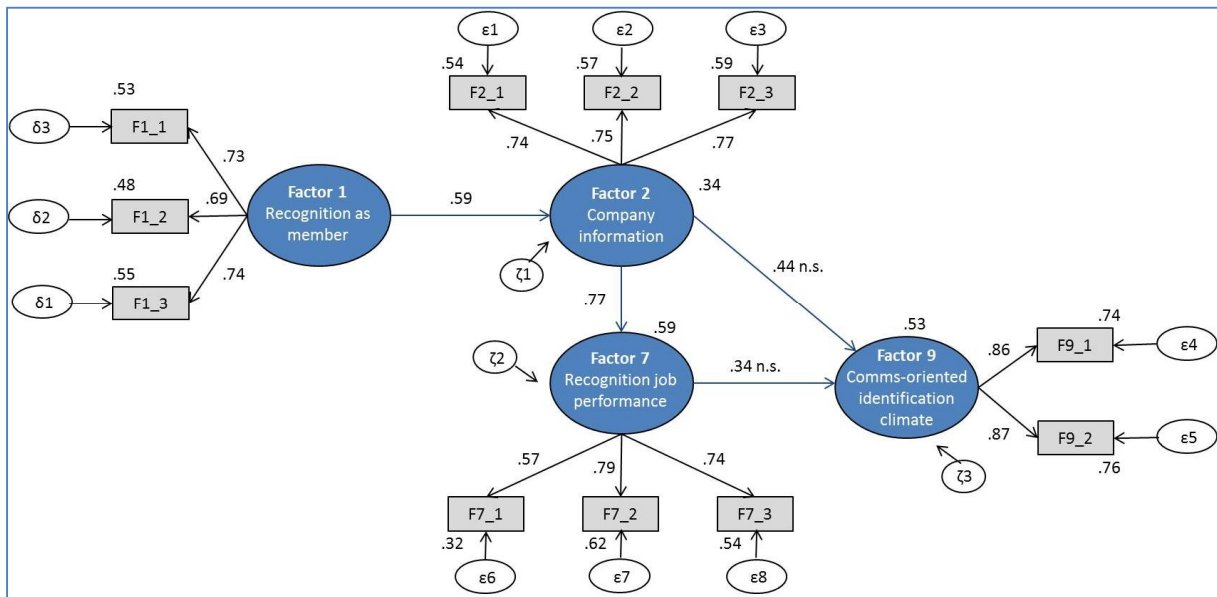


Figure 14: Model I – SEM analysis. All paths are significant ( $p \leq 0.01$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 2 ← Factor 1	0.59	0.09	0.39	0.74	0.001
Factor 7 ← Factor 2	0.77	0.07	0.61	0.90	0.001
Factor 9 ← Factor 7	0.34	0.25	-0.22	0.75	0.168
Factor 9 ← Factor 2	0.44	0.25	-0.07	0.84	0.081
F1_1 ← Factor 1	0.73	0.08	0.55	0.85	0.001
F1_2 ← Factor 1	0.69	0.08	0.51	0.82	0.001
F1_3 ← Factor 1	0.74	0.06	0.61	0.85	0.001
F2_1 ← Factor 2	0.74	0.07	0.57	0.84	0.002
F2_2 ← Factor 2	0.75	0.05	0.63	0.85	0.002
F2_3 ← Factor 2	0.77	0.06	0.65	0.86	0.001
F7_1 ← Factor 7	0.57	0.08	0.40	0.70	0.001
F7_2 ← Factor 7	0.79	0.06	0.67	0.89	0.001
F7_3 ← Factor 7	0.74	0.07	0.58	0.85	0.001
F9_1 ← Factor 9	0.86	0.06	0.70	0.96	0.002
F9_2 ← Factor 9	0.87	0.06	0.76	1.02	0.001

Table 21: Model I – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	TLI
	2.27	0.06	0.92	0.92

Table 22: Model I – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.59*0.70 = 0.41	0.001	0.41	0.001
Factor 2 → Factor 9 (mediation model)	0.44 n.s.	0.77*0.34 n.s. = 0.26	0.130	0.70	0.001
Factor 7 → Factor 9 (direct relation)	0.34 n.s.			0.34	0.168
Factor 1 → Factor 7 (indirect relation)		0.59*0.77 = 0.45	0.001	0.45	0.001
Factor 1 → Factor 2 (direct relation)	0.59			0.59	0.001

Table 23: Model I – direct, indirect, and total effects (own research)

All fit indices for the SEM model reveal a good model fit. As the explained variances of the latent endogenous factors are higher than 0.33, they can be categorized as moderate according to Chin (1998b). Two relationships, however, are not significant (see Table 23). Generally, if the direct path between factor 2 and factor 9 is not significant but the indirect path is, then there is a full mediation. In this case, the direct and the indirect path are not significant. This means not that there is no mediation effect, when the total effect between factor 2 and factor 9 is significant, which is calculated as the sum of the direct effect and the indirect effect. Recent studies by Cheung and Lau (2008) recommend that just one path in the indirect effect has to be significant and the other one has to be close to significance. In this model, the total effect is significant; one part in the direct effect is not significant but the other one. Therefore, an indirect mediation influence between company information (factor 2) and the communication-oriented identification climate (factor 9) can be identified. Moreover, the influence of an employee's satisfaction with being recognized as a member of the company (factor 1) on the communication-oriented identification climate (factor 9) is significant, too. In consequence, factor 1 contributes indirectly to the identification climate.

Based on the significance of the postulated hypotheses, the nomological validity can be concluded. Furthermore, all standard regression weights have values higher than 0.2 and exhibit the hypothesized relationship (only positive signs between the latent constructs). Following this, the construct validity – consisting of the convergence, discriminant, and the nomological validity – can be inferred (see the results of the confirmatory factor analysis for discriminant and convergence validity). In this model, significant correlations for the hypotheses 2a, 3a, and 3f were found. The hypothesis 1a has no significant results. Hypothesis 4a is merely valid as a total effect that incorporates the significant indirect effect (see hypotheses 3 and 4), but not as a direct effect as postulated in the hypothesis 1a.

### 8.4.2 Model II - impact of factor 3

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1b** the received information content regarding their organizational function, the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member, the more they are satisfied with...

**2b** the received information content regarding their organizational function.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3b** the received information content regarding their organizational function, the more they are satisfied with the recognition of being a member with an individual value for the organization...

**3f** through their personal job performance.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the organization...

**4a** through their personal job performance, the more they are satisfied with the organization's communication-oriented identification climate.

#### Results of the second-generation criteria

The results of the confirmatory factor analysis show a very good model fit – see e.g. IFI 0.96. Additionally, all reliability and validity criteria show very good results as well – except the indicator reliability of F7\_1. This means that the convergence validity (AVE criterion greater than or equal to 0.5) and the discriminant validity (Fornell-Larcker criterion) are fulfilled. In consequence, the structural equation model can be tested.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.69	0.53	0.82	0.001	0.48	0.76	0.51	confirmed
	F1_2	0.69	0.50	0.84	0.001	0.48			
	F1_3	0.77	0.62	0.88	0.002	0.59			
Factor 3	Satisfaction with R&D information within the company								
	F3_1	0.87	0.79	0.94	0.001	0.76	0.84	0.65	confirmed
	F3_2	0.87	0.77	0.93	0.002	0.75			
	F3_3	0.66	0.53	0.78	0.001	0.44			
Factor 7	Recognition as member with a value for the organization regarding the job performance								
	F7_1	0.56	0.39	0.69	0.001	0.31	0.74	0.50	confirmed
	F7_2	0.80	0.68	0.91	0.001	0.64			
	F7_3	0.73	0.57	0.84	0.002	0.53			
Factor 9	Communication-oriented identification climate								
	F9_1	0.81	0.61	0.94	0.001	0.65	0.86	0.76	confirmed
	F9_2	0.93	0.78	1.11	0.002	0.87			

Table 24: CFA model II – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 3	↔	Factor 9	0.59	0.39	0.75	0.001	0.35
Factor 9	↔	Factor 7	0.67	0.45	0.85	0.001	0.45
Factor 3	↔	Factor 7	0.60	0.42	0.76	0.001	0.36
Factor 1	↔	Factor 3	0.42	0.22	0.60	0.001	0.17
Factor 1	↔	Factor 7	0.59	0.40	0.76	0.001	0.35
Factor 1	↔	Factor 9	0.38	0.08	0.60	0.014	0.14

Table 25: CFA model II – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	1.67	0.06	0.96	0.96

Table 26: CFA model II – model fit indices (own research)

Results of the SEM analysis

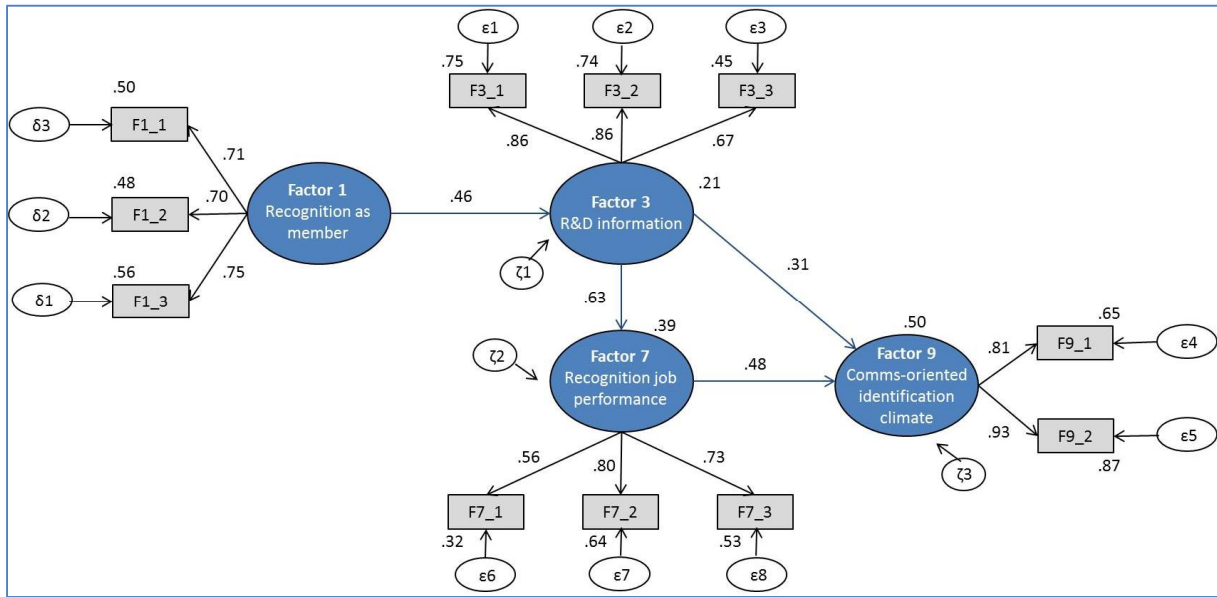


Figure 15: Model II – SEM analysis. All paths are significant ( $p \leq 0.05$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 3 ← Factor 1	0.46	0.10	0.26	0.63	0.001
Factor 7 ← Factor 3	0.63	0.09	0.45	0.79	0.001
Factor 9 ← Factor 7	0.48	0.14	0.20	0.76	0.002
Factor 9 ← Factor 3	0.31	0.12	0.02	0.52	0.037
F1_1 ← Factor 1	0.71	0.08	0.53	0.84	0.001
F1_2 ← Factor 1	0.70	0.08	0.51	0.84	0.002
F1_3 ← Factor 1	0.75	0.07	0.61	0.86	0.001
F3_1 ← Factor 3	0.86	0.04	0.78	0.93	0.001
F3_2 ← Factor 3	0.86	0.04	0.76	0.93	0.002
F3_3 ← Factor 3	0.67	0.06	0.54	0.78	0.001
F7_1 ← Factor 7	0.56	0.07	0.40	0.69	0.001
F7_2 ← Factor 7	0.80	0.06	0.66	0.90	0.002
F7_3 ← Factor 7	0.73	0.07	0.58	0.84	0.002
F9_1 ← Factor 9	0.81	0.06	0.67	0.91	0.001
F9_2 ← Factor 9	0.93	0.06	0.82	1.06	0.001

Table 27: Model II – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	1.96	0.08	0.94	0.94

Table 28: Model II – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		$0.46 \cdot 0.61 = 0.28$	0.001	0.28	0.001
Factor 3 → Factor 9 (mediation model)	0.31	$0.63 \cdot 0.48 = 0.30$	0.001	0.61	0.001
Factor 7 → Factor 9 (direct relation)	0.48			0.48	0.002
Factor 1 → Factor 7 (indirect relation)		$0.46 \cdot 0.63 = 0.29$	0.001	0.29	0.001
Factor 1 → Factor 3 (direct relation)	0.46			0.46	0.001

Table 29: Model II – direct, indirect, and total effects (own research)

As the confirmatory factor analysis suggested, the SEM model fit is good as well. All indices show good model fits. In the SEM model, all paths are significant and indicate the causal hypothesized relationships (positive signs). The variances of the latent factors are once weak, with a value of 0.21 (factor 3: satisfaction with R&D information within the company), and the other two times moderate, with values of 0.39 and 0.50 (factor 7 and 9). Altogether, the nomological validity can be attested and, in combination with the discriminant and convergence validity (see results of the CFA), the construct validity as well.

The effect combinations are relevant to interpret, too: Table 29 is based on the bias-corrected bootstrapping and shows that all calculated indirect and total effects are significant. Following this, being recognized as member (factor 1) has an indirect effect on the communication-oriented identification climate (factor 9) but also on the recognition as a member with value for the organization regarding the job performance (factor 7). The satisfaction with R&D information within the company (factor 3) is partially mediated by the recognition as a member with value for the organization regarding the job performance (factor 7). This means that the satisfaction with R&D information (factor 3) still has a direct influence on the communication-oriented identification climate (factor 9). Additionally, the satisfaction with R&D information (factor 3) also influences the recognition as a member with value for the organization regarding the job performance (factor 7), which also has a positive relationship to the communication-oriented identification climate (factor 9). Both the direct path and the mediation path have almost equal weights. All four paths show high and strong regression weights. In this model, all correlations representing the relations of the hypotheses system are significant.

### 8.4.3 Model III - impact of factor 4

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1c** the received information content regarding their job,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2c** the received information content regarding their job.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3c** the received information content regarding their job,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3f** through their personal job performance.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4a** through their personal job performance,  
the more they are satisfied with the organization's communication-oriented identification climate.

#### Results of the second-generation criteria

The results of the confirmatory factor analysis show an adequate reliability and validity for the measurement models. Once again, item F7\_1 has no optimal indicator reliability but at least it has a regression weight higher than 0.4. As already described, this item was not deleted due to content-driven aspects. The factor reliability consistently has values higher than 0.6. As the AVE criterion is fulfilled with at least the minimum requirement of 0.5 (except factor 4) for almost every construct, the convergence validity can be fully attested. Furthermore, the discriminant validity which gives information about the independence of each construct is confirmed. The good model fits induce to calculate the SEM for this latent factor setup in the next step.



Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.67	0.49	0.81	0.001	0.44	0.76	0.51	confirmed
	F1_2	0.69	0.48	0.83	0.001	0.47			
F1_3	0.79	0.66	0.91	0.002	0.63				
Factor 4	Satisfaction with job information								
	F4_1	0.74	0.50	0.88	0.002	0.55	0.73	0.48	confirmed
	F4_2	0.64	0.43	0.79	0.002	0.41			
F4_3	0.69	0.48	0.87	0.001	0.47				
Factor 7	Recognition as member with a value for the organization regarding the job performance								
	F7_1	0.54	0.37	0.67	0.001	0.29	0.74	0.50	confirmed
	F7_2	0.64	0.43	0.79	0.002	0.41			
F7_3	0.72	0.58	0.83	0.001	0.52				
Factor 9	Communication-oriented identification climate								
	F9_1	0.81	0.64	0.91	0.002	0.65	0.86	0.76	confirmed
	F9_2	0.93	0.82	1.09	0.001	0.87			

Table 30: CFA model III – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 4	↔	Factor 9	0.69	0.50	0.87	0.000	0.47
Factor 9	↔	Factor 7	0.66	0.46	0.85	0.001	0.44
Factor 4	↔	Factor 7	0.50	0.28	0.72	0.001	0.25
Factor 1	↔	Factor 4	0.44	0.14	0.68	0.004	0.19
Factor 1	↔	Factor 7	0.59	0.40	0.75	0.001	0.34
Factor 1	↔	Factor 9	0.38	0.11	0.59	0.006	0.14

Table 31: CFA model III – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	1.92	0.06	0.94	0.94

Table 32: CFA model III – model fit indices (own research)

Results of the SEM analysis

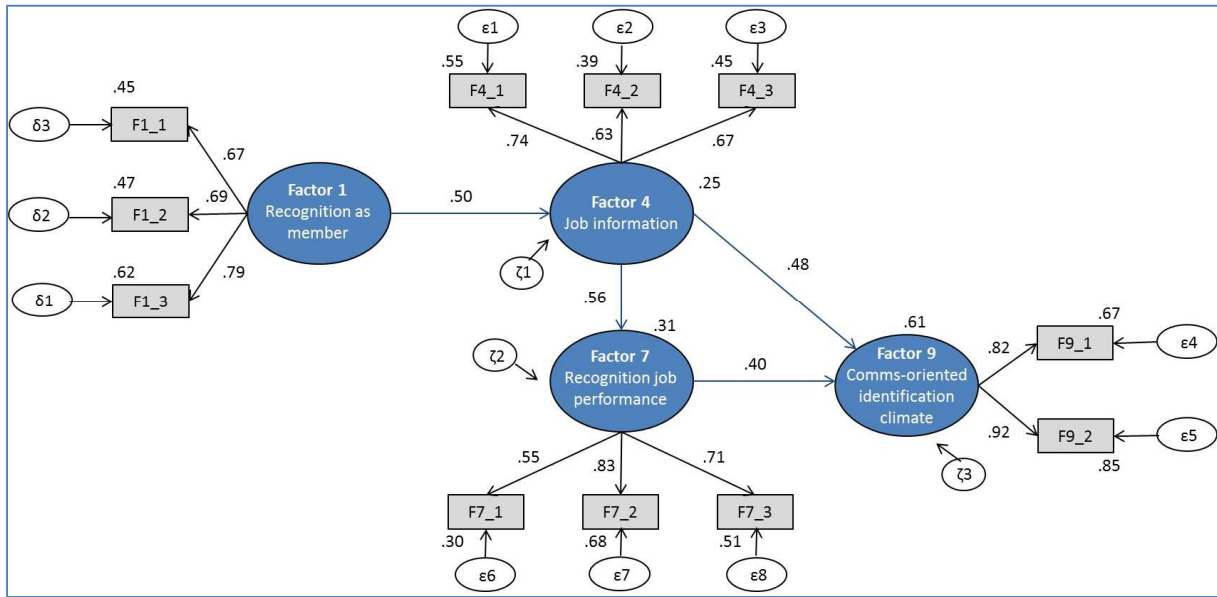


Figure 16: Model III – SEM analysis. All paths are significant ( $p \leq 0.01$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 4 ← Factor 1	0.50	0.14	0.21	0.73	0.003
Factor 7 ← Factor 4	0.56	0.12	0.31	0.79	0.001
Factor 9 ← Factor 7	0.40	0.15	0.12	0.66	0.010
Factor 9 ← Factor 4	0.48	0.15	0.17	0.74	0.010
F1_1 ← Factor 1	0.67	0.09	0.48	0.82	0.001
F1_2 ← Factor 1	0.69	0.09	0.48	0.83	0.002
F1_3 ← Factor 1	0.79	0.07	0.64	0.93	0.001
F4_1 ← Factor 4	0.74	0.08	0.56	0.87	0.001
F4_2 ← Factor 4	0.63	0.09	0.43	0.78	0.001
F4_3 ← Factor 4	0.67	0.09	0.48	0.84	0.001
F7_1 ← Factor 7	0.55	0.08	0.38	0.69	0.001
F7_2 ← Factor 7	0.83	0.07	0.69	0.95	0.001
F7_3 ← Factor 7	0.71	0.07	0.56	0.83	0.001
F9_1 ← Factor 9	0.82	0.05	0.69	0.91	0.002
F9_2 ← Factor 9	0.92	0.06	0.82	1.04	0.001

Table 33: Model III – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.24	0.09	0.91	0.91

Table 34: Model III – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.50*0.70 = 0.35	0.002	0.35	0.002
Factor 4 → Factor 9 (mediation model)	0.48	0.56*0.40 = 0.22	0.003	0.70	0.001
Factor 7 → Factor 9 (direct relation)	0.40			0.40	0.010
Factor 1 → Factor 7 (indirect relation)		0.50*0.56 = 0.28	0.002	0.28	0.002
Factor 1 → Factor 4 (direct relation)	0.50			0.50	0.003

Table 35: Model III – direct, indirect, and total effects (own research)

All model fits show good results. Although the SRMR index is relatively high, it is still below the maximum value of the acceptable fit ( $\leq 0.1$ ). Consequently, this part of the nomological validity can still be attested. Furthermore, nomological validity is also based on the confirmed hypothesized relationships. According to the hypotheses, all paths have positive signs. Moreover, the direct paths in the model are significant and have values higher than 0.20. The indirect effects show significant p-values, too. In consequence, the satisfaction with the recognition as a member of the organization (factor 1) has indirect impacts on the recognition as member with value for the organization regarding the job performance (factor 7) and the communication-oriented identification climate (factor 9). The effect is higher for factor 9 than for factor 7. Following this, in combination with the results of the confirmatory factor analysis the construct validity can be concluded.

The mediation model can be confirmed as well: There is a significant indirect as well as an direct effect between factor 4 satisfaction with the job information and factor 9, the communication-oriented identification climate. This is a partially mediated model: The direct effect is stronger than the indirect one (0.48 vs. 0.22). The total effect between factor 1 and factor 9 is similar to the total effect between factor 7 and 9. However, factor 4 has the strongest total effect on factor 9.

In this model, all correlations representing the relations of the hypotheses system are significant.

#### 8.4.4 Model IV - impact of factor 5

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1d** the official interactional communication climate,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2d** the official interactional communication climate.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3d** the official interactional communication climate,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3f** through their personal job performance.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4a** through their personal job performance,  
the more they are satisfied with the organization's communication-oriented identification climate.

#### Results of the second-generation criteria

The fit indices show adequate results. All relations between the factors and their respective indicators are significant. The factor reliability is high for all factors. While the indicators F5\_1 and F7\_1 have weak indicator reliabilities, the relationships are at least significant. Therefore, F5\_1 influences the AVE, which in turn does just almost reach the threshold of 0.50. Nevertheless, based on content-driven aspects this item shall not be eliminated. The convergence validity (see AVE) can be confirmed for each construct – except for factor 5, due to the weak item. The Fornell-Larcker criterion indicates the discriminant validity for all factors. The comparison of the squared correlations of Table 37 with the AVE of Table 36 reveals that the discriminant validity is valid.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.69	0.53	0.82	0.001	0.47	0.76	0.51	confirmed
	F1_2	0.70	0.50	0.84	0.001	0.49			
	F1_3	0.77	0.63	0.88	0.002	0.59			
Factor 5	Satisfaction with the official interactional communication climate								
	F5_1	0.46	0.22	0.65	0.001	0.21	0.70	0.45	confirmed
	F5_2	0.69	0.49	0.85	0.002	0.48			
	F5_3	0.82	0.67	1.03	0.001	0.67			
Factor 7	Recognition as member with a value for the organization regarding the job performance								
	F7_1	0.54	0.38	0.67	0.001	0.29	0.74	0.50	confirmed
	F7_2	0.80	0.67	0.92	0.001	0.64			
	F7_3	0.75	0.58	0.86	0.002	0.56			
Factor 9	Communication-oriented identification climate								
	F9_1	0.84	0.63	1.00	0.001	0.71	0.86	0.75	confirmed
	F9_2	0.89	0.71	1.09	0.002	0.79			

Table 36: CFA model IV – results of the second-generation criteria (own research)

Correlation between two factors			Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation
Factor 5	↔	Factor 9	0.44	0.17	0.68	0.002	0.20
Factor 9	↔	Factor 7	0.66	0.47	0.86	0	0.44
Factor 5	↔	Factor 7	0.51	0.26	0.71	0.002	0.26
Factor 1	↔	Factor 5	0.46	0.20	0.66	0.001	0.21
Factor 1	↔	Factor 7	0.59	0.40	0.76	0.001	0.35
Factor 1	↔	Factor 9	0.41	0.11	0.62	0.009	0.17

Table 37: CFA model IV – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.13	0.06	0.92	0.92

Table 38: CFA model IV – model fit indices (own research)

Results of the SEM analysis

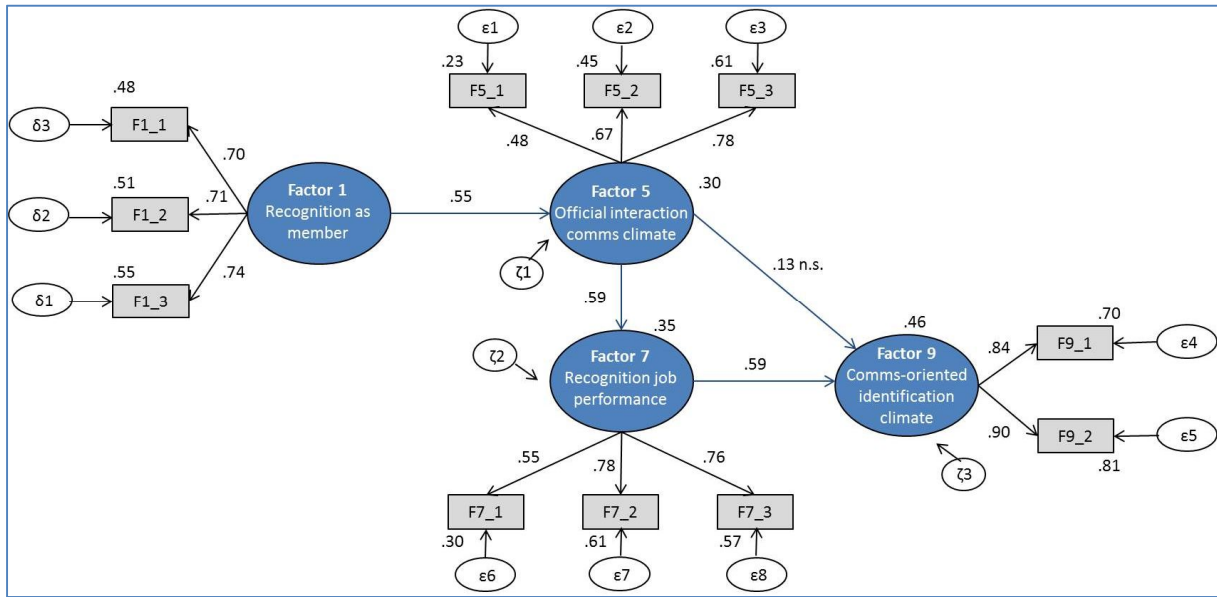


Figure 17: Model IV – SEM analysis. All paths are significant ( $p \leq 0.01$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 5 ← Factor 1	0.55	0.13	0.29	0.78	0.001
Factor 7 ← Factor 5	0.59	0.13	0.32	0.83	0.001
Factor 9 ← Factor 7	0.59	0.18	0.25	0.95	0.007
Factor 9 ← Factor 5	0.13	0.21	-0.32	0.49	0.500
F1_1 ← Factor 1	0.70	0.08	0.53	0.83	0.001
F1_2 ← Factor 1	0.71	0.09	0.52	0.86	0.002
F1_3 ← Factor 1	0.74	0.07	0.60	0.86	0.001
F5_1 ← Factor 5	0.48	0.10	0.27	0.65	0.001
F5_2 ← Factor 5	0.67	0.09	0.45	0.82	0.001
F5_3 ← Factor 5	0.78	0.08	0.60	0.93	0.001
F7_1 ← Factor 7	0.55	0.07	0.39	0.68	0.001
F7_2 ← Factor 7	0.78	0.06	0.65	0.91	0.001
F7_3 ← Factor 7	0.76	0.07	0.60	0.88	0.002
F9_1 ← Factor 9	0.84	0.07	0.67	0.96	0.001
F9_2 ← Factor 9	0.90	0.08	0.75	1.06	0.002

Table 39: Model IV – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.13	0.08	0.90	0.90

Table 40: Model IV – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		$0.55 \cdot 0.48 = 0.26$	0.001	0.26	0.001
Factor 5 → Factor 9 (mediation model)	0.13 n.s.	$0.59 \cdot 0.59 = 0.35$	0.003	0.48	0.001
Factor 7 → Factor 9 (direct relation)	0.59			0.59	0.007
Factor 1 → Factor 7 (indirect relation)		$0.55 \cdot 0.59 = 0.32$	0.001	0.32	0.001
Factor 1 → Factor 5 (direct relation)	0.55			0.55	0.001

Table 41: Model IV – direct, indirect, and total effects (own research)

While the model fits CFI and IFI reach the demanded threshold, they are lower than in previous models. The SRMR and the CMIN/d.f. also show acceptable values. The model itself shows high path values (meaningfully higher than 0.2) that are all significant, except for the path between factor 5 and factor 9. This is an indication for a full mediation – above all, the indirect effect between these two factors is significant (see Table 41). Furthermore, the indirect effect between factor 1 and factor 9 is significant. While comparing both, factor 7 – recognition regarding the job performance – obviously has a considerably higher total effect on factor 9 than factor 1 – membership recognition – on factor 9. This relation (factor 7 → factor 9) even has a higher total effect than the total mediation. Altogether, the interactional communication climate has no direct effect on the communication-based identification climate; the mediator being recognized as a value, however, has a strong effect. The variances of factor 5, factor 7, and factor 9 are moderate.

In total, the nomological validity is confirmed due to model fit and the verified hypothesized relationships between the latent factors. Following this, the construct validity can also be attested because the nomological validity is the third component besides convergence and discriminant validity that was already tested in the confirmatory factor analysis.

In this model, all correlations representing the relations of the hypotheses system are significant – except for 1d. This hypothesis is only indirectly fulfilled by a mediation indicated by hypotheses 3 and 4, but not directly.

### 8.4.5 Model V - impact of factor 6

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1e** the informal interactional communication climate,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2e** the informal interactional communication climate.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3e** the informal interactional communication climate,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3f** through their personal job performance.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4a** through their personal job performance,  
the more they are satisfied with the organization's communication-oriented identification climate.

### Results of the second-generation criteria

According to the results of the confirmatory factor analysis, the convergence validity based on an AVE at least of 0.5 and the discriminant validity based on the Fornell-Larcker criterion is confirmed. Additionally, the factor reliability is also obviously higher than 0.6, and the indicator reliability is higher than 0.4 - apart from the indicators F6\_4 and F7\_1. But both indicators have a significant relationship to the factor which is the less strict requirement or in other words this is at least necessary to be in the indicator set of one factor. The global fit criteria signal a good model fit of this factor combination. In consequence, the SEM is calculated.



Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.68	0.50	0.82	0.001	0.46	0.76	0.51	confirmed
	F1_2	0.67	0.48	0.82	0.001	0.45			
	F1_3	0.79	0.65	0.91	0.003	0.63			
Factor 6	Satisfaction with the informal interactional communication climate								
	F6_1	0.63	0.48	0.76	0.001	0.40	0.83	0.55	confirmed
	F6_2	0.78	0.65	0.88	0.001	0.61			
	F6_3	0.95	0.86	1.03	0.002	0.89			
F6_4	0.56	0.42	0.67	0.001	0.31				
Factor 7	Recognition as member with a value for the organization regarding the job performance								
	F7_1	0.53	0.38	0.66	0.001	0.28	0.74	0.50	confirmed
	F7_2	0.83	0.71	0.95	0.001	0.69			
	F7_3	0.72	0.58	0.84	0.002	0.52			
Factor 9	Communication-oriented identification climate								
	F9_1	0.84	0.70	0.97	0.002	0.71	0.86	0.75	confirmed
	F9_2	0.89	0.73	1.02	0.001	0.80			

Table 42: CFA model V – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 6	↔	Factor 9	0.40	0.24	0.57	0.001	0.16
Factor 9	↔	Factor 7	0.67	0.48	0.85	0.001	0.45
Factor 6	↔	Factor 7	0.27	0.03	0.48	0.029	0.07
Factor 1	↔	Factor 6	0.23	0.01	0.42	0.040	0.05
Factor 1	↔	Factor 7	0.59	0.39	0.76	0.001	0.34
Factor 1	↔	Factor 9	0.41	0.17	0.62	0.001	0.17

Table 43: CFA model V – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	1.72	0.07	0.95	0.95

Table 44: CFA model V – model fit indices (own research)

Results of the SEM analysis

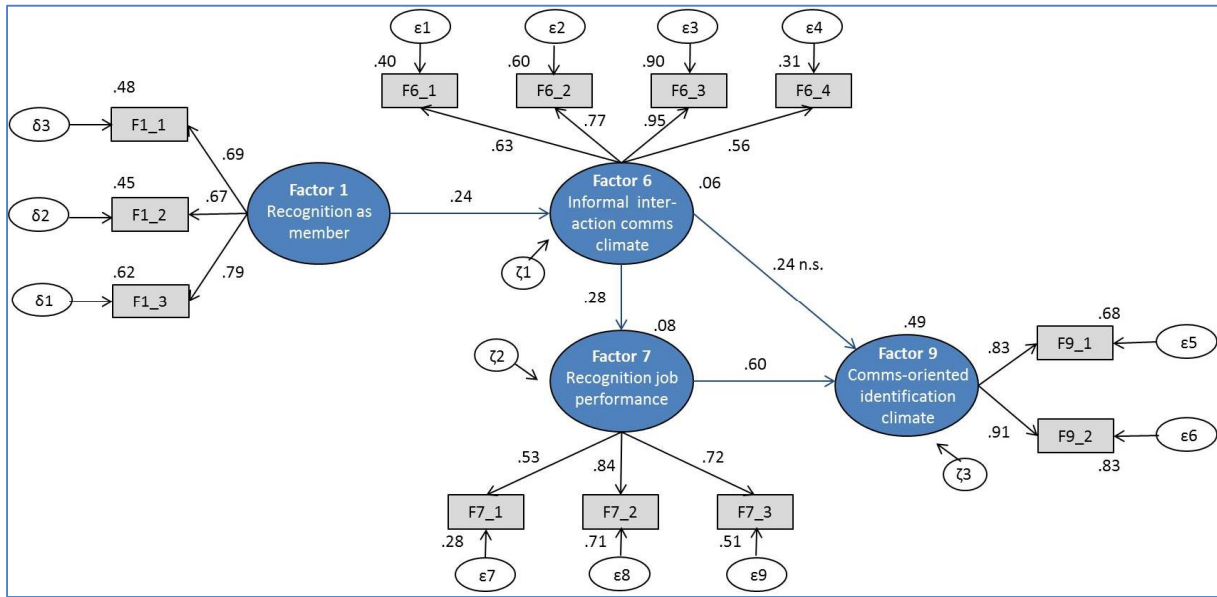


Figure 18: Model V – SEM analysis. All paths are significant ( $p \leq 0.05$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 6 ← Factor 1	0.24	0.11	0.01	0.44	0.041
Factor 7 ← Factor 6	0.28	0.12	0.03	0.49	0.025
Factor 9 ← Factor 7	0.60	0.11	0.40	0.82	0.001
Factor 9 ← Factor 6	0.24	0.14	-0.01	0.46	0.064
F1_1 ← Factor 1	0.69	0.09	0.46	0.84	0.001
F1_2 ← Factor 1	0.67	0.09	0.47	0.84	0.001
F1_3 ← Factor 1	0.79	0.08	0.62	0.95	0.002
F6_1 ← Factor 6	0.63	0.07	0.49	0.76	0.001
F6_2 ← Factor 6	0.77	0.06	0.64	0.87	0.001
F6_3 ← Factor 6	0.95	0.04	0.86	1.02	0.001
F6_4 ← Factor 6	0.56	0.07	0.42	0.67	0.001
F7_1 ← Factor 7	0.53	0.07	0.38	0.66	0.001
F7_2 ← Factor 7	0.84	0.06	0.70	0.96	0.001
F7_3 ← Factor 7	0.72	0.07	0.57	0.84	0.001
F9_1 ← Factor 9	0.83	0.05	0.71	0.92	0.002
F9_2 ← Factor 9	0.91	0.06	0.80	1.02	0.001

Table 45: Model V – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.24	0.10	0.91	0.91

Table 46: Model V – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.24*0.41 = 0.10	0.028	0.10	0.028
Factor 6 → Factor 9 (mediation model)	0.24 n.s.	0.28*0.60 = 0.17	0.020	0.41	0.001
Factor 7 → Factor 9 (direct relation)	0.60			0.60	0.001
Factor 1 → Factor 7 (indirect relation)		0.24*0.28 = 0.07	0.041	0.07	0.041
Factor 1 → Factor 6 (direct relation)	0.24			0.24	0.041

Table 47: Model V – direct, indirect, and total effects (own research)

In comparison to the confirmatory factor analysis, the model fit values deteriorated. This is normal because the SEM model has more restrictions due to the relationships (directional paths) between the latent factors than the undirected paths in the confirmatory factor analysis. Nevertheless, the CMIN/d.f., CFI, and IFI show acceptable fits, as does the SRMR, but with the maximum admissible value. Almost all correlations in the model are significant, excluding only that one between factor 6 and factor 9. Furthermore, the paths of the structural model are all meaningful (greater than 0.2). However, the variances of factor 6 and factor 7 are very weak, which means that just a small percentage is explained by factor 1 (for factor 6) and by factor 1 and 6 (for factor 7). All of the indirect effects and total effects are significant. In consequence, amongst others membership recognition (factor 1) has an indirect influence on the communication-oriented identification climate (factor 9). The informal interactional communication exchange (factor 6) has no significant direct relationship to the communication-oriented identification climate (factor 9) but this relationship is mediated by the satisfaction of being recognized as valuable to the company (factor 7). In particular, the significant correlation between factor 7 and 9 is very strong, with a value of 0.6. It is a full mediated construct between factor 6 and factor 9. The significant indirect effect of factor 1 on factor 7 indicates that being satisfied with one's recognition as a member indirectly influences the satisfaction of being recognized as a value for the company. In general, the nomological validity can be confirmed while comparing the hypotheses with the measured relations between the latent factors. Consequently, the construct validity can also be confirmed because the convergence and discriminant validity were calculated on basis of the confirmatory factor analysis. In this model, all correlations representing the relations of the hypotheses system are significant - except hypothesis 1e is not. Based on a full mediation, the

relationship of hypothesis 1e is only indirectly significant by a significant total effect. This indirect effect is indicated by the hypotheses 3 and 4.

#### 8.4.6 Result interpretation: Models I-V

In the previous chapters, the empirical evaluation of each model was the object of interest. Now, the focus is on the content-related interpretation of each model.

Models	Effects	Direct	Indirect	p-value	Total	p-value
<b>Model I</b>	<b>Factor 2: Satisfaction with company information</b>					
	Factor 1 → Factor 9 (full model)		0.59*0.70 = 0.41	0.001	0.41	0.001
	Factor 2 → Factor 9 (mediation model)	0.44 n.s.	0.77*0.34 n.s. = 0.26	0.130	0.70	0.001
	Factor 7 → Factor 9 (direct relation)	0.34 n.s.			0.34	0.168
	Factor 1 → Factor 7 (indirect relation)		0.59*0.77 = 0.45	0.001	0.45	0.001
	Factor 1 → Factor 2 (direct relation)	0.59			0.59	0.001
<b>Model II</b>	<b>Factor 3: Satisfaction with R&amp;D information within the company</b>					
	Factor 1 → Factor 9 (full model)		0.46*0.61 = 0.28	0.001	0.28	0.001
	Factor 3 → Factor 9 (mediation model)	0.31	0.63*0.48 = 0.30	0.001	0.61	0.001
	Factor 7 → Factor 9 (direct relation)	0.48			0.48	0.002
	Factor 1 → Factor 7 (indirect relation)		0.46*0.63 = 0.29	0.001	0.29	0.001
	Factor 1 → Factor 3 (direct relation)	0.46			0.46	0.001
<b>Model III</b>	<b>Factor 4: Satisfaction with job information</b>					
	Factor 1 → Factor 9 (full model)		0.50*0.70 = 0.35	0.002	0.35	0.002
	Factor 4 → Factor 9 (mediation model)	0.48	0.56*0.40 = 0.22	0.003	0.70	0.001
	Factor 7 → Factor 9 (direct relation)	0.40			0.40	0.010
	Factor 1 → Factor 7 (indirect relation)		0.50*0.56 = 0.28	0.002	0.28	0.002
	Factor 1 → Factor 4 (direct relation)	0.50			0.50	0.003
<b>Model IV</b>	<b>Factor 5: Official interactional communication climate</b>					
	Factor 1 → Factor 9 (full model)		0.55*0.48 = 0.26	0.001	0.26	0.001
	Factor 5 → Factor 9 (mediation model)	0.13 n.s.	0.59*0.59 = 0.35	0.003	0.48	0.001
	Factor 7 → Factor 9 (direct relation)	0.59			0.59	0.007
	Factor 1 → Factor 7 (indirect relation)		0.55*0.59 = 0.32	0.001	0.32	0.001
	Factor 1 → Factor 5 (direct relation)	0.55			0.55	0.001
<b>Model V</b>	<b>Factor 6: Informal interactional communication climate</b>					
	Factor 1 → Factor 9 (full model)		0.24*0.41 = 0.10	0.028	0.10	0.028
	Factor 6 → Factor 9 (mediation model)	0.24 n.s.	0.28*0.60 = 0.17	0.020	0.41	0.001
	Factor 7 → Factor 9 (direct relation)	0.60			0.60	0.001
	Factor 1 → Factor 7 (indirect relation)		0.24*0.28 = 0.07	0.041	0.07	0.041
	Factor 1 → Factor 6 (direct relation)	0.24			0.24	0.041

Table 48: Overview of the direct, indirect, and total effects in the models I-V (own research)

Models	Factor 1	Model-specific factor	Factor 7	Factor 9
<b>Model I</b>		0.34 (factor 2)	0.59	0.53
<b>Model II</b>		0.21 (factor 3)	0.39	0.50
<b>Model III</b>		0.25 (factor 4)	0.31	0.61
<b>Model IV</b>		0.30 (factor 5)	0.35	0.46
<b>Model V</b>		0.06 (factor 6)	0.08	0.49

Table 49: Overview of the variances in the models I-V (own research)

**Interpretation of hypothesis 2: The relation between recognition as a member and the satisfaction with the communication content and climate (factor 1 → factor 2/3/4/5/6)**

Each model has a significant positive relation between being recognized as a member of the organization (factor 1) and being satisfied with the respective facet of information (about the company, the organizational function (R&D), and the job) as well as with the official and informal interactional communication climate (factor 2-6). Model I shows a strong correlation between factor 1 and factor 2 (correlation: 0.59). Based on the theoretical background, one interpretation is: The higher the member is satisfied with being perceived as member of the organization, the higher he is satisfied with the communicated information about the company because the employee feels to be recognized as part of the organization and these information are exclusively addressed to internals. That creates an inside feeling and an openness to take part of the direction the organization follows. He has the chance to get to know the organization internally due to an active recognition as part of it. This is a basic requirement – if it is not fulfilled, the employee will perhaps judge the information from a more external perspective, although being an internal. This external perspective leads to the problem that strong overlaps between one's own expectations as a member and the communicated company's expectations on the company could not be developed. Recognition as a member makes visible that an organization consists of people who have a common interest in fulfilling a certain organizational objective. In model I, factor 1 explains 34% of the variance of factor 2 which can be interpreted as moderate variance (Chin, 1998b, p. 323).

Model IV also shows a strong relation between factor 1 and factor 5, with a path value of 0.55. Factor 1 explains 30% of the variance of factor 5. This can be interpreted in the following way: The more the employees are satisfied that they are recognized as a member with a special role and function based on the correct information distribution (adequate confidentiality application in the company), the more they are satisfied with the official interactional communication climate. The climate is indicated by an international and interdisciplinary exchange between the respective functions and an information exchange to enable work synergies. Now, the more the membership recognition is expressed by a conscious behavior with information confidentiality – which means knowing which information is determined for which person holding a special role and function within the company – the more satisfying the official interactional communication climate will be, due to a conscious, target-group, and efficient exchange of information. A chaotic information exchange would otherwise evoke misspecified information or no communication due to distrust. In this case, it is obvious that there is a general understanding between membership and satisfying interaction to facilitate working for the benefit of the company. Consequently, the respective function within the company can be fulfilled more easily.

For model III, the interpretation why satisfaction with membership recognition (factor 1) and job information (factor 4) correlate strongly is similar to the previous one. To receive the relevant information that the employee can do his job requires, first of all, the recognition that he is a member with a special job target and description. The correlation amounts to 0.5 (similar but not as high value as in the models I and IV) and factor 1 explains 25% of the variance of factor 4.

In model II, the relationship between factor 1 and factor 3 (satisfaction with R&D information) has a correlation of 0.46. This can be interpreted as follows: A satisfying recognition of membership is still necessary for satisfaction with the respective information but there is the awareness that information about the R&D function and the company is determined for a broader audience, not merely necessary for a certain job description and target. This audience is internal. In consequence, the relationship is significant. Factor 1 explains 21% of the variance of factor 3.

A weak significant relationship lies between factor 1 and factor 6 in model V, yet is still meaningful, with a value of 0.24. The informal interactional communication climate is less dependent on satisfactory membership recognition. It is a meaningful path because membership is still necessary to gain access to the information but the informal interactional communication climate is more satisfying on the basis of individual sympathy and networks than on the basis of the official roles and functions an employee holds. Therefore, the variance of factor 6 is just 0.06.

**Interpretation of the hypotheses 1, 3, and 4: The relation between satisfaction with the communication content and climate and the communication-oriented identification climate (factor 2/3/4/5/6 (→ factor 7) → factor 9)**

The models I-V examined whether, on the one hand, the respective factors 2/3/4/5/6 influence factor 9 directly and, on the other hand, whether there is an indirect influence due to factor 7 (mediation construct). The results show different significant or non-significant – but always positive – effects.

Both communication interaction climates – the official (factor 5) and the informal (factor 6) one – have no significant direct effect - but always significant indirect effects - on the communication-oriented identification climate (factor 9). These are full mediation models. One possible interpretation is that such interaction climates affect an employee in person. Am I involved in this interaction and am I recognized as a relevant person with an individual value in this interaction? Therefore, both interaction climates have a significant indirect influence on the communication-oriented identification climate (hypotheses 3 and 4): The more an

employee is satisfied with the official or in-official communication climate, the more he is satisfied with his recognition as a member with an individual value for the company. The more he is satisfied with his recognition to be valuable for the company, the more he is satisfied with the communication-oriented identification climate. In particular, model IV shows an equally strong correlation between factor 5 and factor 7 (0.59) and between factor 7 and factor 9 (0.59). Additionally, factor 1 and factor 5 explain 35% of the variance of factor 7, which is classified as moderate according to Chin (1998b). If the employee is integrated into the official communication interactions and is satisfied with it, this evokes that the employee is satisfied to be valued with his job performance fulfilling a certain purpose. The satisfying communication interactions facilitate working in accordance to the organization's targets and consequently in taking part to reach these based on valuable performance. Without such a satisfying interactional communication climate, relevant information is exchanged less. Strong recognition also leads to a highly perceived identification climate. In comparison to the other models, model IV with factor 5 shows a very strong significant indirect effect, whereas model V with factor 6 indicates a very low indirect significant effect. One possible interpretation is that the informal interaction climate still evokes satisfaction with the valuation of individual job performance. According to the results of the expert interviews, doing a good job that is valued, is often the entrance-ticket for informal communication because colleagues who have no official working relation to the employee will try to connect via informal ways. In the informal communication interactions themselves, however, job performance is not the only element that is valued. Other recognition aspects seem to exist that are recognized more in an informal environment: Perhaps the power of networks, personal sympathies, or being a good "whistleblower". Therefore, the value of the path between factor 6 and factor 7 is just 0.28, and factor 1 and factor 6 also only explain 8% of the variance of factor 7.

Model II has a strong indirect effect in the mediation. However, in contrast to model IV and V it is a partial, not full, mediation because a significant direct effect between factor 3 and factor 9 still exists. In consequence, satisfaction with the R&D information within the company has a direct correlation of 0.31 to the communication-oriented identification climate and in parallel, the indirect effect with factor 7 – which indicates satisfaction with one's recognition as a member with value for the company – has a very similar, but indirect, effect of 0.30 as well. An employee evaluates his expectations and the experience he has with the information content regarding R&D within the company. When he is satisfied, he understands the "other's" view – that of the company – and his expectations are in line with his experiences with R&D topics in the company. This leads to a satisfying identification climate because identification is evoked through role-taking aspects and the internalization and acceptance of the "other's" aim, purpose, strategic direction, etc. Hence, the employee is satisfied with the

company's innovation topics, which are transferred with information about R&D. The employee finally works in the R&D function and this information is important for him. In addition, satisfaction with the content of the R&D information also positively correlates to satisfaction with the recognition of being perceived as valuable for the company. When an employee finds overlaps between his skills leading to job performance and the communicated information on R&D innovation focus, he is willed to act in a way that is beneficial for the company. If he is satisfied with the recognition of his value by the company, with his own expectations, and with the company's perceived expectations as communicated through behavior, then there is a satisfying match. This company's cultural value to recognize the employee's individual value for the company leads again to a satisfying communication-oriented identification climate for the employee. Of course, it is possible that an employee would not like to act in a valuable way. However, in order to do so, the condition is that he still must gain information about the R&D focus within the company to have the general possibility to work for the benefit of the company.

The same explanation of the indirect effect is valid for model III. Strong satisfaction with the received information about the job (factor 4) positively influences the satisfaction of being recognized as a value for the company (factor 7) because the employee can direct his performance based on the received, necessary information. This satisfaction with one's recognition by the company leads to satisfaction with the communication-oriented identification climate (factor 9), the indicator for the adequate internal identifying environment for identification processes.

In model II, the direct effect (0.31) and the indirect effect (0.30) are almost equal. This means that communication satisfaction with R&D information evokes a very similar satisfaction with the communication-oriented identification climate and missing value recognition as mediator does not disturb identification effects. In contrast, the difference between the direct (0.48) and the indirect (0.22) effect is considerable in the model III. Following this, satisfaction with job information is very important for identification processes, whereas value recognition as mediator plays a role but not an intensifying one. To note: The correlation between satisfaction with job information and value recognition has a high value (0.56) and confirms the relevant relation between receiving information and action according to this information to enable work performance for the benefit of the company.

A weak indirect effect can be found in model I. The indirect total effect between factor 2 (satisfaction with the company information) and factor 9 (communication-oriented identification climate) is not significant, although the total effect is. According to Cheung and Lau (2008), not all paths in the indirect effect have to be significant. Therefore, an indirect



effect can be interpreted. This means that there is in principal an indirect influence of content satisfaction with the received information on the company on the communication-oriented identification climate but no direct influence. Factor 1 and 2 explain 59% of the variance of factor 7.

**Interpretation: The relation between recognition as a member and the communication-oriented identification climate (factor 1 → factor 9) and the relation between recognition as a member and recognition as a value for the company (factor 1 → factor 7)**

The interpretation of the mediations in the models I-V clarified that all factors belonging to the respective mediations directly or indirectly influence the communication-oriented identification climate. However, factor 1 is not part of the mediations. Therefore, it must be examined whether factor 1 also contributes to factor 9 (the communication-oriented identification climate). All models show an indirect significant effect. The strength of the effect varies between 0.26 and 0.35. A high effect is found in model III. Only model V shows a weak effect with 0.10. Nevertheless, the two recognition factors (factor 1 and 7) and the content or climate satisfaction factor of each model (factor 2/3/4/5/6) explain at least 46% of variance of factor 9 and at a maximum 61%. These values indicate moderate explications.

In consequence, it is empirically validated that membership recognition always indirectly influences the communication-oriented identification climate, whereas the other recognition factor “being recognized as value for the company” has a direct relation. However, both kinds of recognitions contribute as influencing factors to identification processes. Afterwards, factor 1 also has a significant indirect influence on factor 7, which is verified in all models. This means that “being recognized as a member” has indirect effects on job performance recognition.

## 8.5 CFA and SEM models: Results of the second-generation criteria and of the SEM analysis for the models VI-X with mediation factor 8

In the next five models, factor 7 is replaced by factor 8 to examine the special characteristic of job performance creativity for R&D employees. The five models again represent the different facets of satisfaction with communication content and climate. For example, model I and VI cover “information content regarding their organization” and only their mediation factors differ. The same structure can be applied to model II and VII, to model III and VIII, to model IV and IX, and to model V and X.

### 8.5.1 Model VI - impact of factor 2

#### 1<sup>st</sup> hypothesis:

The more the employees are satisfied with...

**1a** the received information content regarding their organization, the more they are satisfied with the organization’s communication-oriented identification climate.

#### 2<sup>nd</sup> hypothesis:

The more the employees are satisfied with the recognition of being part of the organization as a member, the more they are satisfied with...

**2a** the received information content regarding their organization.

#### 3<sup>rd</sup> hypothesis:

The more the employees are satisfied with...

**3a** the received information content regarding their organization, the more they are satisfied with the recognition of being a member with an individual value for the organization...

**3g** through their personal job performance contribution based on creative work.

#### 4<sup>th</sup> hypothesis:

The more they are satisfied with the recognition of being a member with an individual value for the organization...

**4b** through their personal job performance contribution based on creative work, the more they are satisfied with the organization’s communication-oriented identification climate.

### Results of the second-generation criteria

Model VI is similar to model I: The indicator reliability is confirmed for all indicators. Furthermore, the factor reliability is high for every factor; only factor 8 misses the AVE’s threshold – a value of 0.50 is demanded. The convergence validity is therefore attested for the factors 1, 2, and 9, and almost for factor 8. Nevertheless, the Fornell-Larcker criterion which indicates the discriminant validity is confirmed three times. Based on a high correlation

between factor 8 and 9 (see Table 51), the AVE value for factor 8 is not higher than the squared correlation. In general, however, the local fit indices have predominantly good values (requirement see Fritz, 1992). The global fit indices show acceptable model fits.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.71	0.51	0.85	0.001	0.50	0.76	0.51	confirmed
	F1_2	0.69	0.51	0.83	0.001	0.48			
	F1_3	0.76	0.62	0.87	0.002	0.57			
Factor 2	Satisfaction with company information								
	F2_1	0.77	0.61	0.87	0.002	0.59	0.80	0.58	confirmed
	F2_2	0.76	0.65	0.86	0.001	0.58			
	F2_3	0.74	0.61	0.85	0.001	0.55			
Factor 8	Recognition as member with a value for the organization regarding the job performance contribution based on creative work								
	F8_1	0.66	0.51	0.77	0.002	0.43	0.73	0.48	almost confirmed
	F8_2	0.77	0.61	0.88	0.001	0.59			
	F8_3	0.64	0.45	0.77	0.002	0.41			
Factor 9	Communication-oriented identification climate								
	F9_1	0.84	0.71	0.93	0.002	0.71	0.86	0.75	confirmed
	F9_2	0.89	0.79	0.99	0.001	0.80			

Table 50: CFA model VI – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 2	↔	Factor 1	0.54	0.32	0.71	0.001	0.29
Factor 8	↔	Factor 1	0.57	0.37	0.74	0.001	0.32
Factor 9	↔	Factor 1	0.41	0.17	0.61	0.001	0.17
Factor 2	↔	Factor 9	0.68	0.47	0.84	0.001	0.47
Factor 2	↔	Factor 8	0.66	0.47	0.81	0.001	0.44
Factor 9	↔	Factor 8	0.76	0.66	0.91	0.000	0.58

Table 51: CFA model VI – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.80	0.06	0.90	0.90

Table 52: CFA model VI – model fit indices (own research)

Results of the SEM analysis

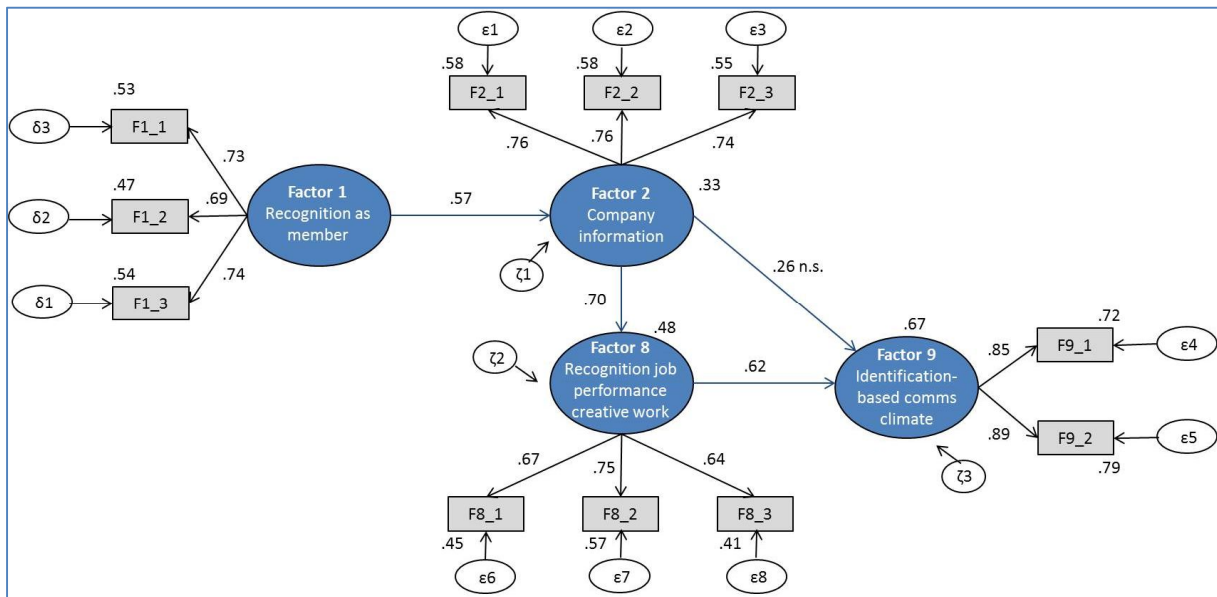


Figure 19: Model VI – SEM analysis. All paths are significant ( $p \leq 0.01$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 2 ← Factor 1	0.57	0.09	0.36	0.73	0.001
Factor 8 ← Factor 2	0.70	0.09	0.51	0.85	0.001
Factor 9 ← Factor 8	0.62	0.18	0.27	0.99	0.001
Factor 9 ← Factor 2	0.26	0.21	-0.24	0.60	0.245
F1_1 ← Factor 1	0.73	0.08	0.55	0.85	0.001
F1_2 ← Factor 1	0.69	0.08	0.51	0.82	0.002
F1_3 ← Factor 1	0.74	0.06	0.60	0.85	0.002
F2_1 ← Factor 2	0.76	0.06	0.61	0.86	0.002
F2_2 ← Factor 2	0.76	0.06	0.65	0.86	0.001
F2_3 ← Factor 2	0.74	0.06	0.61	0.84	0.001
F8_1 ← Factor 8	0.67	0.06	0.54	0.79	0.002
F8_2 ← Factor 8	0.75	0.07	0.58	0.87	0.001
F8_3 ← Factor 8	0.64	0.08	0.44	0.77	0.002
F9_1 ← Factor 9	0.85	0.05	0.74	0.93	0.001
F9_2 ← Factor 9	0.89	0.05	0.80	0.98	0.001

Table 53: Model VI – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.90	0.07	0.90	0.90

Table 54: Model VI – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.57*0.69 = 0.40	0.001	0.40	0.001
Factor 2 → Factor 9 (mediation model)	0.26 n.s.	0.70*0.62 = 0.43	0.001	0.69	0.001
Factor 8 → Factor 9 (direct relation)	0.62			0.62	0.001
Factor 1 → Factor 8 (indirect relation)		0.57*0.70 = 0.40	0.001	0.40	0.001
Factor 1 → Factor 2 (direct relation)	0.57			0.57	0.001

Table 55: Model VI – direct, indirect, and total effects (own research)

The model fit is acceptable. Except for the correlation between factor 6 and factor 9, all paths are significant and meaningful (paths are equal to or greater 0.2). However, the non-significant relationship is completely mediated by factor 8, which can be interpreted by a significant indirect and total effect. This mediation effect has the strongest influence on the communication-oriented identification climate (factor 9). Factor 1 also contributes indirectly to the communication-oriented identification climate and factor 8 does so directly. In total, all factors explain 67% of the variance of factor 9, factor 1 and factor 2 explain 48% of the variance of factor 8 and factor 1 alone explains 33% of the variance of factor 2. In consequence of an acceptable model fit as well as significant and meaningful paths, nomological validity can be concluded. Together with the confirmed convergence and discriminant validity for most of the factors (see confirmatory factor analysis for this model), the construct validity is attested for this model.

In this model, all correlations representing the relations of the hypotheses system are significant - excluded hypothesis 1a. The relationship of hypothesis 1a is indicated with a total effect that is combined as the direct and the significant indirect mediating effect described in hypothesis 3 and 4.

### 8.5.2 Model VII - impact of factor 3

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1b** the received information content regarding their organizational function, the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member, the more they are satisfied with...

**2b** the received information content regarding their organizational function.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3b** the received information content regarding their organizational function, the more they are satisfied with the recognition of being a member with an individual value for the organization...

**3g** through their personal job performance contribution based on creative work.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the organization...

**4b** through their personal job performance contribution based on creative work, the more they are satisfied with the organization's communication-oriented identification climate.

#### Results of the second-generation

The confirmatory factor analysis illustrates very good global fit indices. Furthermore, all indicators are significant, with values above the threshold of 0.4 for indicating good indicator reliability. The factor reliability is also high (values greater than 0.6). The comparison of the AVEs and the squared correlations between the factors show discriminant validity for the factors 1; 3; and 9. For factor 8 two squared correlations are higher than the factor's AVE. The convergence validity is confirmed for all factors (AVE values higher than 0.50).

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.68	0.49	0.82	0.001	0.47	0.76	0.51	confirmed
	F1_2	0.69	0.50	0.84	0.001	0.47			
	F1_3	0.78	0.64	0.90	0.001	0.60			
Factor 3	Satisfaction with R&D information within the company								
	F3_1	0.85	0.77	0.91	0.002	0.71	0.85	0.65	confirmed
	F3_2	0.89	0.79	0.96	0.002	0.79			
	F3_3	0.66	0.53	0.78	0.001	0.44			
Factor 8	Recognition as member with a value for the organization regarding the job performance contribution based on creative work								
	F8_1	0.69	0.55	0.79	0.002	0.47	0.73	0.51	almost confirmed
	F8_2	0.74	0.57	0.85	0.001	0.55			
	F8_3	0.64	0.46	0.76	0.001	0.40			
Factor 9	Communication-oriented identification climate								
	F9_1	0.82	0.68	0.91	0.001	0.67	0.86	0.76	confirmed
	F9_2	0.92	0.82	1.03	0.002	0.85			

Table 56: CFA model VII – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 1	↔	Factor 3	0.42	0.21	0.60	0.001	0.17
Factor 1	↔	Factor 9	0.39	0.15	0.60	0.002	0.15
Factor 1	↔	Factor 8	0.57	0.38	0.74	0.001	0.33
Factor 3	↔	Factor 9	0.59	0.40	0.74	0.001	0.35
Factor 3	↔	Factor 8	0.72	0.52	0.88	0.001	0.52
Factor 9	↔	Factor 8	0.79	0.66	0.91	0.000	0.62

Table 57: CFA model VII – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	1.90	0.06	0.95	0.95

Table 58: CFA model VII – model fit indices (own research)

Results of the SEM analysis

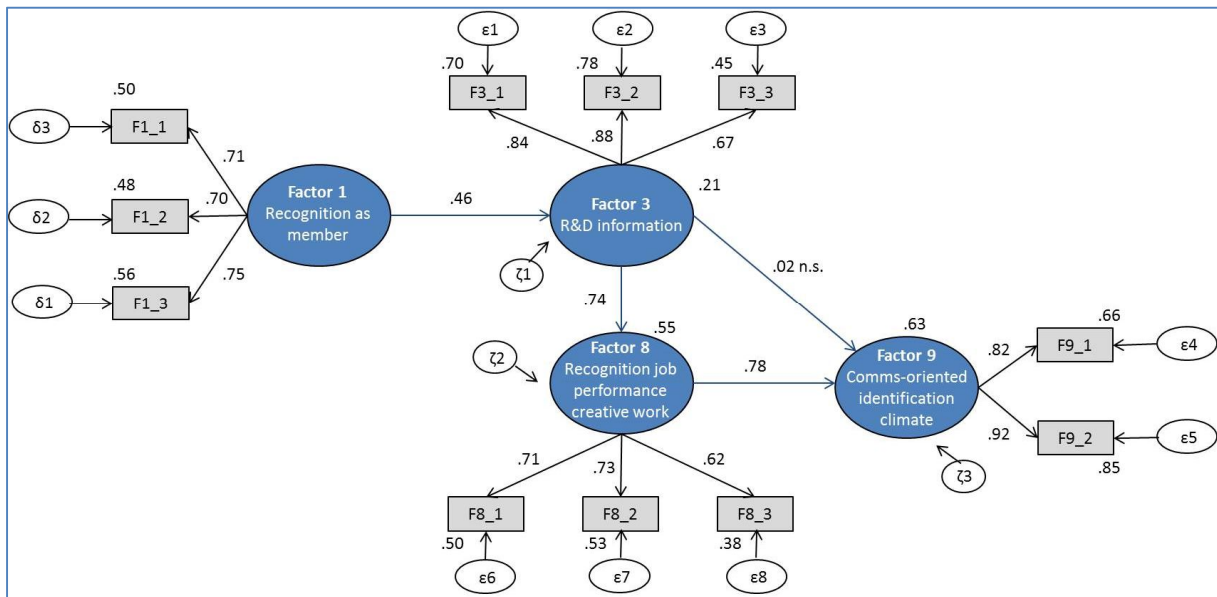


Figure 20: Model VII – SEM analysis. All paths are significant ( $p \leq 0.01$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 3 ← Factor 1	0.46	0.10	0.26	0.63	0.001
Factor 8 ← Factor 3	0.74	0.09	0.55	0.90	0.001
Factor 9 ← Factor 8	0.78	0.23	0.46	1.32	0.001
Factor 9 ← Factor 3	0.02	0.25	-0.59	0.36	0.949
F1_1 ← Factor 1	0.71	0.08	0.52	0.84	0.001
F1_2 ← Factor 1	0.70	0.08	0.51	0.84	0.002
F1_3 ← Factor 1	0.75	0.06	0.62	0.87	0.001
F3_1 ← Factor 3	0.84	0.04	0.76	0.90	0.001
F3_2 ← Factor 3	0.88	0.04	0.78	0.95	0.002
F3_3 ← Factor 3	0.67	0.06	0.54	0.78	0.001
F8_1 ← Factor 8	0.71	0.06	0.59	0.81	0.002
F8_2 ← Factor 8	0.73	0.08	0.55	0.85	0.001
F8_3 ← Factor 8	0.62	0.08	0.44	0.75	0.001
F9_1 ← Factor 9	0.82	0.05	0.71	0.90	0.001
F9_2 ← Factor 9	0.92	0.04	0.84	1.02	0.001

Table 59: Model VII – detailed information (own research)



Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.04	0.08	0.94	0.94

Table 60: Model VII – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		$0.46 * 0.60 = 0.28$	0.001	0.28	0.001
Factor 3 → Factor 9 (mediation model)	0.02 n.s.	$0.74 * 0.78 = 0.58$	0.000	0.60	0.001
Factor 8 → Factor 9 (direct relation)	0.78			0.78	0.001
Factor 1 → Factor 8 (indirect relation)		$0.46 * 0.74 = 0.34$	0.001	0.34	0.001
Factor 1 → Factor 3 (direct relation)	0.46			0.46	0.001

Table 61: Model VII – direct, indirect, and total effects (own research)

All model fits are revealed to be acceptable or good. The correlations between the latent factors show that the postulated relationship and all paths are meaningful – except for the relation between factor 3 and factor 9, which is a non-significant and very weak correlation (lower than 0.2). However, the indirect – mediated – way is highly significant. In consequence, this relation is completely mediated by factor 8, which means that factor 3 has an influence on factor 9 – but only indirectly (indicated by a total significant effect). Factor 1, the satisfaction with membership recognition, has an indirect significant effect on factor 9. It is the weakest total effect on the communication-oriented identification climate compared to the other ones in the model (see Table 61). The highest total effect is the one that factor 8 has on factor 9. Both mediation paths are very strong. Based on the postulated relationships between the latent factor models and the results of the model fit, the nomological validity can be confirmed. Besides the already attested convergence and discriminant validity as a third part of the construct validity, the nomological validity can be now concluded as well.

In this model, all correlations representing the relations of the hypotheses system are significant - except for hypothesis 1b, which is only indirectly indicated as a total significant effect mediated by the relationships described in hypotheses 3 and 4.

### 8.5.3 Model VIII - impact of factor 4

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1c** the received information content regarding their job,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2c** the received information content regarding their job.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3c** the received information content regarding their job,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3g** through their personal job performance contribution based on creative work.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4b** through their personal job performance contribution based on creative work,  
the more they are satisfied with the organization's communication-oriented identification climate.

### Results of the second-generation criteria

The results indicate indicator reliabilities and factor reliabilities above their respective thresholds. Moreover, the convergence validity can be deduced by the AVE for factor 1 and factor 9. Factor 4 and factor 8 are very close to the threshold of 0.5. Consequently, the convergence validity can be entirely confirmed for two factors and almost for the other two. The discriminant validity is violated for factor 8 based on the value of the squared correlation between factor 8 and 9. All other comparisons between the AVEs and the squared multiple correlations show discriminant validity. According to Homburg and Baumgartner (1995) and Fritz (1992), however, at least half of the second-generation criteria have to reach the demanded values. This model shows that the empirical values are very close to the thresholds and that the violations are rather moderate. Therefore, the CFA model is not rejected. The model fit indices are acceptable and even good for CFI and IFI.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.66	0.47	0.83	0.002	0.44	0.76	0.51	confirmed
	F1_2	0.69	0.47	0.84	0.004	0.47			
	F1_3	0.79	0.67	0.91	0.002	0.63			
Factor 4	Satisfaction with job information								
	F4_1	0.74	0.49	0.87	0.006	0.55	0.74	0.48	confirmed
	F4_2	0.65	0.44	0.80	0.002	0.42			
	F4_3	0.69	0.48	0.88	0.002	0.47			
Factor 8	Recognition as member with a value for the organization regarding the job performance contribution based on creative work								
	F8_1	0.64	0.48	0.78	0.004	0.41	0.73	0.48	almost confirmed
	F8_2	0.80	0.63	0.89	0.002	0.63			
	F8_3	0.63	0.44	0.77	0.003	0.40			
Factor 9	Communication-oriented identification climate								
	F9_1	0.81	0.67	0.89	0.004	0.66	0.86	0.76	confirmed
	F9_2	0.93	0.85	1.03	0.003	0.86			

Table 62: CFA model VIII – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 1	↔	Factor 4	0.44	0.14	0.69	0.004	0.19
Factor 1	↔	Factor 8	0.57	0.38	0.74	0.001	0.33
Factor 1	↔	Factor 9	0.38	0.17	0.57	0.002	0.14
Factor 4	↔	Factor 8	0.50	0.23	0.73	0.003	0.25
Factor 4	↔	Factor 9	0.69	0.50	0.87	0.001	0.47
Factor 9	↔	Factor 8	0.78	0.63	0.90	0.001	0.61

Table 63: CFA model VIII – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.27	0.07	0.92	0.92

Table 64: CFA model VIII – model fit indices (own research)

Results of the SEM analysis

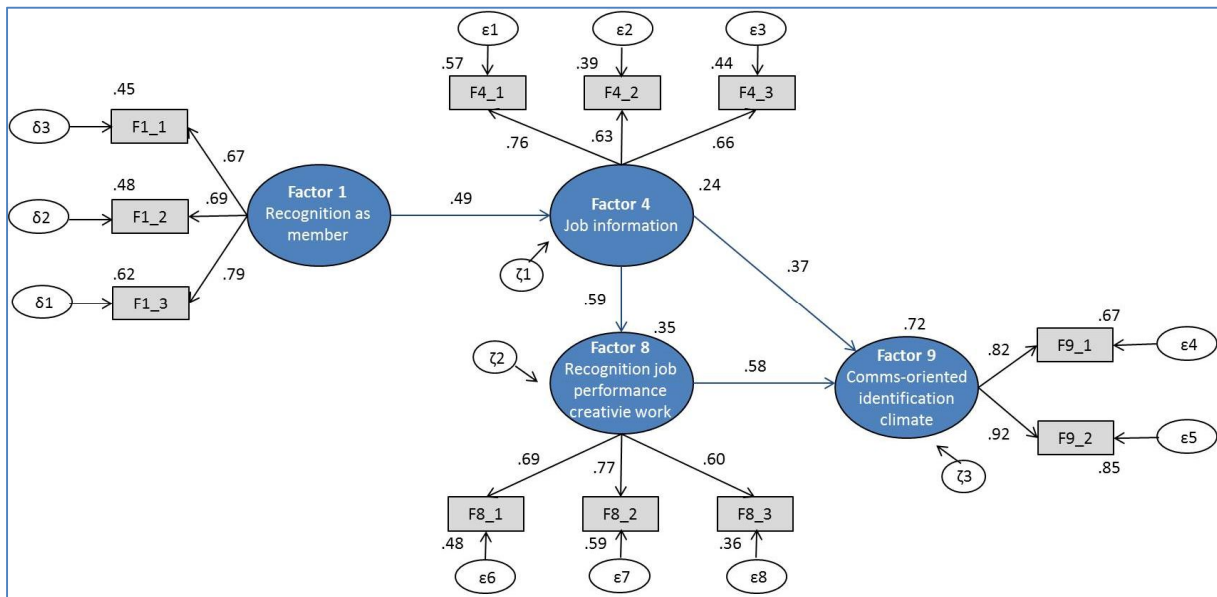


Figure 21: Model VIII – SEM analysis. All paths are significant ( $p \leq 0.05$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 4 ← Factor 1	0.49	0.14	0.21	0.73	0.003
Factor 8 ← Factor 4	0.59	0.13	0.29	0.81	0.001
Factor 9 ← Factor 8	0.58	0.13	0.33	0.82	0.002
Factor 9 ← Factor 4	0.37	0.15	0.03	0.62	0.036
F1_1 ← Factor 1	0.67	0.09	0.48	0.82	0.001
F1_2 ← Factor 1	0.69	0.09	0.48	0.84	0.002
F1_3 ← Factor 1	0.79	0.07	0.64	0.93	0.001
F4_1 ← Factor 4	0.76	0.08	0.57	0.87	0.001
F4_2 ← Factor 4	0.63	0.09	0.40	0.78	0.002
F4_3 ← Factor 4	0.66	0.10	0.45	0.84	0.001
F8_1 ← Factor 8	0.69	0.08	0.52	0.83	0.002
F8_2 ← Factor 8	0.77	0.08	0.56	0.89	0.001
F8_3 ← Factor 8	0.60	0.09	0.39	0.75	0.001
F9_1 ← Factor 9	0.82	0.05	0.71	0.90	0.002
F9_2 ← Factor 9	0.92	0.04	0.84	1.01	0.001

Table 65: Model VIII – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.50	0.09	0.90	0.90

Table 66: Model VIII – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.49*0.71 = 0.35	0.002	0.35	0.002
Factor 4 → Factor 9 (mediation model)	0.37	0.59*0.58 = 0.34	0.001	0.71	0.001
Factor 8 → Factor 9 (direct relation)	0.58			0.58	0.002
Factor 1 → Factor 8 (indirect relation)		0.49*0.59 = 0.29	0.004	0.29	0.004
Factor 1 → Factor 4 (direct relation)	0.49			0.49	0.003

Table 67: Model VIII – direct, indirect, and total effects (own research)

The model fit indices show acceptable values. Furthermore, all paths are significant and have the respective hypothesized direction. Following these arguments, the nomological validity can be attested and together with the convergence and discriminant validity – calculated in the previous confirmatory factor analysis – the requirements for the construct validity are fulfilled.

All factors have a direct or indirect significant relationship to factor 9, the communication-oriented identification climate, and in total, they explain 72% of the variance of factor 9. According to Chin (1998b), it is a substantial coefficient of determination. The satisfaction with information about the job has a stronger direct effect than the indirect effect including factor 8. Both ways are significant, which reveals a partial mediation. Nevertheless, the mediation itself has the strongest total effect on factor 9. Recognition of creativity performance has a strong direct relationship to the communication-oriented identification climate. Factor 1 has a strong influence on factor 4, which also explains 24% of the variance of factor 4.

In this model, all correlations representing the relations of the hypotheses system are significant.

### 8.5.4 Model IX - impact of factor 5

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1d** the official interactional communication climate,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2d** the official interactional communication climate.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3d** the official interactional communication climate,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3g** through their personal job performance contribution based on creative work.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4b** through their personal job performance contribution based on creative work,  
the more they are satisfied with the organization's communication-oriented identification climate.

#### Results of the second-generation criteria

The model shows a good fit based on the evaluation of the fit indices. All factor-indicator relationships are significant. The indicator reliability is guaranteed except for item F5\_1. This indicator is also the reason that the AVE is not quite reached. As in model IV, the item shall not be deleted due to content-related aspects. All factors signal discriminant validity and except for factor 5 convergence validity, too.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.68	0.49	0.81	0.001	0.46	0.76	0.51	confirmed
	F1_2	0.70	0.51	0.85	0.002	0.49			
	F1_3	0.77	0.64	0.87	0.002	0.59			
Factor 5	Satisfaction with the official interactional communication climate								
	F5_1	0.49	0.25	0.67	0.001	0.24	0.70	0.45	confirmed
	F5_2	0.70	0.51	0.85	0.001	0.49			
	F5_3	0.79	0.63	0.97	0.001	0.63			
Factor 8	Recognition as member with a value for the organization regarding the job performance contribution based on creative work								
	F8_1	0.65	0.51	0.77	0.002	0.43	0.75	0.50	confirmed
	F8_2	0.79	0.65	0.90	0.001	0.62			
	F8_3	0.67	0.44	0.76	0.002	0.45			
Factor 9	Communication-oriented identification climate								
	F9_1	0.84	0.71	0.93	0.001	0.70	0.86	0.75	confirmed
	F9_2	0.90	0.79	0.99	0.002	0.80			

Table 68: CFA model IX – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 5	↔	Factor 9	0.44	0.17	0.67	0.006	0.20
Factor 9	↔	Factor 8	0.70	0.66	0.91	0.001	0.49
Factor 5	↔	Factor 8	0.42	0.07	0.71	0.027	0.18
Factor 1	↔	Factor 5	0.46	0.20	0.67	0.004	0.22
Factor 1	↔	Factor 8	0.57	0.38	0.73	0.001	0.33
Factor 1	↔	Factor 9	0.41	0.18	0.61	0.001	0.17

Table 69: CFA model IX – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.03	0.07	0.93	0.93

Table 70: CFA model IX – model fit indices (own research)

Results of the SEM analysis

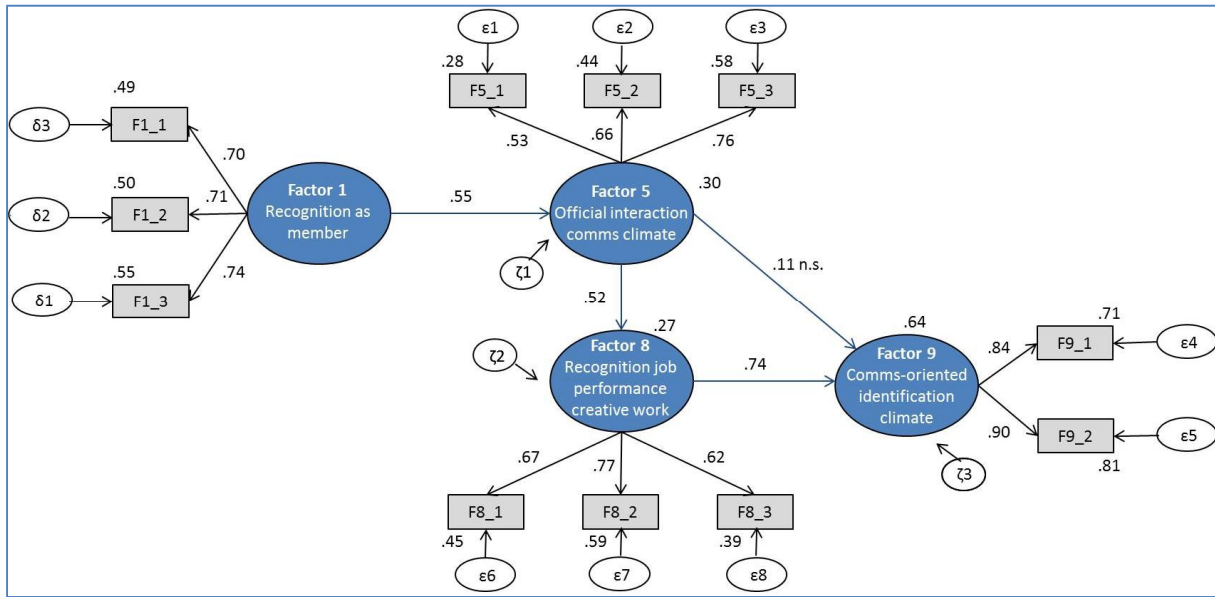


Figure 22: Model IX – SEM analysis. All paths are significant ( $p \leq 0.01$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 5 ← Factor 1	0.55	0.13	0.26	0.78	0.001
Factor 8 ← Factor 5	0.52	0.17	0.14	0.81	0.007
Factor 9 ← Factor 8	0.74	0.21	0.48	1.09	0.001
Factor 9 ← Factor 5	0.11	0.24	-0.39	0.41	0.561
F1_1 ← Factor 1	0.70	0.08	0.53	0.83	0.001
F1_2 ← Factor 1	0.71	0.09	0.52	0.86	0.002
F1_3 ← Factor 1	0.74	0.07	0.60	0.86	0.002
F5_1 ← Factor 5	0.53	0.11	0.29	0.70	0.001
F5_2 ← Factor 5	0.66	0.11	0.40	0.82	0.001
F5_3 ← Factor 5	0.76	0.09	0.51	0.90	0.001
F8_1 ← Factor 8	0.67	0.06	0.54	791.00	0.001
F8_2 ← Factor 8	0.77	0.07	0.62	0.88	0.001
F8_3 ← Factor 8	0.62	0.08	0.42	0.76	0.002
F9_1 ← Factor 9	0.84	0.05	0.73	0.93	0.001
F9_2 ← Factor 9	0.90	0.05	0.80	0.98	0.002

Table 71: Model IX – detailed information (own research)



Model fit indices	CMIN/d.f.	SRMR	CFI	TLI
	2.28	0.09	0.91	0.91

Table 72: Model IX – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.55*0.49 = 0.27	0.001	0.27	0.001
Factor 5 → Factor 9 (mediation model)	0.11 n.s.	0.52*0.74 = 0.39	0.005	0.49	0.001
Factor 8 → Factor 9 (direct relation)	0.74			0.74	0.001
Factor 1 → Factor 8 (indirect relation)		0.55*0.52 = 0.29	0.006	0.29	0.006
Factor 1 → Factor 5 (direct relation)	0.55			0.55	0.001

Table 73: Model IX – direct, indirect, and total effects (own research)

The model fits signal a good model and the SRMR signals an acceptable one. Almost all paths are significant and meaningful (paths greater than 0.20), except for the one between factor 5 and 9. This indicates a full mediation, which is endorsed by a significant indirect effect. This effect has strong single correlations of 0.52 and 0.74. The last one is the strongest direct effect in the structural model and shows the highest total effect on factor 9 (see Table 73). The second highest total effect is the relationship between factor 1 and 5. Following this, membership recognition has a strong influence on satisfaction with the official interactional communication climate. In total, all factors contribute significantly to a communication-oriented identification climate. The factors explain 64% of the variance of factor 9. However, factor 1 and 5 explain 27% of the variance of factor 8. The nomological validity can be attested and, in consequence, so can the construct validity (together with the convergence and discriminant validity resulting from the confirmatory factor analysis).

In this model, all correlations representing the relations of the hypotheses system are significant - except relationship in hypothesis 1d. It only exists indirectly by a total significant effect. This indirect effect is represented in the hypotheses 3 and 4.

### 8.5.5 Model X - impact of factor 6

**1<sup>st</sup> hypothesis:**

The more the employees are satisfied with...

**1e** the informal interactional communication climate,  
the more they are satisfied with the organization's communication-oriented identification climate.

**2<sup>nd</sup> hypothesis:**

The more the employees are satisfied with the recognition of being part of the organization as a member,  
the more they are satisfied with...

**2e** the informal interactional communication climate.

**3<sup>rd</sup> hypothesis:**

The more the employees are satisfied with...

**3e** the informal interactional communication climate,  
the more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**3g** through their personal job performance contribution based on creative work.

**4<sup>th</sup> hypothesis:**

The more they are satisfied with the recognition of being a member with an individual value for the  
organization...

**4b** through their personal job performance contribution based on creative work,  
the more they are satisfied with the organization's communication-oriented identification climate.

#### Results of the second-generation criteria

This model shows good indicator reliabilities and factor reliabilities. Only the items F6\_4 and F8\_3 have a lower indicator reliability value than demanded but the relation to the factor is significant. Therefore, the items can still exist in their respective item pool. Apart from factor 8, every factor reaches the threshold of 0.5 for an acceptable AVE. Convergence validity can be confirmed and is slightly violated only once (factor 8). Comparing the AVE values with the squared multiple correlations between the latent constructs shows that the discriminant validity can be mostly attested. Only factor 8 has an AVE of 0.48 and the correlation between factor 8 and factor 9 is 0.62. All fit indices signal a good model fit. Consequently, the SEM model is tested.

Factor with indicators		Indicator-related					Construct-related		
Factor	Indicator	Stand. regression weight	Confidence interval lower	Confidence interval upper	p-value	Indicator reliability	Factor reliability	AVE	Discriminant validity (Fornell-Larcker)
Factor 1	Satisfaction with the recognition as member of the organization								
	F1_1	0.67	0.46	0.81	0.001	0.45	0.76	0.51	confirmed
	F1_2	0.67	0.48	0.83	0.001	0.45			
	F1_3	0.80	0.65	0.91	0.002	0.64			
Factor 6	Satisfaction with the informal interactional communication climate								
	F6_1	0.64	0.48	0.76	0.001	0.40	0.83	0.55	confirmed
	F6_2	0.78	0.65	0.88	0.001	0.61			
	F6_3	0.94	0.86	1.02	0.001	0.89			
	F6_4	0.56	0.42	0.67	0.001	0.31			
Factor 8	Recognition as member with a value for the organization regarding the job performance contribution based on creative work								
	F8_1	0.64	0.50	0.77	0.002	0.41	0.73	0.48	almost confirmed
	F8_2	0.80	0.67	0.90	0.001	0.64			
	F8_3	0.62	0.44	0.76	0.001	0.39			
Factor 9	Communication-oriented identification climate								
	F9_1	0.84	0.74	0.91	0.002	0.70	0.86	0.75	confirmed
	F9_2	0.90	0.80	0.97	0.001	0.81			

Table 74: CFA model X – results of the second-generation criteria (own research)

Correlation between two factors		Correlation	Confidence interval lower	Confidence interval upper	p-value	Squared correlation	
Factor 6	↔	Factor 9	0.40	0.22	0.56	0.001	0.16
Factor 9	↔	Factor 8	0.79	0.65	0.90	0.001	0.62
Factor 6	↔	Factor 8	0.24	0.04	0.42	0.023	0.06
Factor 1	↔	Factor 6	0.23	0.02	0.42	0.034	0.05
Factor 1	↔	Factor 8	0.57	0.38	0.73	0.001	0.32
Factor 1	↔	Factor 9	0.41	0.19	0.60	0.001	0.17

Table 75: CFA model X – correlations between the latent factors (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	1.78	0.07	0.95	0.95

Table 76: CFA model X – model fit indices (own research)

Results of the SEM analysis

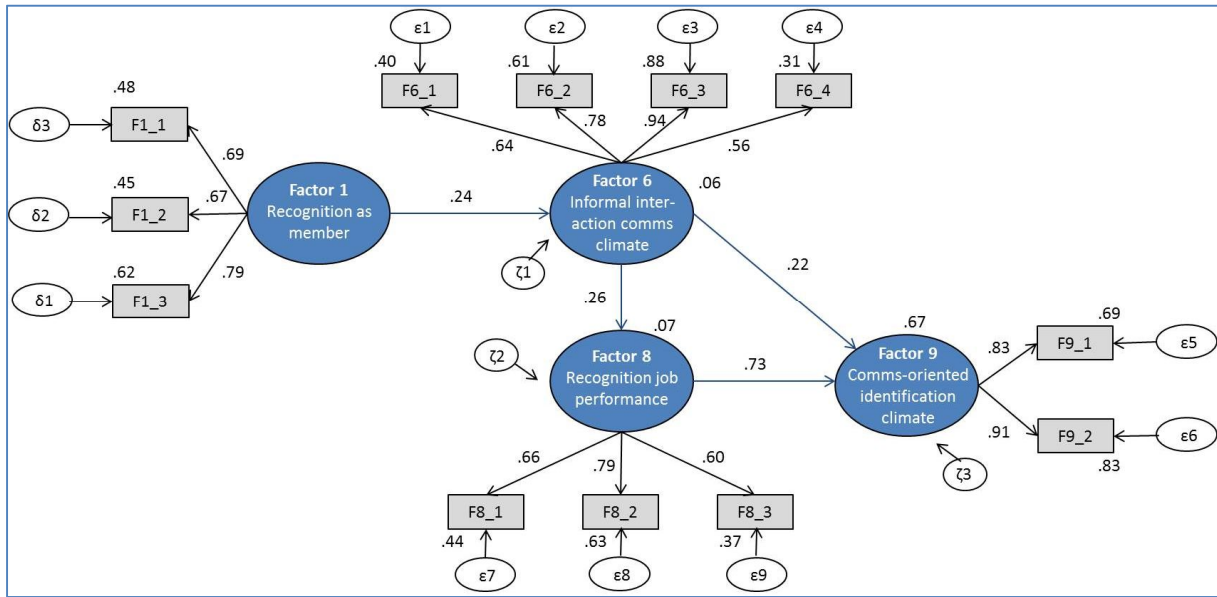


Figure 23: Model X – SEM analysis. All paths are significant ( $p \leq 0.05$ ) except the ones labelled with n.s. (own research)

Parameter	Stand. regression weight	Standard error	Confidence interval lower	Confidence interval upper	p-value
Factor 6 ← Factor 1	0.24	0.11	0.01	0.44	0.042
Factor 8 ← Factor 6	0.26	0.10	0.05	0.45	0.018
Factor 9 ← Factor 8	0.73	0.07	0.58	0.87	0.002
Factor 9 ← Factor 6	0.22	0.09	0.02	0.38	0.033
F1_1 ← Factor 1	0.69	0.10	0.46	0.84	0.001
F1_2 ← Factor 1	0.67	0.10	0.47	0.84	0.001
F1_3 ← Factor 1	0.79	0.08	0.62	0.95	0.002
F6_1 ← Factor 6	0.64	0.07	0.49	0.75	0.001
F6_2 ← Factor 6	0.78	0.06	0.65	0.87	0.001
F6_3 ← Factor 6	0.94	0.04	0.86	1.02	0.001
F6_4 ← Factor 6	0.56	0.06	0.42	0.67	0.001
F8_1 ← Factor 8	0.66	0.07	0.51	0.79	0.002
F8_2 ← Factor 8	0.79	0.06	0.65	0.90	0.001
F8_3 ← Factor 8	0.60	0.09	0.41	0.75	0.001
F9_1 ← Factor 9	0.83	0.04	0.75	0.90	0.002
F9_2 ← Factor 9	0.91	0.04	0.83	0.97	0.001

Table 77: Model X – detailed information (own research)

Model fit indices	CMIN/d.f.	SRMR	CFI	IFI
	2.20	0.10	0.91	0.91

Table 78: Model X – model fit indices (own research)

Effects	Direct	Indirect	p-value indirect	Total	p-value total
Factor 1 → Factor 9 (full model)		0.24*0.41 = 0.10	0.034	0.10	0.034
Factor 6 → Factor 9 (mediation model)	0.22	0.26*0.73 = 0.19	0.013	0.41	0.001
Factor 8 → Factor 9 (direct relation)	0.73			0.73	0.002
Factor 1 → Factor 8 (indirect relation)		0.24*0.28 = 0.07	0.037	0.07	0.037
Factor 1 → Factor 6 (direct relation)	0.24			0.24	0.042

Table 79: Model X – direct, indirect, and total effects (own research)

The structural equation model shows acceptable model fit values indicated by the CMIN/d.f., CFI, and IFI. The SRMR has the maximum value for an acceptable fit. All paths are significant and are meaningful according to Chin (1998a). In general, the nomological validity can be confirmed based on path values and directions. Consequently, the construct validity can be endorsed due to the nomological and the convergence and discriminant validity (both examined in the confirmatory factor analysis).

The model attests that all constructs significantly contribute to a communication-oriented identification climate (factor 9). The highest total effect lies between factor 8 and 9: Being recognized as making a valuable contribution of creativity to the company strongly correlates with an identification climate. Having a look at the mediation effect, it is obvious that both satisfaction with the informal interactional communication climate and the mediated way including factor 8 correlate very similarly to factor 9 (direct path 0.22; indirect path 0.19). It is striking that a satisfying behavior of confidentiality representing membership recognition leads to meaningful satisfaction with the informal interactional communication climate (0.24). In this model, all correlations representing the relations of the hypotheses system are significant.

### 8.5.6 Result interpretation: Models VI-X

The interpretative approach for these models has the same structure as for the other first five models. Comparing the first five models with these enables to draw conclusions if the developed general model structure between the latent factors is relatively stable or not.

Models	Effects	Direct	Indirect	p-value indirect	Total	p-value total
<b>Model VI</b>	<b>Factor 2: Satisfaction with company information</b>					
	Factor 1 → Factor 9 (full model)		0.57*0.69 = 0.40	0.001	0.40	0.001
	Factor 2 → Factor 9 (mediation model)	0.26 n.s.	0.70*0.62 = 0.43	0.001	0.69	0.001
	Factor 8 → Factor 9 (direct relation)	0.62			0.62	0.001
	Factor 1 → Factor 8 (indirect relation)		0.57*0.70 = 0.40	0.001	0.4	0.001
	Factor 1 → Factor 2 (direct relation)	0.57			0.57	0.001
<b>Model VII</b>	<b>Factor 3: Satisfaction with R&amp;D information within the company</b>					
	Factor 1 → Factor 9 (full model)		0.46*0.60 = 0.28	0.001	0.28	0.001
	Factor 3 → Factor 9 (mediation model)	0.02 n.s.	0.74*0.78 = 0.58	0.000	0.60	0.001
	Factor 8 → Factor 9 (direct relation)	0.78			0.78	0.001
	Factor 1 → Factor 8 (indirect relation)		0.46*0.74 = 0.34	0.001	0.34	0.001
	Factor 1 → Factor 3 (direct relation)	0.46			0.46	0.001
<b>Model VIII</b>	<b>Factor 4: Satisfaction with job information</b>					
	Factor 1 → Factor 9 (full model)		0.49*0.71 = 0.35	0.002	0.35	0.002
	Factor 4 → Factor 9 (mediation model)	0.37	0.59*0.58 = 0.34	0.001	0.71	0.001
	Factor 8 → Factor 9 (direct relation)	0.58			0.58	0.002
	Factor 1 → Factor 8 (indirect relation)		0.49*0.59 = 0.29	0.004	0.29	0.004
	Factor 1 → Factor 4 (direct relation)	0.49			0.49	0.003
<b>Model IX</b>	<b>Factor 5: Official interactional communication climate</b>					
	Factor 1 → Factor 9 (full model)		0.55*0.49 = 0.27	0.001	0.27	0.001
	Factor 5 → Factor 9 (mediation model)	0.11 n.s.	0.52*0.74 = 0.39	0.005	0.49	0.001
	Factor 8 → Factor 9 (direct relation)	0.74			0.74	0.001
	Factor 1 → Factor 8 (indirect relation)		0.55*0.52 = 0.29	0.006	0.29	0.006
	Factor 1 → Factor 5 (direct relation)	0.55			0.55	0.001
<b>Model X</b>	<b>Factor 6: Informal interactional communication climate</b>					
	Factor 1 → Factor 9 (full model)		0.24*0.43 = 0.10	0.034	0.10	0.034
	Factor 6 → Factor 9 (mediation model)	0.24	0.26*0.73 = 0.19	0.013	0.43	0.001
	Factor 8 → Factor 9 (direct relation)	0.73			0.73	0.002
	Factor 1 → Factor 8 (indirect relation)		0.24*0.28 = 0.07	0.037	0.07	0.037
	Factor 1 → Factor 6 (direct relation)	0.24			0.24	0.042

Table 80: Overview of the direct, indirect, and total effects in the models VI-X (own research)

Models	Factor 1	Model-specific factor	Factor 8	Factor 9
<b>Model VI</b>		0.33 (factor 2)	0.48	0.67
<b>Model VII</b>		0.21 (factor 3)	0.55	0.63
<b>Model VIII</b>		0.24 (factor 4)	0.35	0.72
<b>Model IX</b>		0.30 (factor 5)	0.27	0.64
<b>Model X</b>		0.06 (factor 6)	0.07	0.67

Table 81: Overview of the variances in the models VI-X (own research)

**Interpretation of hypothesis 2: The relation between recognition as a member and the satisfaction with the communication content and climate (factor 1 → factor 2/3/4/5/6)**

A very strong relationship exists between factor 1 and factor 5 (official interactional communication climate) in model IX. However, the models VI, VII, VIII, and X also have significant relations which are meaningful according to Chin (1998a). This is the same interpretational approach as for the models I-V (for a content-related explanation, see chapter 8.4.6).

**Interpretation of the hypotheses 1, 3, and 4: The relation between satisfaction with the communication content and climate and the communication-oriented identification climate (factor 2/3/4/5/6 (→ factor 8) → factor 9)**

The interpretation of the mediation in the models VI-X differs slightly from the models I-V due to another mediation factor. In the models I-V the mediator factor 7 – “satisfaction with the recognition as a member with a value for the organization regarding the job performance” – was replaced by the mediator factor 8 – “satisfaction with the recognition as a member with a value for the organization regarding the job performance contribution based on creative work”. As result of the expert interviews, the job performance has an important aspect which reflects a more specialized work for R&D employees than for employees in finance and accounting: R&D work includes creative work, thinking about new ideas and hopefully producing innovation.

Model IX shows strong mediated, indirect effects. This model has a full mediation with an indirect significant effect and a non-significant direct effect. In model IX, satisfaction with the official interactional communication climate correlates to satisfaction with one’s recognition as a member with a value for the organization regarding the creative job performance. This recognition leads to a communication-oriented identification climate. For R&D employees, it is important to be valued for the creative work they do. Eventually, new ideas will be born and developed. Such new ideas are not always developed by one person but in groups in which, ideally, each person’s creative work is valued. Therefore, the official interactional communication climate correlates to factor 8, which in turn affects factor 9. Except the different mediation factors - model IX and model IV measures the mediated relationship between factor 5 and factor 9: Both have a full mediation but the strengths of the indirect effect slightly differ between model IX (0.39) and model IV (0.35). In consequence, as mediators both kinds of recognition are essential to enable identification processes.

Model VII indicates that a satisfaction with R&D information is only, but strongly, indirectly related (0.58) to the communication-based identification climate (factor 9) and that the direct relation to the mediator, factor 7, is very strong (0.74). Both strengths of correlations can be

explained: The employee is recognized more for his creative work performance when it is in line with the communicated R&D direction and topics within the company. The reason of such a strong indirect effect could be that information about R&D within the company is absolutely necessary to know for creative work performance. In contrast, model II with the mediator recognition of job performance has a partial mediation with almost equal strong direct and indirect correlation values in the mediation. However, the indirect effect in model II is not as strong as in model VII. This means that general job performance recognition is also important for identification processes. General job performance encompasses more tasks than creative work. Therefore, the full mediation in model VII gives the employee a strong satisfying feeling to be valued with his individual job performance with regard to creative tasks and then, he is willed to internalize with this company and its R&D direction.

Model VI only has an indirect relation (correlation 0.43) between factor 2 and factor 9, which also indicates a full mediation. Again, this can be explained as follows: Satisfaction with information about the company contains overlaps between the employee's expectations and the management's expectations of the company's goals. This satisfaction leads to satisfaction with being valued by the company for one's creative work performance. Creative new ways and inventions can help one reach company goals, and this work performance is valued with recognition. Satisfying recognition always relates to an identification environment. There is an obvious difference between model VI (factor 8) and model I (factor 7). Model I has no significant direct and indirect effect in the mediation, whereas model VI also has no significant direct effect but does have a significant indirect effect. Both mediators have a strong significant relation to factor 2 but only the mediator factor 8 has a significant direct effect on factor 9. Consequently, being recognized as a value for the organization due to one's creative work shows relevant effects on the communication-oriented identification climate, whereas mere the mediation factor 7, recognition as valuable based on one's general work performance, does not have a significant indirect effect (model I). To remember: Model I only shows a total significant effect in the mediation.

Interestingly, model VIII with factor 4 (satisfaction with job information) shows a partial mediation, where the direct effect between factor 4 and factor 9 is still significant. This direct effect can exist for the following reason. Here, the satisfaction with the job information directly influences the communication-oriented identification climate. Furthermore, the personal recognition being valuable for the company also plays a significant role because the satisfaction with job information has an immediate impact on an employee – what he must do and how. If this information does not meet his personal expectations, there is a mismatch and understanding and internalizing with the company will perhaps not take place. In



comparison with model III, model VIII shows almost equal values of the direct (0.37) and indirect (0.34) relations, whereas model III has definitely a stronger direct relation (0.48) than indirect (0.22) relation. One interpretation is: In the R&D department job information impacts more internalizing processes and general job performance recognition has less impact for identification effects because the job tasks are often creative tasks. Therefore, for the employees the recognition of creative work performance seems to be very important for internalizing.

A low indirect effect lies between factor 6 and factor 9. It is a partial mediation mediated by factor 8, apparently for similar reasons as in model V.

**Interpretation: The relation between recognition as a member and the communication-oriented identification climate (factor 1 → factor 9) and the relation between recognition as a member and recognition as a value for the company (factor 1 → factor 8)**

In each model, factor 1 has an indirect significant effect on the communication-oriented identification climate (factor 9). A very strong indirect effect can be seen in model VI (total effect 0.40). Model X has a very low indirect effect. Moreover, the factors of the mediation models also contribute to factor 9. In consequence, each factor has an indirect or direct effect on factor 9. The explained variances of factor 9 range from 0.63 (model X) to 0.72 (model VIII). They indicate a moderate or even substantial explication ( $\geq 0.66$ ). These variances are higher than in the models I-V. The mediation factor 8 contributes more strongly to the variance of factor 9.

The models VI-X all show that factor 1 also has an indirect implication on factor 8. This was also confirmed for the models I-V. All indirect effects are significant and the variances of factor 8 range from 0.07 up to 0.59. One possible interpretation is that membership recognition is an indirect pre-requisite for perceiving recognition as a value. The direct requirement is still receiving information.

**General finding: Stability of the model structure**

Although the measurement model of the mediation factor was changed for the models VI-X, the results were similar in comparison to the models I-V. Changes in the strength of the correlations are explainable. This shows that the general relationship between the single influencing factors is relatively stable and does not completely change the strength of relations in the model. It is an indication that Mead's theoretical relations are valid for different modifications.

## 9. Summary for the empirical study and its design, evaluation method, results, and limitations

### 9.1 Study design and evaluation method

This study's aim was to empirically substantiate the main different and interdependent influencing factors of the employee's identity formation process for employees working in the R&D function. Thereby, the empirical focus was set on the dimension identification and not on the two other dimensions i) identity components, and ii) continual development of identity (see adaptation of Mead's theory in the theory chapters). According to the adapted key findings of Mead's theory for the organizational context, the empirical hypotheses were deduced and conducted in order to test them with the data of an empirical study. The study's survey was executed in the R&D function of a German DAX company. In order to avoid high employee fluctuation or demotivation due to a lack of long-term research development without daily feelings of success, it is of high interest to understand what factors influence employee identity formation and can thereby supplement or even substitute monetary incentive systems. These factors can be triggered and controlled by the employers (principals).

After conducting the single hypotheses in the chapter 6, they were combined into a logical hypotheses system representing the different influencing factors and their effects on satisfaction with the communication-oriented identification climate which can be controlled by the principal to use employee identity as substitute for monetary incentives. Such an enduring internal climate is necessary to evoke and foster identification processes. Organizational communication as an influencing factor, especially as an enabler for identification processes, was the central aspect regarding content and climate extended to the recognition levels of "rights" and "solidarity" as further essential cultural influencing factor. The defined factors are not directly measurable because they are latent. However, they directly influence measurable indicators. The appropriate method for estimating such latent factors is structural equation modeling, which requires a three-step testing process: From a single measurement model examination that uses psychometrical methods and the explorative factor analysis to a combined measurement model evaluation executed by a confirmatory factor analysis and finally to the examination of the structural equation model. Details on this methodological approach can be found in chapter 7. Furthermore, with this method it is possible to define direct, indirect, multiple, or interdependent relationships between the factors. It was necessary to represent appropriately the heterogeneity of influencing factors and their mutual relations, and their effects to the dependent factor communication-based identification climate.

In order to adequately cover these heterogeneous characteristics of the influencing factors communication and recognition, whereby communication is even the enabler of identification processes by Mead, the hypotheses system was varied ten times regarding certain measurement models. However, all model variations had the same structure and relations between the factors. In consequence, it was also possible to make statements on the stability of the defined model structure based on the results of the variations. Furthermore, it was possible to examine and above all to compare the influencing factors with their different characteristics of communication content and climate as well as of membership and performance value recognition for the company in each model.

Based on the study's results, the principal in the R&D function can derive recommendations which characteristics of the influencing factors have more or only less effects on the employee's identity formation process. Additionally, he has guidance for the systematical interdependences of the influencing factors and their relations to the identification process, because in all model variants the general hypothesized relations were stable and did not change completely in the respective model variants. Only with such a systematical, logical relation between the factors, a successful usage and handling of employee identity serving as substitute of monetary incentives is possible for the employers in different situations which is not just valid in a specific one-case situation.

## 9.2 Summary of the study's results

Table 82 and Table 83 show the results at a glance. These are the main findings:

### **Main Results I: Theoretical framework confirmed by testing the empirical model structure**

- In general, all ten different variants of the basic model show significant effects in the hypotheses system. Those relations which have no significant direct effect can be explained by a total or indirect mediation effect. In detail: The general hypothesized relations between the single determinants (influencing factors) communication and recognition on the communication-based identification climate are valid in all model variants.
- This means that Mead's theoretical postulated interdependent influencing factors have a significant relevance in the empirical study, conducted in one DAX company, as well.
- Based on the ten model variants, it is possible to get a differentiated view of how heterogeneously the influencing factors can be expressed and which variants have more significant effects in the respective structural models and which less. It also becomes

obvious how important communication is to express factors and how different communication can be conveyed.

- Thereby, the ten variants show that the general model structure (the interdependences between the latent factors) does not change completely and does not evoke new relations between the latent factors. Changing the measurement model of the mediation factor showed similar results in the comparison between the models I-V and models VI-X, too. This means: The structure of the developed general structural model is relatively stable and enduring, although measurement models change (model variants). The relations resist different communicative situations in the DAX company. This shows that Mead's theory is applicable in different organizational situations and not only valid for one specific constellation of communication content or climate topics and recognition characteristics.
- An additional examination to the model variants was to differ between heterogeneous characteristics of the employee groups for each model variant. However, the results showed no significant effects which indicate group differences, although the employees have different characteristics (e.g. retention time in the company).
- With a reflexive latent factor structure, it was possible to include the different levels of culture (with the latent factor as the deeper-lying level and the indicators representing the first level "artifacts"). The same is applicable for satisfaction with communication content and climate representing one kind of successful role-taking according to Mead.
- In consequence, employers in the R&D function of the DAX company can use this wide-spanning concept to control the determinants/ influencing factors in a company in order to foster the employees' identity formation processes in the best possible manner in different situations – ranging from company information to informal communication exchange and the various possibilities to express recognition to the employees.

### **Main Results II: The tested, different aspects of the influencing factors show varying degrees of relationship in the hypotheses system**

- All variants had predominantly significant correlations.
- Being recognized as a member of an organization always positively correlates to satisfaction with the communication content and climate (statement valid for the models I-X).
- Satisfaction with the communication content and climate has a direct positive correlation to the communication-based identification climate for the variants "job information" in the models with the mediator "recognition job performance" and "recognition creative work" (models III and VIII). Furthermore, this is valid for the variant "R&D information within the company" in combination with the mediator "recognition of job performance"

(model II) and for the variant “informal interactional communication climate” combined with the mediator “recognition of creative work” (model X). The following tables offer an overview of the model variants.

- An indirect effect between satisfaction with the communication content and climate and the communication-based identification climate mediated by “recognition of job performance” or “recognition of creative work” is always significant for the model variants “official interactional communication climate” (models IV and IX), “informal interactional communication climate” (models V and X), “job information” (models III and VIII), and “R&D information within the company” (models II and VII). For the variant “company information”, the indirect effect is only valid with the mediator “recognition of creative work” (model VI). For model I, the indirect effect can be explained by the significant total effect.
- The two direct paths representing the indirect effect in the mediation are always significant – except in model I.
- The following two tables give an overview of the significant relations in all model variants. The strengths of each relation can be found in the tables of chapter 8, above all at a glance in the chapters 8.4.6 and 8.5.6.

			Direct relation between influencing factors		Direct relation to communication-oriented identification climate	Indirect relation to communication-oriented identification climate
			factor 1 → factor 2/3/4/5/6	factor 2/3/4/5/6 → factor 7	factor 2/3/4/5/6 → factor 9	factor 2/3/4/5/6 → factor 7 → factor 9
Models	Influencing factors		factor 1	factor 7	factor 9	factor 9
Model independent factors	factor 1	recognition as member	-	-	-	significant for all models
	factor 7	recognition job performance	-	-	significant for models II-V	-
Model I	factor 2	company information	significant	significant	not significant	not significant
Model II	factor 3	R&D information within the company	significant	significant	significant	significant
Model III	factor 4	job information	significant	significant	significant	significant
Model IV	factor 5	official interactional communication climate	significant	significant	not significant	significant
Model V	factor 6	informal interactional communication climate	significant	significant	not significant	significant

Table 82: Overview of the empirical results – models I-V (own research)

			Direct relation between influencing factors		Direct relation to communication-oriented identification climate	Indirect relation to communication-oriented identification climate
			factor 1 → factor 2/3/4/5/6	factor 2/3/4/5/6 → factor 8	factor 2/3/4/5/6 → factor 9	factor 2/3/4/5/6 → factor 8 → factor 9
Models	Influencing factors		factor 1	factor 8	factor 9	factor 9
Model independent factors	factor 1	recognition as member	-	-	-	significant for all models
	factor 8	recognition creative work	-	-	significant for all models	-
Model VI	factor 2	company information	significant	significant	not significant	significant
Model VII	factor 3	R&D information within the company	significant	significant	not significant	significant
Model VIII	factor 4	job information	significant	significant	significant	significant
Model IX	factor 5	official interactional communication climate	significant	significant	not significant	significant
Model X	factor 6	informal interactional communication climate	significant	significant	significant	significant

**Table 83: Overview of the empirical results – models I-V (own research)**

### 9.3 Generalizability and limitations of the research design

The results of the study are not valid for all kinds of employees in an organization – while they could be, not further variations were examined. The study only considered employees working in the R&D environment of one DAX company, not more. One possibility for further research is to extend the study design to more employee groups (e.g. finance or purchase department). Then, it is possible to make statements if the hypothesized model is also valid for other employee groups. To do so, however, in some cases the items of the measurement models used in this study would have to be revised– above all those items related to recognition of creativity, which is only relevant for the R&D department. The heterogeneity of expressing the influencing factors was an important aspect of this thesis and that these variations do not evoke completely new relations in the general model structure. This heterogeneity was shown in different model variants to compare which kind of expression of the three influencing factors has more effects on the communication-oriented identification climate. Therefore, a single company served as the empirical basis for this study to get deep insights on the stability of the postulated relations. Future research can include more companies in order to compare the results between the single companies based on just one or two model variants for selected employee groups (e.g. R&D). Then, it is possible to make statements if the hypotheses system is also applicable for certain industry segments or even for more than one segment. The measurement models were all related to communication and culture topics according to Mead's theory which are relevant for the studied company. Future research can focus on further indicators representing these latent factors and study their application in the hypotheses system. The current study gives an overview of a status quo report regarding the influencing factors: An additional idea is to include the aspect continual development of identity into researches and set-up a panel study.

## **10. Conclusions on the results for the construct employee identity serving as substitute for monetary incentives: Practical implications and future research**

To reduce the information asymmetry in principal-agent constellations and to foster the agent's work for the benefit of the company, incentive systems play a crucial role. When using employee identity as a supplement or even substitute of monetary incentives (Akerlof and Kranton, 2005), the concept of employee identity must be clarified. In contrast to monetary incentives, which can be transferred by bank transactions to the employee, the process of employee identity formation has to be evoked and then maintained for each employee. Therefore, the central interest of this thesis was to examine theoretically and empirically how employee identity emerges.

To successfully use employee identity as substitute of monetary incentives in the R&D function of an organization, a systematical relation between the influencing factors and the employee's identity formation has to be developed which is not only valid for a specific one-case situation, but defines the general relationship which is stable towards the heterogeneity of expressing such influencing factors. Otherwise, employers have no guidance how to apply employee identity serving as substitution of monetary incentives in a changing environment with daily new situations in an organization. Above all, in the R&D field employers and employees are regularly confronted with changes.

Based on this requirement, it is obvious that, first, a deep theoretical examination of the concept "employee identity and its formation" is very important to examine in order to understand the general and interdependent triggers. Then, the next step enables to empirically prove these trigger points in order to make statements if the general structure of the interdependent triggers is valid for different characteristics these influencing factors have in organizations. This thesis's structure seized this two-step-approach and made a new contribution to existing literature to examine the concept employee identity derived from a human identity theory and to empirically examine the relation and stability of the main factors influencing employee identity formation in a ten-times-varied interdependent system. The study was conducted in the R&D environment of one DAX company.

Mead's theory provides a wide-spanning and consistent discourse of identity and its formation which can be derived for the organizational context and is even applicable for employees. Employee identity contains three dimensions which all must be considered: i) identity components, ii) continual development of identity, and iii) identification. With these dimensions, it is possible to answer the question "Who am I as employee in the organization?". This question reflects Mead's approach "symbolic interactionism": Focusing on the interplay between the employee and the organization for employee identity formation processes.

Based on these theoretical findings, the effect mechanisms of the influencing factors were empirically tested with employees working in the R&D department in a German DAX company. Following these analyses' results, the DAX company's principal has guiding principles and a systematical system how to trigger, foster, maintain, and control the influencing factors. Under consideration of all three dimensions, the principal can use employee identity as substitute of monetary incentives in R&D departments. These implications for practice and future research are now summarized recorded.

## **10.1 Identity dimension: Identification**

### **10.1.1 Comprehensive review of the influencing factors**

Understanding the complex interplay between the factors influencing employee identity is the essential success key for using employee identity as substitute for monetary incentives. Thereby, the empirical examined influencing factors trigger identification processes as one of the three essential dimensions in identity formation. Some factors have an indirect effect on the identification climate, and some have a direct one. In order to evoke an identification process of the employee with the company, the single influencing factors and their relationship amongst each other must be considered. If employers only push some factors, a significant influence on a communication-oriented identification climate will not always emerge or eventually evoke unintended consequences. Then, principals wonder why triggering some single factors have not evoked the appreciated output on fostering the employees' identity formation processes. Then, the successful usage of employee identity serving as substitute for monetary incentives cannot be guaranteed.

According to Mead's theory and its theoretical derivation to the concept employee identity, the main influencing factors are communication and culture, above all the cultural aspect recognition. These influencing factors follow Mead's approach "symbolic interactionism" that the employee and the company have to be in close exchange: Communication is central for interactions with the company and to enable internalizing effects. Recognition reflects the position and value of an individual employee embedded into the community of the organization.

The peculiarity of this study is that all factors deal with the broad field of communication and information relevant for the DAX company's R&D function. In particular, the measurement models represent specific communication facets and functions – ranging from company information, R&D information, job information to official and unofficial interactional communication climate. Communication climate is one expression of culture (see Schein's



concept). In general, organizational culture is expressed by communication – above all recognition as member and his value for the company. Therefore, different kinds of employee recognition, namely recognition of the employee's membership and his value contribution to the company, were also examined.

The study reveals that different characteristics of some factors, tested in various model variants, do not disturb the developed, general relationships and interdependences between these influencing factors. Mead's theory is applicable in the R&D context, tested in one DAX company. There are differences between the strength of the correlations, but the study's results show that the general structure of the complex system continues to exist in each model variant. Such a stable system can give guidance how the series of reactions function and where to trigger and maintain identity formation processes in various daily situations in the organization.

In general, the enormous advantage of the influencing factors for the principal is that he can directly affect communication content and climate, and communication as expression for recognition and he should plan, use, and control this enormous tool as professional and target group oriented as much.

### 10.1.2 Single review of the influencing factors

Unless it is absolutely necessary to consider the interdependences of all influencing factors, the review of the single factors communication and recognition is also important in order to know how to shape the factors.

#### **Single review I: Communication - significant and satisfying communication**

For Mead, the fundamental basis of enabling and triggering identity formation is communication and he describes a successful and satisfying exchange with "significant symbols". Information plays a crucial role in significant communication. The sent message has a value for the sender and hopefully for the receiver as well, and it transfers the sender's meaning and intention. In economic literature, Wittmann's famous definition of information as "purpose-oriented knowledge" (Wittmann, 1999, p. 14) is wide-spread and should be considered determining when a communication should become significant. Krcmar (2015) describes the duality of information – it is abstract and yet must always be transmitted in a physical way which includes verbal and non-verbal communication. However, communication only becomes significant when the employee physically receives and recognizes it as relevant, purpose-intended communication for him. When the employee's expectations and experiences are met by the principal, satisfying and significant communication emerges.

Thereby, communication satisfaction does not only refer to the content, but also to the communication climate. Von Weizsäcker's (1974) model gives a helpful indication of the balance between the degree of new information and well-known information to successfully reach the receiver.

Practical implication:

The principal should consider the power of communication. This means, communicating, above all transferring information, consciously to the respective target group that this communication exchange becomes a significant and fruitful communication and not futile. Planning communication content, fostering a satisfying communication climate, and transferring information via suitable communication channels should have an important significance in the principal's schedules and regularly evaluated by the employees, e.g. in four-eye-meetings. Communication as enabler and influencing factor provides a strong active leverage for the principal to control this factor because he can often decide or do it on his own what, how and then is communicated to the employees. Very often it is assumed that everybody can communicate. However, everybody has communicative interactions every day because we are in social relations with our environment, but if he is able to do it in a successful way is not guaranteed. It has to be trained.

**Single review II: Culture, in particular expressing recognition of "rights" and "solidarity"**

According to Mead, the social environment and the respective culture is one central aspect for the identity formation. In particular, the cultural aspect recognition of individuals is an essential driver in his theory which has to be communicatively expressed to individuals by the society. Honneth (1995) seizes this fundamental kind of social interaction and categorizes recognition into three levels "love", "rights", and "solidarity".

To internalize culture and to understand the society to which the individual belongs, he has to be recognized. How an employee is recognized in a company is driven by organizational culture, which has three different levels according to Schein: The deeper assumptions (3<sup>rd</sup> level), values, and beliefs (2<sup>nd</sup> level) about how to recognize and appreciate an employee must be expressed and lived in a "visible" and reasonable way for the employee (1<sup>st</sup> level). Thereby, the recognition levels "rights" and "solidarity" (Honneth, 1995) are reflected in organizational culture: To recognize the employee as equal member with a specific function and role in the organization and to recognize him as valuable for the company due to his work performance.

### Practical implication:

In daily work, the discrepancy between having recognition as an essential company value and actively expressing recognition has to be overcome by the principal. As the study has shown, confidentiality of information is perceived as an expression of membership recognition. The principals have to be aware of such expressions and should be sensitive towards the handling – in this case the handling of confidentiality of information. Furthermore, receiving time for creativity is perceived as an appreciation of the employee's individual value in the R&D departments. Both examples show that there is a need for a constant evaluation by the principal of which cultural behaviors are perceived and linked to the employees' recognition which is not always obviously associated at first glance. The expert interviews revealed that the obvious kinds of value recognition are also demanded, such as praise or thanks, but the experts strongly linked this kind of recognition to very personal relations and behaviors between the supervisor and the employees or between employees and not a company's general culture according to which the principal can act and behave. For the experts, the company's culture encompasses more general behaviors and norms towards the employee to show him recognition - exemplarily the freedom and time to do creative work. Then, the employee feels recognized as member with a value for the company because he can actively live his position as worker in the R&D department in order to contribute to the department's targets.

It is important to transmit a lively recognition culture to the employees. Thereby, the principal has a direct lever to recognize via communication. He should be aware that it is not only performance recognition, but also membership recognition which contributes to identification processes. In particular, membership recognition is the central starting point to make role-taking and value recognition possible.

### **10.1.3 Interdependent review of the influencing factors**

Based on the empirical study, the interdependences between all influencing factors are summarized in detail to give concrete implications for the principal.

#### **Interdependent review I: Recognition of "rights" and communication satisfaction**

In Mead's theory, significant communication also entails the right message to the right receiver. If significant communication is targeted incorrectly, it will often be unsuccessful – even when an employee is happy and satisfied to receive information which he finds interesting, but it is not meant for him. Therefore, first of all, there should be a perceived difference between internal and external information, and this differentiation should be

consistent (see Welch and Jackson, 2007). Then, the internal members can be consciously recognized as member of the company. For all model variants, the study showed significant relations between membership recognition and communication satisfaction with content and climate. Membership recognition has a strong correlation on satisfaction with company information and satisfaction with the official interactional communication climate. This means that the awareness who gets company information or not should be clearly communicated to employees and stress that categorization with special communication channels such as intranet, employee-emails, or company-wide town-hall meetings. An in-group versus out-group effect is then transmitted, which is necessary to produce a first relationship with the company that differs from that of externals who also have a defined relationship according to their stakeholder status (e.g. supplier, government). Furthermore, considering the correlation between membership recognition and e.g. satisfaction with job information or the official interactional communication climate addresses another important topic: The employee is recognized as a member with a pre-defined function and role in the company's social order. Therefore, he should receive target group-oriented information according to his function. It fosters and strengthens his position in the company towards his colleagues. Recognition of membership then makes the transmitted message more satisfying for the employees. This means that the employee's expectations and real experiences in the company have overlaps because he feels informed in a way that corresponds to his membership status. He has the possibility to feel concerned on the transmitted information because he affects him as member of the company with a certain role. The informal interactional communication climate also correlates to the membership recognition, but this effect is weak.

#### Practical implication:

Feeling perceived as member with a specific role and function within the company, the communication exchange can be addressed according to internal and external information and internally "customized" to the employee's roles and functions. The practical recommendations for employers are to shape the awareness of a strong internal community and the meaning of internal information which are just addressed to internals. Moreover, the employers should clearly define job tasks and responsibilities, making it obvious to everyone in a company who is doing what. Then, he should control his team and foster to adapt information exchanges target-group-oriented in internal communication according to the respective "rights". The confidentiality of information can then be guaranteed due to correct information addressees. In general, a good way to express membership to the employee is the consistent and logical handling of information confidentiality by the principal. A confidentiality codex should be created – especially for the R&D function where information of new ideas and inventions has to be carefully handled. Furthermore, the official interactional

communication climate will then be satisfying for the employees with their specific functions, too. With regard to the informal interactional communication climate: Informal networks are also based on internal vs. external categories and to a certain degree to functions. However, in this case of informal communication exchanges the strength of personal relations on sympathy level and on tactical corporate policy level should not be neglected.

### **Interdependent review II: Role-taking, identification, and recognition of “solidarity”**

According to Mead’s theory, role-taking effects are essential for the process of identification and emerge through communication. Role-taking enables an employee to understand the views, targets, and intentions of “the others” through matching their roles and his own, individual function within the company in order to understand how to act in the job which then can be recognized as valuable for the organization. These both aspects role-taking and recognition are picked up in the study with the direct and indirect relation to identification climate. If the employee is satisfied, that means finding overlaps between his expectations or convictions and the experiences he has made with the company, then the employee faces up with the organization and starts an internalizing process. An employee needs information on different hierarchical levels regarding the company’s targets, codex, way of behavior, and working style to get to know the “others” for starting role-taking processes.

The study entails the direct relation between the communication satisfaction of content or climate and identification climate. Furthermore, the indirect relation between communication satisfaction and identification was examined when the recognition to employees being valuable for the company mediates (2 mediator variants: i) recognition of the job performance and ii) recognition of the job performance regarding creative work).

The results confirm the direct and indirect relations: Satisfaction with information on the job directly and indirectly correlates with the communication-oriented identification climate and this is valid for both mediator variants. Satisfaction with information on R&D-related topics has direct effects to the identification climate and has an indirect impact using the mediator job performance, too. In contrast, in the model with mediator recognition of job performance regarding creative work a direct effect misses but the indirect effect is still significant for the mediator creative work recognition. With regard to the satisfaction with information on the company: The model with the mediator “recognition of job performance” has a significant total effect on the communication-oriented identification climate but no direct and also no indirect significant relation, whereas the model with the mediator “recognition of creative work” has at least an indirect significant effect. Communication content alone will not only evoke an identifying process – climate is also a relevant factor, albeit always indirectly. In the study, the formal and informal interactional communication climates have no direct effects on the communication-oriented identification climate – except the model with the informal

climate in combination with the mediator “recognition of creative work”. However, the indirect effects are always significant.

Practical implication:

Considering the role-taking aspect, namely the satisfaction with communication content and climate often has a direct effect on the identification climate. However, satisfaction with communication content and climate nearly always has an indirect significant effect on the communication-oriented identification climate with both kinds of member-value recognitions as mediators. As a result, it is recommended to appropriately transmit recognition by the employer to the employee that he is valuable to the company. The indirect effect means that role-taking always impacts and is precondition for value recognition which in turn leads to a satisfying identification climate. The reason is: There must be awareness that value recognition is only communicated by the principal when the employee works as demanded. In daily work, many goals, strategies, and tasks are discussed among employees, but the decisions have to be cascaded to all hierarchical levels by the principal. Otherwise, an information asymmetry emerges, and misunderstandings are produced because the employee is not informed about strategic directions and cannot adapt his way of working for the benefit of the company. Then, he is not recognized as valuable for the company and this leads to a weak or no identification process. To avoid this negative spiral, the principal has to send actively these kinds of information in order to make sure that the employee has a realistic chance of receiving it. Additionally to the mediated indirect way, satisfaction with job information and partly R&D information even though directly leads to perceived identification climate in the organization. Using regular meetings and face-to-face interviews as direct contact to the employees, the principal should foster to get a good overview of the kind of information which the employees expect to receive for their job and about the R&D function. Then, all these activities effect a satisfying identifying environment for the employee which is in the employer’s interest to foster.

Moreover, besides the satisfying information content, the principal should also reflect the official and informal communicational interaction climate as important for a satisfying identification working environment. Climate is a part of the company’s culture. Therefore, each member should be aware of guaranteeing a structured and respectful official communication climate according to the employee’s function. Then, the employee has the chance to act as demanded for the company that is then positively recognized. Evoking and then maintaining such a climate should be in the interest of each organization – in particular the principal. He should discuss regularly with his employees how to enable and operate such a climate, e.g. how the employee must be informed in projects based on his role. The employer has hardly influence on controlling the informal communication climate in his official function.

However, he is often part of informal structures as well and then, it is possible to slightly trigger informal communication exchanges in the spirit of identity formation. The interpretation of each model and the strengths of the correlations can be found in the chapters 8.4.6 and 8.5.6

### **Interdependent review III: Recognition of “rights”, role-taking and identification**

As illustrated two paragraphs above, membership recognition always has positive effects on role-taking, in particular communication satisfaction considering content and climate. The previous paragraph gave recommendations for the direct and/ or indirect relation between role-taking and identification. Composing now these two jigsaw pieces means that membership recognition always has an indirect effect to the communication-related identification climate. These interdependent effects show impressive that the principal should consider all influencing factors to maximize controlling and enabling identification which is part to build up employee identity. Furthermore, recognition of “rights” lay the foundation for role-taking and indirectly to get recognition while working for the company as demanded.

#### Practical implication:

If an organization - in particular employers - would like to evoke and produce an identifying effect, then it must not only transmit information relevant to its goals, structure, and way of working as well as foster adequate communication climate for a role-taking process, but must also first guarantee perceived and satisfying membership recognition. There are many possibilities to stimulate it – one was measured according to the handling of information confidentiality.

## **10.2 Identity dimensions: Identity components and continual development**

### **Review: Identity components**

According to Mead, the self consists of the “I” and the “me” which shall to be balanced to receive an inner unit. An employer must always be aware that an employee will view the organization and its different hierarchies as “the others” who influence the employee’s “me”, and to adequately adopt the communication content and recognition aspects for identification processes. On the one hand, the employee reacts habitually and in a conventional manner according to the organization’s value system in order to be part of the organization. On the other hand, every individual has a completely individual set of characteristics and past of experiences and each reaction is therefore individually executed

and transmitted. With these individual reactions the employee shapes the organization and the organization must react. In return, the organization shapes the employee's thinking and behavior with its rules, norms, and behaviors of membership. Hence, a single employee has implications for the organization and its culture and the other way around.

Practical implication:

Identification processes are very important for relating the employee's individual characteristics to the organization's framework. Then, the employee's inner identity components "I" and "me" can harmonically build and shape the employee's identity. Creating this inner identity unit is then successful, when the employees can answer "who am I as employee?" in an organization. This means that employees have to find, to know, and be accepted in their roles and functions defined in the company, and how they interpret their roles and act in their functions as complete unique individual. Therefore, the strengths and weaknesses of everyone shall fit to the function he has to fulfill. Furthermore, the openness towards the individual's way of working to reach the company's targets shall be fostered in the context of his role: He should be recognized as member with an individual value contribution for the company. One practical approach is to introduce continuous talent management within a company. This talent management should support a satisfying match between the individual's characteristics, skills and the job function.

**Review: Continual development of identity**

Many identity theories do not consider identity a static construct because new environmental influences constantly impact it. Therefore, according to Erikson it is shaped during a complete life cycle and has to be maintained. The formation is a long-term process – change does not happen over the night, but modifications are, in principle, possible. An employer has to consider this fact. Mead also describes identity not as static and unchangeable construct. As intensively discussed in this thesis, the influencing factors come from a lively environment to affect identification processes.

Practical implication:

A lively environment means for the principal, that he has to communicate and recognize again and again. Building-up and then maintaining strong employee identity is continual, daily work. Furthermore, disruptive factors which can evoke imbalances in the relation between the organization and their employees and which can even diminish the answer of "who am I as employee in an organization?" should be regularly screened and avoided.



### 10.3 Outlook

As employee identity plays an important role in reducing principal-agent problems, research should continue to study its formation process. Then, the employer can consciously trigger and control them in order to successfully use employee identity as substitute for monetary incentives. Akerlof and Kranton (2005) mainly refer to social identity theory as theoretical basis. Their paper mentions internalizing effects and cultural norms which are, though, of strong importance in organizational identity theory. This thesis's approach focuses in-depth on the interaction and reflection (mirroring) between the employees and the organization – derived from the research approach symbolic interactionism. Recognizing the necessity to consider this topic more in economic research, Davis (2007) also demands a stronger integration of these aspects into the employee's identity utility function in economic theory and provides a first suggestion for how to do so - based on Akerlof's and Kranton's paper.

This thesis answered in-depth the research questions, what employee identity is, and which factors influence the employee's identity formation and the factors' interdependencies. As introduced at the beginning of this thesis, identity research covers different dimensions, which must be considered when discussing about the employee's identity "Who am I as employee in the organization?". Reviewing only the dimension identification is too narrowly considered. This is often the case in research. Identification of the employee with the organization "(...) implies psychological oneness (...)" (van Knippenberg and Sleebos, 2006, p. 574). However, employee identity means that the "I" and "me" components are harmonized to get a balanced employee identity. Identification strongly contributes to shaping the employee's "me", but additionally, the employee has to adequately retrieve his "I" as member in the organization as well.

Based on the symbolic interactionism approach, which has the interplay between the individual and his environment at center stage, the influencing factors communication and culture, above recognition, of the dimension identification also enable to foster orientation on the "I" component. The employee can find out as who he is recognized with his personal skills and character based on his role and function in relation to the others' roles and functions. Therefore, the importance of recognition as influencing factor should be further examined in studies for the concept employee identity. However, to satisfy the central approach "interplay between the employee and the organization" in symbolic interactionism research, communication is the elementary key. It describes the interactional exchange between the employee and the organization which can enable internalizing effects. Additional examinations on this complex and heterogeneous term and its application in the practice for identity formation processes should be further analyzed, too. It is necessary to trigger the influencing factors again and again in a changing environment because the employee identity

is also not an unchangeable construct and is affected by new influences from the environment. Instead of a status quo report study, an additional idea is to include the aspect continual development of identity into researches and set-up a panel study.

Moreover, future research on employee identity should further examine the influencing factors extensively with other employee groups besides the R&D department - in particular, the heterogeneity of the cultural aspect of recognition and organizational communication, which can be expressed and interpreted very differently across employee groups, different organizations, industries or even across organizations in different countries. Thereby, the interdependent relations between the single influencing factors and their bundled effects should still be considered. This will lead to an enhanced consciousness by employers on the power, heterogeneity, interdependences, and complexity of these factors influencing and shaping strongly employee identity and its usage as substitute of monetary incentives. Considering the importance of employee identity in an organization, this leads to employees who can consciously answer for themselves: "Who am I as employee in an organization?"

## Bibliography

### A

Abrams, D., and de Moura, R. (2001): Organizational identification: Psychological anchorage and turnover. In Hogg, M. A., and Terry, D. J. (Eds.), *Social identity processes in organizational contexts*, Philadelphia: Psychology Press, p. 131-148.

Abratt, R. (1989): A new approach to the corporate image management process, *Journal of Marketing Management*, 5 (1), p. 63-76.

Akerlof, G. A., and Kranton, R. E. (2005): Identity and the Economics of Organizations, *The Journal of Economic Perspectives*, 19 (1), p. 9-32.

Akkirman, A., and Harris, D. (2005): Organizational communication satisfaction in the virtual workplace, *Journal of Management Development*, 24 (5), p. 397-409.

Al-Atwi, A. A., and Bakir, A. (2014): Relationships between status judgments, identification, and counterproductive behavior, *Journal of Managerial Psychology*, 29, p. 472-489.

Albert, S., Ashforth, Blake E., and Dutton, Jane E.: (2000): Organizational identity and identification: Charting new waters and building new bridges, *Academy of Management Review*, Special Topic Forum on Organizational Identity and Identification, 25 (1), p. 13-17.

Albert, S., and Whetten, D. (1985): Organizational Identity, *Research in Organizational Behavior*, 7, p. 263-295.

Alvesson, M., and Sveningsson, S. (2008): *Changing Organizational Culture*, Oxon: Routledge.

Anderson, J., and Gerbing, D. (1988): Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach, *Psychological Bulletin*, 103 (3), p. 411-423.

Anderson, J. C., and Gerbing, D. W. (1991): Predicting the Performance of Measures in a Confirmatory Factor Analysis with a Pretest Assessment of Their Substantive Validities, *Journal of Applied Psychology*, 76 (5), p. 732-740.

Arrow, K. J. (1962): Economic welfare and the allocation of resources for invention. In: Nelson, R. (Publisher), *The rate of and direction of inventive activity: economic and social factors*, New York, NY: Princeton University Press, p. 609-625.

Ashforth, B. E., and Mael, F. A. (1989): Social identity theory and the organization, *Academy of Management Review*, 14 (1), p. 20-39.

Ashforth, B. E., and Mael, F. A. (1996): Organizational identity and strategy as a context for the individual, *Advances in Strategic Management*, 13, p. 19-64.

## **B**

Backhaus, K., Erichson, B., Plinke, W. and, Weiber, R. (2011): *Multivariate Analysemethoden – Eine anwendungsorientierte Einführung*, Heidelberg: Verlag Springer, 13<sup>th</sup> edition.

Backhaus, K., Erichson, B., and Weiber, R. (2013): *Fortgeschrittene Multivariate Analysemethoden – Eine anwendungsorientierte Einführung*, Berlin & Heidelberg: Verlag Springer Gabler, 2<sup>nd</sup> edition.

Bagozzi, R. P., and Baumgartner, H. (1994): The evaluation of structural equation models and hypotheses testing. In: Bagozzi, R. P. (Editor), *Principles of marketing research*, Cambridge: Blackwell, p. 386-422.

Bagozzi, R. P., and Yi, Y. (1988): On the Evaluation of Structural Equation Models, *Journal of the Academy of Marketing Science*, 16 (1), p. 74-94.

Balmer, J. M. T. (1995): Corporate Branding and Connoisseurship, *Journal of General Management*, 21 (1), p. 24-46.

Balmer, J. M. T. (2001): Corporate identity, corporate branding and corporate marketing: seeing through the fog, *European Journal of Marketing*, 35 (3/4), p. 248-292.

Balmer, J. M. T. (2008): Identity based views of the corporation, *European Journal of Marketing*, 42 (9-10), p. 879-906.

Baron, R. M., and Kenny, D. A. (1986): The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations, *Journal of Personality & Social Psychology*, 51 (6), p. 1173-1182.

Bartel, C. A., Wrzesniewski, A., and Wiesenfeld, B. M. (2012): Knowing where you stand: Physical isolation, perceived respect, and organizational identification among virtual employees, *Organization Science*, 23, p. 743-757.

Bartels, J., Douwes, R., de Jong, M., and Pruyn, A. (2006): Organizational Identification During a Merger: Determinants of Employees' Expected Identification With the New Organization, *British Journal of Management*, 17 (S1), p. S49-S67.

Bartels, J., Pruyn, A., De Jong, M., and Joustra, I. (2007): Multiple organizational identification levels and the impact of perceived external prestige and communication climate, *Journal of Organizational Behavior*, 28 (2), p. 173-190.

Belkin, N. J., and Robertson, S. E. (1976): Information science and the phenomenon of information, *Journal of the American Society for Information Science*, 27 (4), p. 197-204.

Bendor, J., and Swistak, P. (2001): The evolution of norms, *American Journal of Sociology*, 106 (6), p. 1493-1545.

Bentler, P. M. (2006): EQS 6 Structural equation program manual, Encino, CA: Multivariate Software Inc.

Birkigt, K., Stadler, M., and Funck, A. (2000): Corporate Identity – Grundlagen, Funktionen, Fallbeispiele. Landsberg/ Lech: Verlag Moderne Industrie, 10<sup>nd</sup> edition.

Bisel, R., Messersmith A., and Kelley, K. (2012): Supervisor-Subordinate Communication: Hierarchical Mum Effect Meets Organizational Learning, *Journal of Business Communication*, 49 (2), p. 128-147.

Boje, D. M., and Baskin, K. (2011): Our organizations were never disenchanting: enchantment by design narratives vs. enchantment by emergence, *Journal of Organizational Change Management*, 24 (4), p. 411-426.

Bollen, K. A. (1989): Structural equations with latent variables, New York: Wiley-Interscience.

Boosma, A., and Hoogland, J. J. (2001): The robustness of LISREL modelling revisited. In: Cudeck, R., du Toit, S., and Sörbom, D. (Editors), *Structural equation models: Present and*

future. A Festschrift in honor of Karl Joreskög, Chicago, IL: Scientific Software International, p. 139-168.

Brown, M. E. (1969): Identification and some conditions of organizational involvement, *Administrative Science Quarterly*, 14, p. 346-355.

Brunninge, O. (2005): Organisational self-understanding and the strategy process: Strategy dynamics in Scania and Handelsbanken, JIBS Dissertation Series No. 027, Jonkoping: Jonkoping International Business School.

Busse von Colbe, W., and Laßmann, G. (1991): *Betriebswirtschaftstheorie Bd 1 – Grundlage, Produktion- und Kostentheorie*, Berlin: Springer, 2<sup>nd</sup> edition.

Byrne, B. M. (2010): *Structural equation modeling with AMOS. Basic concepts, applications and programming*, New York & London: Routledge, 2<sup>nd</sup> edition.

## C

Cameron, J., and Pierce, W. D. (1994): Reinforcement, Reward, and Intrinsic Motivation: A Meta-Analysis, *Review of Educational Research*, p. 363-423.

Cheney, C. (1983a): The rhetoric of identification and the study of organizational communication, *Quarterly Journal of Speech*, 69 (2), p. 143-158.

Cheney, G. (1983b): On the various and changing meanings of organizational membership: A field study of organizational identification, *Communication Monographs*, 50, p. 343-362.

Cheney, G., and Christensen, L. T. (2001): Organizational identity. Linkages between internal and external communication. In: Jablin, F., and Putnam, L. (Editors), *The new handbook of organizational communication*, Thousand Oaks, CA: Sage.

Cheung, G. W., and Lau, R. S. (2008): Testing Mediation and Suppression Effects of Latent Variables Bootstrapping With Structural Equation Models, *Organizational Research Methods*, 11(2), p. 296-325.

Chin, W. W. (1998a): Issues and opinion on structural equation modeling, *Management Information Systems Quarterly*, 22 (1), p. 7-16.

- Chin, W. W. (1998b): The partial least squares approach for structural equation modeling. In: Marcoulides, G. A. (Editor), *Modern methods for business research*, London: Lawrence Erlbaum Associates, p. 295-336.
- Christensen, L. T., and Askegaard, S. (2001): Corporate identity and corporate image revisited: A semiotic perspective, *European Journal of Marketing*, 35 (3-4), p. 292-315.
- Churchill, G. A. (1979): A paradigm for developing better measures of marketing constructs, *Journal of Marketing Research*, 16 (1), p. 64-73.
- Clampitt, P. G., and Downs, C. W. (2004): Downs-Hazen Communication Satisfaction Questionnaire. In: Downs C. W., and Adrian, A. D. (Editors), *Assessing organizational communication*, London: Guilford Press, p. 139-157.
- Cooke, R., and Rousseau, D. (1988): Behavioral norms and expectations: a quantitative approach to the assessment of the organizational culture, *Group & Organization Studies*, 13 (3), p. 245-273.
- Cooley, C. H. (1922): *Human Nature and the Social Order*, New York: Charles Scribner's Sons.
- Corley, K. G. (2004): Defined by our strategy or our culture? - Hierarchical differences in perceptions of organizational identity and change, *Human Relations*, 57 (9), p. 1145-1177.
- Corley, K. G, Harquail, C. V., Pratt, M. G., Glynn, M. A., Fiol, C. M., and Hatch, M. J. (2006): Guiding organizational identity through aged adolescence, *Journal of Management Inquiry*, 15 (2), p. 85-99.
- Cornelissen, J. P. (2002): On the 'Organizational Identity' Metaphor, *British Journal of Management*, 13 (3), p. 259-268.
- Cornelissen, J. P., Haslam, S. A., and Balmer, M. T. (2007): Social identity, organizational identity and corporate identity: towards an integrated understanding of processes, patternings and products, *British Journal of Management*, 18 (S1), p. S1-S16.
- Crino, M. D., and White, M. C. (1981): Satisfaction in Communication: An Examination of the Downs-Hazen Measure, *Psychological Reports*, 49 (3), p. 831-838.

Cronbach, L. J., and Meehl, P. E. (1955): Construct validity in psychological tests, *Psychological Bulletin*, 52, p. 281-302.

Czarniawska, B. (1997): *Narrating the organization: Dramas of institutionalized identity*, Chicago, IL: University of Chicago Press.

Czarniawska, B., and Wolff, R. (1998): Constructing new identities in established organization fields, *International, Studies of Management and Organization*, 28 (3), p. 32-56.

## D

Davis, J. B. (2007): Akerlof and Kranton on identity in economics: inverting the analysis, *Cambridge Journal of Economics*, 31, p. 349-362.

Day, R. L. (1984): Modeling Choices Among Alternative Responses to Dissatisfaction. In: Kinnear, T. C. (Editor), *NA - Advances in Consumer Research*, Volume 11, Provo, UT: Association for Consumer Research, p. 496-499.

Dennis, H. S. (1974): *A theoretical and empirical study of managerial communication climate in complex organizations*, Unpublished doctoral thesis, Xerox University Microfilms, Ann Arbor, Michigan.

Downs, C. W., and Hazen, M. D. (1977): A facto analytic study of communication satisfaction, *Journal of Business Communication*, 14 (3), p. 63-73.

Driscoll, C., and McKee, M. (2006): Restorying a culture of ethical and spiritual values: a role for leader storytelling, *Journal of Business Ethics*, 73 (2), p. 205-217.

Dunn, R. G. (1998): *Identity Crises: A Social Critique of Postmodernity*, Minneapolis, MN: University of Minnesota Press.

Dutton J., and Dukerich, J. (1991): Keeping an Eye on the mirror: image and identity in organizational adaptation, *Academy of Management Review*, 34 (3), p. 517-554.

Dutton, J., Dukerich, J., and Harquail, C. (1994): Organizational Images and Member Identification, *Administrative Science Quarterly*, 39 (2), p. 239-263.



**E**

Edwards, M. R. (2005). Organizational identification: A conceptual and operational review, *International Journal of Management Reviews*, 7(4), p. 207-230.

Edwards, M. R., and Peccei, R. (2007): Organizational Identification: Development and Testing of a Conceptually Grounded Measure, *European Journal of Work and Organizational Psychology*, 16, p. 25-57.

Efron, B. (1979): Bootstrap methods: Another look at the jackknife, *Annals of Statistics*, 7 (1), p. 1-26.

Efron, B., and Tibshirani, R. J. (1993): An introduction to the bootstrap, New York, NY: Chapman and Hall.

Ehrhart, M. G., Schneider, B., and Macey, W. H. (2013): Organizational Culture and Climate - An Introduction to Theory, Research and Practice, New York, NY: Routledge.

Eisenberg, E. M., and Riley, P. (2001): Organizational culture. In: Jablin, F. M. and Putnam, L. L. (Editors), *The new handbook of organizational communication: advances in theory, research, and methods*, Thousand Oaks, CA: Sage, p. 291-322.

Eisenberger, R., and Cameron, J. (1996): Detrimental Effects of Reward. Reality or Myth?, *American Psychologist*, p. 1153-1166.

Ekvall, G. (1996): Organizational climate for creativity and innovation, *European Journal of Work and Organizational Psychology*, 5 (1), p. 105-123.

Ellemers, N., De Gilder, D., and Haslam, A. (2004): Motivating individuals and groups at work: a social identity perspective on leadership and group performance, *Academy of Management Review*, 29 (3), p. 459-478.

Elsbach, K. D., and Kramer R. M. (1996): Members' Responses to Organizational Identity Threats: Encountering and Countering the Business Week Rankings, *Administrative Science Quarterly*, 41 (3), p. 442-476.

Elsner, K. (2013): Kleine Ursache – große Wirkung: Wertschätzung von hochqualifizierten Mitarbeitern. Eine konzeptionelle Einordnung und empirische Untersuchung zur Bedeutung der Anerkennung für gute Mitarbeiterführung, München & Mering: Rainer Hampp Verlag.

Erikson, E. (1997): *The Life Cycle Completed*, New York, NY: WW Norton and Company.

## F

Farradane, J. (1980): Knowledge, information, and information science, *Journal of Information Science*, 2 (2), p. 75-80.

Farrell, A. M. (2010): Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009), *Journal of Business Research*, 63, p. 324-327.

Fields, D. L. (2002). *Taking the measure of work: A guide to validated scales for organizational research and diagnosis*. Thousand Oaks, CA: SAGE Publications, Inc.

Fink, E. L., and Chen, S.-S. (1995): A Galileo analysis of organizational climate, *Human Communication Research*, 21, p. 494-521.

Finke, J., and Stumm, G. (2012): Identität aus der Sicht der Gesprächspsychotherapie. In: Petzold, H. G. (Editor), *Identität. Ein Kernthema moderner Psychotherapie – interdisziplinäre Perspektiven*, Wiesbaden: VS Verlag für Sozialwissenschaften, p. 361-378.

Fiske, J. (1990): *Introduction to communication studies*, London & New York: Routledge, 2<sup>nd</sup> edition.

Foreman, P., and Whetten, D. (2016): Measuring organizational identity: Taking stock and looking forward. In: Pratt, M. G., Schultz, M., Ashforth, B. E., and Ravasi, D., *The Oxford Handbook of Organizational Identity*, Oxford University Press, Oxford, p. 39-64.

Fornell, C., and Larcker, D. F. (1981): Evaluation structural equation models with unobservable variables and measurement error, *Journal of Marketing Research*, 18 (1), p. 39-50.

Freud, S. (2005): *Das Ich und das Es*, Frankfurt a. Main: Suhrkamp.

Fritz, W. (1992): *Marktorientierte Unternehmensführung und Unternehmenserfolg: Grundlagen und Ergebnisse einer empirischen Untersuchung*, Stuttgart: Schäffer-Poeschel.

Fuller, J. B., Hester, K., Barnett, T., Beu, D., Frey, L., and Relyea, C. (2009): Extending the Group Engagement Model: An Examination of the Interactive Effects of Prestige, Respect, and Employee Role Identity, *Journal of Managerial Issues*, 21 (1), p. 119-139.

Fuller, J., Hester, K., Barnett, T., Frey L., Relyea, C., and Beu, D. (2006): Perceived External Prestige and Internal Respect: New Insights into the Organizational Identification Process, *Human Relations*, 59 (6), p. 815-846.

## G

Gagliardi, P. (1986): The creation and change of organizational cultures: a conceptual framework, *Organizational Studies*, 7 (2), p. 117-134.

Giese, J. L., and Cote, J. A. (2000): Defining Consumer Satisfaction, *Academy of Marketing Science Review*, 1, p. 1-27.

Gioia, D., Schultz M., and Corley, K. (2000): Organizational identity, image and adaptive instability, *Academy of Management Review*, 25 (1), p. 63-81.

Gioia, D. A., and Thomas, J. B. (1996): Identity, Image, and Issue Interpretation: Sensemaking during Strategic Change in Academia, *Administrative Science Quarterly*, 41 (3), p. 370-403.

Glynn, M. A. (2000): When cymbals become symbols: conflict over organizational identity within a symphony orchestra, *Organization Science*, 11 (3), p. 285-298.

Goffman, E. (1974): *Das Individuum im öffentlichen Austausch. Mikrostudien zur öffentlichen Ordnung*, Frankfurt a. Main: Suhrkamp.

Goldhaber, G. M. (1986): *Organizational communication*, Dubuque, IA: Wm. C. Brown Publisher.

Goldhaber, G. M., and Rogers, D. P. (1979): *Auditing organizational communication systems: The ICA communication audit*, Dubuque, IA: Kendall/Hunt Publishing Company.

Goris, J. (2007): Effects of satisfaction with communication on the relationship between individual-job congruence and job performance/satisfaction, *Journal of Management Development*, 26 (8), p. 737-752.

Gray, J., and Laidlaw, H. (2002): Part-time employment and communication satisfaction in an Australian retail organization, *Employee Relations*, 24 (2), p. 211-228.

Gregson, T. (1990): Communication Satisfaction: a path analytic study of accountants affiliated with CPA firms, *Behavioral Research in Accounting*, 2, p. 32-49.

Gutenberg, E. (1979): *Grundlagen der Betriebswirtschaftslehre, Band 1*, Berlin: Springer.

Guzley, R. (1992): Organizational Climate and Communication Climate – Predictors of Commitment to the organization, *Management Communication Quarterly*, 5 (4), p. 379-402.

## H

Habermas, J. (1976): *Zur Rekonstruktion des Historischen Materialismus*, Frankfurt a. Main: Suhrkamp.

Hall, D. T., Schneider, B., and Nygren, H. T. (1970): Personal factors in organizational identification, *Administrative Science Quarterly*, 15, p. 176-190.

Halstead D., Hartman, D., and Schmidt, S. L. (1994): Multisource Effects on the Satisfaction Formation Process, *Journal of the Academy of Marketing Science*, 22, p. 114-129.

Hargie, O., and Tourish, D. (2004): *Handbook of communication audits for organisations*, London: Routledge.

Harmon, G. (1984): The measurement of information. *Information Processing and Management*, 20 (1-2), p. 193-198.

Haslam, S. A., Powell, C., and Turner, J. C. (2000): Social Identity, Self-categorization, and Work Motivation: Rethinking the Contribution of the Group to Positive and Sustainable Organisational Outcomes, *Applied Psychology: An International Review*, 49 (3), p. 319-339.

Hatch, M. J., and Schultz, M. (1997): Relations between organizational culture, identity and image, *European Journal of Marketing*, 31 (5-6), p. 356-365.

Hatch, M. J., and Schultz M. (2002): The dynamics of organizational identity, *Human Relations*, 55 (8), p. 989-1018.

- Hegel, G. W. F. (1973): *Phänomenologie des Geistes*, Frankfurt a. Main: Suhrkamp.
- Helfferrich, C. (2014): Leitfaden- und Experteninterviews. In: Blasius, J., and Baur, N. (Editors), *Handbuch Methoden der empirischen Sozialforschung*, Wiesbaden: Springer, p. 559-574.
- Henderson, P. W., Cote, J. A., Leong, S. M., and Schmitt, B. (2003): Building strong brands in Asia: selecting the visual components of image to maximize brand strength, *International Journal of Research in Marketing*, 20 (4), p. 297-313.
- Hildebrandt, L. (1984): Kausalanalytische Validierung in der Marketingforschung, *Marketing: Zeitschrift für Forschung und Praxis*, 6 (1), p. 41-51.
- Hildebrandt, L., and Temme, D. (2006): Probleme der Validierung mit Strukturgleichungsmodellen, *Die Betriebswirtschaft*, 66 (6), p. 618-639.
- Hinkin, T. R. (1995): A Review of Scale Development Practices in the Study of Organizations, *Journal of Management*, 21 (5), p. 967-988.
- Hinkin, T. R., and Tracey, J. B. (1999): An Analysis of Variance Approach to Content Validation, *Organizational Research Methods*, 2 (2), p. 175-186.
- Hodge, B., William, A., and Lawrence, G. (2003): *Organization Theory – A strategic approach*, New Jersey: Prentice Hall, 6<sup>th</sup> edition.
- Hoelter, J. W. (1983): The analysis of covariance structures: Goodness-of-fit Indices, *Sociological Methods Research*, 11 (3), p. 325-344.
- Hofstede, G., Neuijen, B., Ohayv, D., and Sanders, G. (1990): Measuring Organizational Cultures - A Qualitative and Quantitative Study across Twenty Cases, *Administrative Science Quarterly*, 35 (2), p. 286-316.
- Hogg, M. A., and Reid, S. A. (2006): Social Identity, Self-Categorization, and the Communication of Group Norms, *Communication Theory*, 16 (1), p. 7-30.
- Hogg, M. A., and Terry, D. J. (2000): Social identity and selfcategorization processes in organizational contexts, *Academy of Management Review*, 25 (1), p. 121-140.

Homburg, C. (2012): Marketingmanagement, Wiesbaden: Springer, 4<sup>th</sup> edition.

Homburg, C., and Baumgartner, H. (1995): Beurteilung von Kausalmodellen, Marketing: Zeitschrift für Forschung und Praxis, 17 (3), p. 162-176.

Homburg, C., and Giering, A. (1996): Konzeptualisierung und Operationalisierung komplexer Konstrukte: Ein Leitfaden für die Marketingforschung, Marketing: Zeitschrift für Forschung und Praxis, 18 (1), p. 5-24.

Honneth, A. (1995): The Struggle for Recognition – The moral grammar of social conflicts, Cambridge & Massachusetts: MIT Press.

Hu, L., and Bentler, P. M. (1999): Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives, Structural Equation Modeling, 6 (1), p. 1-55.

## I

Iacobucci, D. (2007): A Meditation on Mediation. In: Fitzsimons, G., and Morwitz, V. (Editors), NA - Advances in Consumer Research, 34, Duluth, MN: Association for Consumer Research, p. 536-538.

Ibarra, H. and Barbulescu, R. (2010): Identity as narrative: prevalence, effectiveness, and consequences of narrative identity work in macro work role transitions, Academy of Management Review, 35 (1), p. 135-154.

Ichikawa, M., and Konishi, S. (1995): Application of the bootstrap methods in factor analysis, Psychometrika, 60 (1), p. 77-93.

Inamizu, N. (2015): Impact of Change in Office Layout on Employees' Communication Satisfaction, Annals of Business Administrative Science, 14 (6), p. 335-350.

Iyer, S., and Israel, D. (2012): Structural Equation Modeling for Testing the Impact of Organization Communication Satisfaction on Employee Engagement, South Asian Journal of Management, 19 (1), p. 51-81.

**J**

Jacobs, M. A., Yu, W., and Chavez, R. (2016): The effect of internal communication and employee satisfaction on supply chain integration, *International Journal Production Economics*, 171 (1), p. 60-70.

Jacobshagen, N., and Semmer, N. (2009): Wer schätzt eigentlich wen? Kunden als Quelle der Wertschätzung am Arbeitsplatz, *Wirtschaftspsychologie*, 1, p. 11-19.

James, L. R., Choi C. C., Ko C.-H., McNeil, P. K., Minton M. K., Wright, M. A., and Kim, K. (2008): Organizational and psychological climate: A review of theory and research, *European Journal of Work and Organizational Psychology*, 17 (1), p. 5-32.

James, L. A., and James, L. R. (1989): Integrating work environment perceptions: Explorations into the measurement of meaning, *Journal of Applied Psychology*, 74 (5), p. 739-751.

Jarvis, C. B., Mackenzie, S. B., and Podsakoff, P. M. (2003): A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research, *Journal of Consumer Research*, 30 (2), p. 199-218.

Jenkins, R. (2008): *Social identity*, New York, NY: Routledge, 3<sup>rd</sup> edition.

Jöreskog, K. G. (1967a): Some contributions to maximum likelihood factor analysis, *Psychometrika*, 32 (4), p. 443-482.

Jöreskog, K. G. (1967b): A general approach to confirmatory maximum likelihood factor analysis, *Psychometrika*, 34 (2), p. 183-202.

Jöreskog, K. G., and Sörbom, D. (1993): *LISREL 8: Structural equation modeling with the SIMPLIS command language*, Chicago, IL: Scientific Software International.

Jones, A. P., and James, L. R. (1979): Psychological climate: Dimensions and relationships of individual and aggregated work environment perceptions, *Organizational Behavior and Human Performance*, 23 (2), p. 201-250.

Jung, T., Scott, T., Davies, H. T. O., Bower, P., Whalley, D., McNally, R., and Mannion, R. (2009): Instruments for exploring organizational culture: a review of the literature, *Public Administration Review*, 69 (6), p. 1087-1096.

**K**

Kaiser, H. F. (1974): An index of factorial simplicity, *Psychometrika*, 39, p. 31-36.

Kaiser, H. F., and Rice, J. (1974): Little Jiffy, Mark IV. *Educational and Psychological Measurement*, 34, p. 111-117.

Kalla, H. (2003): Exploration of the relationship between knowledge creation, organisational learning, and social capital: role of communication, Helsinki School of Economics Working Papers, W-360, Helsinki: HeSE print.

Kandlousi, N., Ali, A., and Abdollahi, A. (2010): Organizational Citizenship Behavior in Concern of Communication Satisfaction: The Role of the Formal and Informal Communication, *International Journal of Business and Management*, 5 (10), p. 51-61.

Keith, R. (1960): The marketing revolution, *Journal of Marketing*, 24 (3), p. 35-38.

Kerlinger, F. N. (1973): *Foundations of Behavioral Research*, New York: Holt McDougal, 2<sup>nd</sup> ed.

Keyton, J. (2014): Communication, Organizational Culture, and Organizational Climate. In: Schneider, B., and Barbera, K. M. (Editors), *The Oxford Handbook of Organizational Climate and Culture*, New York, NY: Oxford Univ. Press.

Kline, R. B. (2011): *Principles and practice of structural equation modelling*, New York, NY: Guilford Press.

Kotthoff, H., and Wagner, A. (2008): *Die Leistungsträger. Führungskräfte im Wandel der Firmenkultur – eine Follow-up-Studie*, Edition Sigma, Berlin.

Krappmann, L. (1975): *Soziologische Dimensionen der Identität*, Stuttgart: Ernst Klett Verlag.

Krcmar, H. (2015): *Informationsmanagement*, Berlin & Heidelberg: Springer, 6<sup>th</sup> edition.

Kreiner, G. E., and Hollensbe, E. C. (2006): Where is the “me” among the “we”? - Identity work and the search for optimal balance, *Academy of Management Journal*, 49 (5), p. 1031-1057.



**L**

Ladisich-Raine, A., and Pernter, G. (2012): Das Identitätsthema in Theorie und Praxis der Gestalttherapie. In: Petzold, H. G. (Editor), Identität. Ein Kernthema moderner Psychotherapie – interdisziplinäre Perspektiven, Wiesbaden: VS Verlag für Sozialwissenschaften, p. 333-360.

Lafont, J.-J., and Martimort, D. (2001): The theory of incentives I: The principal-agent-model, [https://www.researchgate.net/profile/David\\_Martimort/publication/31737757\\_The\\_Theory\\_of\\_Incentives\\_The\\_Principal-Agent\\_Model\\_JJ\\_Laffont\\_D\\_Martimort/links/54d3e4710cf25013d02751a4.pdf](https://www.researchgate.net/profile/David_Martimort/publication/31737757_The_Theory_of_Incentives_The_Principal-Agent_Model_JJ_Laffont_D_Martimort/links/54d3e4710cf25013d02751a4.pdf); 25<sup>th</sup> March 2017.

Lenzner, T., Neuert, C., and Otto, W. (2014): Kognitives Pretesting, Mannheim: GESIS - Leibniz-Institut für Sozialwissenschaften, (SDM Survey Guidelines).

Levine, M. M. (1977): The informative act and its aftermath: Toward a predictive science of information, *Journal of the American Society for Information Science*, 28 (2), p. 101-106.

Lipponen, J., Olkkonen, M.-E., and Moilanen, M. (2004): Perceived procedural justice and employee responses to an organizational merger, *European Journal of Work and Organizational Psychology*, 13, p. 391-413.

Littig, B. (2008): Interviews mit Eliten – Interviews mit ExpertInnen: Gibt es Unterschiede? *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 9 (3), <http://nbnresolving.de/urn:nbn:de:0114-fqs0803161>, 2<sup>nd</sup> February 2017.

Losee, R. M. (1990): *The science of information: Measurement and applications*, New York, NY: Academic Press.

Losee, R. M. (1997): A Discipline Independent Definition of Information, *Journal of the American society for information science*, 48 (3), p. 254-269.

Luhmann, N. (1984): *Soziale Systeme*, Frankfurt a.M.: Suhrkamp.

**M**

MacCallum, R. C., Browne, M. W., and Sugawara, H. M. (1996): Power analysis and determination of sample size for covariance structure modeling, *Psychological Methods*, 1 (2), p. 130-149.

MacCallum, R. C., and Austin, J. T. (2000): Application of structural equation modeling in psychological research, *Annual Review of Psychology*, 51 (1), p. 201–226.

Machlup, F., and Mansfield, U. (1983): *The study of information: Interdisciplinary messages*, New York, NY: Wiley-Interscience.

MacKenzie, S. B., Podsakoff, P., and Podsakoff, N. (2011): Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques, *MIS Quarterly*, 35 (2), p. 293-334.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., and Sheets, V. (2002): A comparison of methods to test mediation and other intervening variable effects, *Psychological Methods*, 7 (1), p. 83-104.

MacKinnon, D. P., Lockwood, C. M., and Williams, J. (2004): Confidence limits for the indirect effect: Distribution of the product and resampling methods, *Multivariate Behavioral Research*, 39 (1), p. 99-128.

MacKinnon, D. P., Warsi, G., and Dwyer, J. H. (1995): A simulation study of mediated effect measures, *Multivariate Behavioral Research*, 30 (1), p. 41-62.

Madlock, P. (2008): Employee Satisfaction: The Link Between Leadership Style, Communicator Competence, and Employee Satisfaction, *Journal of Business Communication*, 45 (1), p. 61-78.

Madlock, P., and Kennedy-Lightsey, C. (2010): The effects of supervisors' verbal aggressiveness and mentoring on their subordinates, *Journal of Business Communication*, 47 (1), p. 42-62.

Mael, F. A., and Ashforth, B. E. (1992): Alumni and their alma mater: A partial test of a reformulated model of organizational identification, *Journal of Organizational Behavior*, 13, p. 103-123.

Mael, F. A., and Tetrick, L. E. (1992): Identifying organizational identification, *Educational and Psychological Measurement*, 52, p. 813-824.

Marcia, J. E. (1994): "Ego identity and object relations". In: Masling, J. M., and Bornstein, R. F. (Editors), *Empirical Perspectives on Object Relations Theory*, Washington, DC: American Psychological Association, p. 59-103.

Marsh, H. W., Balla, J. R., and McDonald, R. P. (1988): Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size, *Psychological Bulletin*, 103 (3), p. 391-410.

Marsh, H. W., Hau, K.-T., and Wen, Z. (2004): In Search of Golden Rules: Comment on Hypothesis-Testing Approaches to Setting Cutoff Values for fit Indexes and Dangers in Overgeneralizing Hu and Bentler's (1999) Findings, *Structural Equation Modeling*, 11 (3), p. 320-341.

Mead, G. H. (1978): *Geist, Identität und Gesellschaft*, Frankfurt a. Main: Suhrkamp, 3<sup>rd</sup> edition.

Meuser, M., and Nagel, U. (1991): ExpertInneninterviews - vielfach erprobt, wenig bedacht: ein Beitrag zur qualitativen Methodendiskussion. In: Garz, D., and Kraimer, K. (Editors), *Qualitativ-empirische Sozialforschung: Konzepte, Methoden, Analysen*, Opladen: Westdeutscher Verlag, p. 441-471.

Mey, G., and Mruck, K. (2010): Interviews. In: Mey, G., and Mruck, K., *Handbuch qualitative Forschung in der Psychologie*, Wiesbaden: Springer, p. 423-436.

Meyer, J. P., and Allen, N. J. (1997): *Commitment in the workplace*, Thousand Oaks, CA: Sage.

Meyer, J. P., Stanley, D. J., Herscovitch, L., and Topolnytsky, L. (2002): Affective, continuance, and normative commitment to the organization: a meta-analysis of antecedents, correlates, and consequences, *Journal of Vocational Behavior*, 61, p. 20-52.

Morris, C. (1978): Prologue. In: Mead, G. H., *Geist, Identität und Gesellschaft*, Frankfurt a. Main: Suhrkamp, 3<sup>rd</sup> edition, p. 13-38.

Miller, V. D., Allen, M., Casey, M. K., and Johnson, J. R. (2000): Reconsidering the organizational identification questionnaire, *Management Communication Quarterly*, 13, p. 626-658.

Mueller, B., and Lee, J. (2002): Leader-Member Exchange and Organizational Communication Satisfaction in Multiple Contexts, *The Journal of Business Communication*, 39 (2), p. 220-244.

**N**

Nakra, R. (2006): Relationship between communication satisfaction and organizational identification: an empirical study, *Vision: The Journal of Business Perspective*, 10 (2), p. 41-51.

N.N., Hogrefe – online Lexikon der Psychologie (n.d.): Faktorrelibilität, <https://portal.hogrefe.com/dorsch/de/startseite/stichwort-detailseite/desktop/1/keyword/faktorrelibilitaet/>, 21<sup>st</sup> April 2017.

N.N., Livrosgratis (n.d.): Translation of Mead's „Mind, Self and Society”, <http://livros01.livrosgratis.com.br/bu000001.pdf>, 30<sup>th</sup> March 2017.

N.N., Merriam's Webster online encyclopedia (n.d): culture, <https://www.merriam-webster.com/dictionary/culture>, 30<sup>th</sup> March 2017.

N.N., Merriam Webster's online encyclopedia (n.d.): identification, <https://www.merriam-webster.com/dictionary/identification>, 18<sup>th</sup> November 2015.

N.N., Merriam Webster's online encyclopedia (n.d.): identity, <http://www.merriam-webster.com/dictionary/identity>, 18<sup>th</sup> November 2015.

N.N., Merriam Webster's online encyclopedia (n.d.): satisfaction, <https://www.merriam-webster.com/dictionary/satisfaction>, 18<sup>th</sup> November 2015.

N.N., Merriam's Webster online learner's dictionary and encyclopedia (n.d.): recognition, <http://www.learnersdictionary.com/definition/recognition>, 2<sup>nd</sup> January, 2018.

Nunnally, J. C., and Bernstein, I. H. (1994): *Psychometric theory*, New York: McGraw-Hill, 3<sup>rd</sup> edition.

**O**

Oliver, R. L. (1980): A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions, *Journal of Marketing Research*, 17 (4), p. 460-469.

Oliver, R. L. (1981): Measurement and Evaluation of Satisfaction Process in Retail Setting, *Journal of Retailing*, 57 (3), p. 25-48.

Oliver, S. (1997): *Corporate Communication: Principles, Techniques and Strategies*, London: Kogan Page Limited.

Olkkonen, M.-E., and Lipponen, J. (2006): Relationships between organizational justice, identification with organization and work unit, and group-related outcomes, *Organizational Behavior and Human Decision Processes*, 100 (2), p. 202-215.

O'Reilly, C., Chatman, J., and Caldwell, D. (1991): People and organizational culture: a profile comparison approach to assessing person-organization fit, *The Academy of Management Journal*, 34 (3), p. 487-516.

## P

Peter, J. (1979): Reliability: A Review of Psychometric Basics and Recent Marketing Practices, *Journal of Marketing Research*, 16 (1), p. 6-17.

Peters, J. D. (1988): Information: Notes toward a critical history, *Journal of Communication Inquiry*, 12 (2), p. 9-23.

Peters T., and Waterman, R. H. (1982): *In Search of Excellence*, New York, NY: Harper and Row.

Peterson, R. (1994): A Meta-analysis of Cronbach's Coefficient Alpha, *Journal of Consumer Research*, 21 (4), p. 382-391.

Petzold, H. G. (2012): Transversale Identität und Identitätsarbeit - Die Integrative Identitätstheorie als Grundlage für eine entwicklungspsychologisch und sozialisationstheoretisch begründete Persönlichkeitstheorie und Psychotherapie - Perspektiven „klinischer Sozialpsychologie. In: Petzold, H. G. (Editor), *Identität. Ein Kernthema moderner Psychotherapie – interdisziplinäre Perspektiven*, Wiesbaden: VS Verlag für Sozialwissenschaften, p. 407-603.

Picot, A., Reichwald, R., and Wigand, R. T. (2008): *Information, Organization, and Management*, Berlin: Springer.

Pietsch, T., Martiny, L., and Klotz, M. (2004): *Strategisches Informationsmanagement – Bedeutung, Konzeption und Umsetzung*, Berlin: Erich Schmidt Verlag.

Pincus, J. (1986): Communication satisfaction, job satisfaction, and job performance, *Human Communication Research*, 12 (3), p. 395-419.

Pinto, M., and Pinto, J. (1990): Project Team Communication and Cross-functional Cooperation in New Program Development, *Journal of Product Innovation Management*, 7 (3), p. 200-212.

Porst, R. (2011): *Der Fragebogen*, Wiesbaden: Springer, 4<sup>th</sup> edition.

Pratt, A. D. (1982): *The information of the image*, Norwood, NJ: Ablex.

Pratt, M. G., and Rafaeli, A. (2001): Symbols as a language of organizational relationships, *Research in Organizational Behavior*, 23, p. 93-132.

Preacher, K. J., and Hayes, A. F. (2004): SPSS and SAS procedures for estimating indirect effects in simple mediation models, *Behavior Research Methods, Instruments, & Computers*, 36 (4), p. 717-731.

Preacher, K. J., Rucker, D. D., and Hayes, A. F. (2007): Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions, *Multivariate Behavioral Research*, 42(1), p. 185-227.

Preacher, K. J., and Hayes, A. F. (2008): Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models, *Behavior Research Methods*, 2008, 40 (3), p. 879-891.

Prettigrew, A. (1979): On studying organizational cultures, *Administrative Science Quarterly*, 24 (4), p. 570-581.

Przyborski, A., and Wohlrab-Sahr, M. (2014): Forschungsdesigns für die qualitative Sozialforschung. In: Blasius, J., and Baur, N., *Handbuch Methoden der empirischen Sozialforschung*, Wiesbaden: Springer, p. 117-134.

## R

Ravasi, D., and Schultz, M. (2006): Responding to organizational identity threats: exploring the role of organizational culture, *Academy of Management Journal*, 49 (3), p. 433-458.

Redding, W. C. (1972): *Communication within organization: An interpretive review of theory and research*, New York, NY: Industrial Communication Council.

Rhoades, L., and Eisenberger, R. (2002): Perceived organizational support: a review of the literature, *Journal of Applied Psychology*, 87, p. 698-714.

Ricoeur, P. (1996): *Das Selbst als ein Anderer*, München: Wilhelm Fink Verlag.

Riketta, M. (2005): Organizational identification: A meta-analysis, *Journal of Vocational Behavior*, 66, p. 358-384.

Rimal, R. N., and Real, K. (2003): Understanding the influence of perceived norms on Behaviors, *Communication Theory*, 13 (2), p. 184-203.

Roberts, K. H. and O'Reilly, C. A. (1973): Measuring organizational communication, *Journal of Applied Psychology*, 59 (3), p. 321-326.

Rubin, R. R., Palmgreen, P., and Sypher, H. E. (1994): *Communication research measures*, New York, NY: Guilford Press.

## S

Schein, E. (2004): *Organizational culture and leadership*, San Francisco, CA: A Wiley Imprint, 3<sup>rd</sup> edition.

Schein, E. (2017): *Organizational culture and leadership*, Hoboken, NJ: Wiley, 5<sup>th</sup> edition.

Schermelleh-Engel, K., Moosbrugger, H., and Müller, H. (2003): Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures, *Methods of Psychological Research Online*, 8 (2), p. 23-74.

Schulz von Thun, F. (2016): *Miteinander reden 1*, Hamburg: rowohlt, 53<sup>rd</sup> edition.

Schwab, D. P. (1980): Construct Validity in Organizational Behavior. In Staw, B. M., and Cummings, L. L. (Editors), *In Research in Organizational Behavior (Vol. 2)*, Greenwich, CT: JAI Press, p. 3-43.

Scott, C. R., Connaughton, S. L., Diaz-Saenz, H. R., Maguire, K., Ramirez, R., Richardson, B.,

Selznick, P. (1948): Foundations of the Theory of Organization, *American Sociological Review*, 13 (1), p. 25-35.

Selznick, P. (2011): *Leadership in Administration: A Sociological Interpretation*, Louisiana, LA: quid pro books.

Shamir, B., and Kark, R. (2004): A single item graphic scale for the measurement of organizational identification, *Journal of Occupational and Organizational Psychology*, 77, p. 115-123.

Shaw, S. P., and Morgan, D. (1999): The impacts of communication and multiple identifications on the intent to leave - A Multimethodological Exploration, *Management Communication Quarterly*, 12 (3), p. 400-435.

Shrout, P. E., and Bolger, N. (2002): Mediation in Experimental and Nonexperimental Studies: New Procedures and Recommendations, *Psychological Methods*, 7 (4), p. 422-445.

Sickendiek, U. (2009): Persönliche Beziehungen am Arbeitsplatz. In: Lenz, K., and Nestmann, F. (Editors): *Handbuch Persönliche Beziehungen*, Juventa, Weinheim/München, p. 465-490.

Smidts, A., Pruyn, A., and van Riel, C. (2001): The impact of employee communication and perceived external prestige on organizational identification, *Academy of Management Journal*, 44 (5), p. 1051-1062.

Smircich, L. (1983): Concepts of culture and organizational analysis, *Administrative Science Quarterly*, 28, p. 339-358.

Smith, F. L., and Keyton, J. (2001): Organizational storytelling: metaphors for relational power and identity struggles, *Management Communication Quarterly*, 15 (2), p. 149-182.

Sobel, M. E. (1986): Some new results on indirect effects and their standard errors in covariance structure models. In: Tuma, N. (Editor), *Sociological Methodology*, Washington, DC: American Sociological Association, p. 159-186.

Spreng, R. A., MacKenzie, S. B., and Olshavsky, R. W. (1996): A reexamination of the determinants of consumer satisfaction, *Journal of Marketing*, 60 (3), p.15-32.



Steele, G., and Plenty, D. (2015): Supervisor–Subordinate Communication Competence and Job and Communication Satisfaction, *International Journal of Business Communication*, 52 (3), p. 294-318.

Steiger, J. H. (1990): Structural model evaluation and modification: An interval estimation approach, *Multivariate Behavioral Research*, 25 (2), p. 173-180.

Stocker D., Jacobshagen, N., Krings, R., Pfister I. B., and Semmer, N. K. (2014): Appreciative leadership and employee well-being in everyday working life, *Zeitschrift für Personalforschung*, 28 (1-2), p. 73-95.

Stocker, D., Jacobshagen, N., Semmer, N., and Hubert, A. (2010): Appreciation at Work in the Swiss Armed Forces, *Swiss Journal of Psychology*, 69 (2), p. 117-124.

Straub, D. W., Boudreau, M-C, and Gefen, D. (2004): Validation Guidelines for IS Positivist Research, *Communications of the AIS*, 13, p. 380-427.

Strauss, A. L. (1968): *Spiegel und Masken. Die Suche nach Identität*, Frankfurt a. Main: Suhrkamp.

Stürmer, S., Simon, B., and Loewy, M. I. (2008): Intraorganizational respect and organizational participation: The mediating role of collective identity, *Group Processes and Intergroup Relations*, 11, p. 5-20.

## T

Tagiuri, R. (1968): The concept of organizational climate. In: Tagiuri, R., and Litwin, G. H. (Editors), *Organizational climate: Exploration of a concept*, Boston, MA: Harvard University Press, p. 11-32.

Tajfel, H., and Turner, J. C. (1986): An integrative theory of intergroup conflict. In: Austin, W. G., and Worchel, S. (Editors), *The Social Psychology of Intergroup Relations*, Monterey, CA: Brooks/Cole, p. 7-24.

Temme, D., and Hildebrandt, L. (2009): Gruppenvergleiche bei hypothetischen Konstrukten – Die Prüfung der Übereinstimmung von Messmodellen mit der Strukturgleichungsmethodik, *Zfbf*, 61 (2), p. 138-185.

Tracey, B. M., and Tews, M. (2005): Construct Validity of a General Training Climate Scale, *Organizational Research Methods*, 8 (4), p. 353-374.

Trice, B., and Beyer, J. (1993): *The cultures of Work Organizations*, New York, NY: Prentice-Hall.

Tsai, M., Chuang, S., and Hsieh, W. (2009): An Integrated Process Model of Communication Satisfaction and Organizational Outcomes, *Social Behavior and Personality*, 37 (6), p. 825-834.

Tse, D. K., and Wilton, P. C. (1988): Models of Consumer Satisfaction: An Extension, *Journal of Marketing Research*, 25 (2), p. 204-212.

Turner, J. C., Oakes, P. J., Haslam, S. A., and McGarty, C. A. (1994): Self and collective: cognition and social context, *Personality and Social Psychology Bulletin*, 20 (5), p. 454-463.

Tyler, T. and Blader, S. (2002): Autonomous vs. comparative status: Must we be better than others to feel good about ourselves?, *Organizational Behavior and Human Decision Processes*, 89, p. 813-838.

Tyler, T. and Blader, S. (2003): The Group Engagement Model: Procedural Justice, Social Identity, and Cooperative Behavior, *Personality and Social Psychology Review*, 7 (4), p. 349-361.

Tyler, T. R., Degoey, P., and Smith, H. (1996): Understanding why the justice of group procedures matters: A test of the psychological dynamics of the group-value model, *Journal of Personality and Social Psychology*, 70, p. 913-930.

## U

Urban, D., and Mayerl, J. (2014): *Strukturgleichungsmodellierung – Ein Ratgeber für die Praxis*, Wiesbaden: Springer Fachmedien.

## V

Van Dick, R. (2001): Identification in organizational contexts: Linking theory and research from social and organization psychology, *International Journal of Management Reviews*, 3(4), p. 265-283.

Van Knippenberg, D., and Sleebos, E. (2006): Organizational identification versus organizational commitment: Self-definition, social exchange, and job attitudes, *Journal of Organizational Behavior*, 27, p. 571-584.

Van Maanen, J. (1979): The fact of fiction in organizational ethnography, *Administrative Science Quarterly*, 24, p. 539-550.

Van Riel, C. B. M., and Balmer, J. M. T. (1997): Corporate identity: the concept, its measurement and management, *European Journal of Marketing*, 31 (5-6), p. 340-355.

Van Riel, C. B. M., and Van den Ban, A. (2001): The added value of corporate logos: an empirical study, *European Journal of Marketing*, 35 (3-4), p. 428-440.

Varona, F. (1996): Relationship Between Communication Satisfaction and Organizational Commitment in Three Guatemalan Organizations, *The Journal of Business Communication*, 3 (2), p. 111-140.

Vercic, A. T., Vercic, D., and Srirameshc, K. (2012): Internal communication: Definition, parameters, and the future, *Public Relations Review*, 38 (2), p. 223-230.

Voswinkel, S. (2001): Anerkennung und Reputation. Die Dramaturgie industrieller Beziehungen. Mit einer Fallstudie zum „Bündnis für Arbeit“, Konstanz: UVK Verlagsgesellschaft.

## **W**

Walther, J. (1988): Communication Satisfaction in the Bank: An Audit Evaluation, *The Journal of Business Communication*, 25 (3), p. 79-86.

Wassermann, S. (2015): Expertendilemma. In: Niederberger, M., and Wassermann, S., *Methoden der Experten- und Stakeholdereinbindung in der sozialwissenschaftlichen Forschung*, Wiesbaden: Springer, p. 15-32.

Watzlawick, P., Beavin, J. H., and Jackson, D. D. (1990): *Menschliche Kommunikation: Formen, Störungen, Paradoxien*, Bern & Stuttgart: Verlag Hans Huber.

Weaver, W. (1949): The mathematics of communication, *Scientific American*, 181 (1), p.11-15.

Weaver, W. (1964): Recent contributions to the mathematical theory of communication. In: Shannon, C., and Weaver, W., *The Mathematical Theory of Communication*, Urbana, IL: University of Illinois Press, p. 1-28.

Weiber, R., and Mühlhaus, D. (2014): *Strukturgleichungsmodellierung – Eine anwendungsorientierte Einführung in die Kausalanalyse mit Hilfe von AMOS, SmartPLS and SPSS*, Berlin & Heidelberg: Springer Gabler, 2<sup>nd</sup> edition.

Weizsäcker von, E. (1974): Erstmaligkeit und Bestätigung als Komponenten der pragmatischen Information. In: Weizsäcker von, E. (Editor): *Offene Systeme I – Beiträge zur Zeitstruktur von Information, Entropie und Evolution*, Stuttgart: Ernst Klett, p. 82-113.

Welch, M., and Jackson, P. R. (2007): Rethinking internal communication: a stakeholder approach, *Corporate Communications: An International Journal*, 12 (2), p. 177-198.

Welsch, H. P., and La Van, H. (1981): Inter-relationships between organizational commitment and job characteristics, job satisfaction, professional behavior, and organizational climate. *Human Relations*, 34 (12), p. 1079-1089.

West, S. G., Finch, J. F., and Curran, P. J. (1995): Structural equation models with nonnormal variables: Problems and remedies. In: Hoyle, R. H. (Editor), *Structural equation modeling*, London: Sage, p. 56-75.

Wheaton, B., Muthén, B., Alwin, D. F., and Summers, G. F. (1977): Assessing reliability and stability in panel models. In: Heise, D. R. (Editor), *Sociological methodology*, San Francisco, CA: Jossey-Bass, p. 84-136.

Whetten, D. A. (1998): Preface: Why Organizational Identity, and Why Conversations? In: Whetten, D. A., and Godfrey, P.C., *Identity in Organizations, Building Theory Through Conversations*, Thousand Oaks, CA: Sage, p. vii-xi.

Whetten, D. A. (2006): Albert and Whetten Revisited - Strengthening the Concept of Organizational Identity, *Journal of Management Inquiry*, 15 (3), p. 219-234.

White, C., Vanc, A., and Stafford, G. (2010): Internal Communication, Information Satisfaction, and Sense of Community: The Effect of Personal Influence, *Journal of Public Relations Research*, 22 (1), p. 65-84.

Wiio, O. A. (1977): *Organizational Communication and its Development*, Helsinki: Viestintainstituuti (Institute for Human Communication).

Willis, G. B. (2014): *Cognitive interviewing: A tool for improving questionnaire design*, Thousand Oaks, CA: Sage.

Wines, W. A., and Hamilton III, J. B. (2008): On changing organizational cultures by injecting new ideologies: the power of stories, *Journal of Business Ethics*, 89, p. 433-447.

Wittmann, W. (1999): *Unternehmung und unvollkommene Information*, Wiesbaden: Springer Fachmedien.

Wöhe, G., and Döring, U. (2002): *Einführung in die Allgemeine Betriebswirtschaftslehre*, München: Vahlen, 21<sup>st</sup> edition.

## Y

Yung, Y.-F., and Bentler, P. M. (1994): Bootstrap-corrected ADF test statistics in covariance structure analysis, *British Journal of Mathematical and Statistical Psychology*, 47 (1), p. 63-84.

Yung, Y.-F., and Bentler, P. M. (1996): Bootstrapping techniques in analysis of mean and covariance structures. In: Marcoulides, G. A., and Schumacker, R. E. (Editors), *Advanced structural equation modeling: Issues and techniques*, Mahwah, NJ: Erlbaum, p. 195-226.

## Z

Zinnbauer, M., and Eberl, M. (2004): *Die Überprüfung von Spezifikation und Güte von Strukturgleichungsmodellen: Verfahren und Anwendung*, efoplan, 01/ 2004.

Zwijze-Koning, K., and de Jong, M. (2007): Evaluating the Communication Satisfaction Questionnaire as a Communication Audit Management Tool, *Communication Quarterly*, 20 (3), p. 261-282.

## Appendix

### Liebe Teilnehmerinnen und Teilnehmer am Fragebogen,

ich mache im Bereich XXX meine betriebswirtschaftliche Doktorarbeit über verschiedene Arten der internen Kommunikation und der gelebten Unternehmenskultur zu Mitarbeitern und wie sich beides auf die Mitarbeiteridentitätsbildung auswirkt. Für das Gelingen dieser Arbeit brauche ich Ihre freiwillige Unterstützung, indem Sie meinen Fragebogen beantworten.

Deshalb möchte ich Sie bitten, diesen auszufüllen. Ihre Antworten werden selbstverständlich absolut vertraulich behandelt und sind vollständig anonymisiert. Die Auswertung und Speicherung wird auch anonym erfolgen und die Ergebnisse ausschließlich für meine Arbeit genutzt. Die Daten werden nach Beendigung der Auswertung gelöscht.

Der Fragebogen wird bei den Bereichen XXX und bei XXXX mit R&D Tätigkeit ausgegeben sowie im Bereich XXX.

Bei Rückfragen können Sie sich jederzeit an mich wenden: nadine.bernklau@XXX.com, Tel: 089-XXXX oder 0172-XXX.

Bitte schicken Sie den ausgefüllten Fragebogen in dem beigelegten Briefumschlag verschlossen bis spätestens **2. August 2013 per Hauspost an mich zurück**.

Außerdem bitte ich Sie aus Anonymitätsgründen, auf dem Hauspostumschlag nur meinen Namen und meine Abteilung (XXX) als Adressaten einzugeben und das Feld mit dem Absender leer zu lassen.

### Für Ihre Teilnahme bedanke ich mich herzlichst!

Beste Grüße, Nadine Bernklau

Zu meiner Person: Ich habe TUM-BWL studiert und zur Diplom-Kauffrau (Univ.) abgeschlossen. Während meines Studiums hatte ich mich bereits neben meinem anderen Schwerpunkt „Controlling“ schon intensiv mit der Vertiefung zu „Information, Kommunikation und Management/ Strategie“ beschäftigt. Meine Dissertation wird vom Lehrstuhl für Unternehmensführung an der TU München von Prof. Mohnen betreut.

#### Angaben zu Ihrer Person

P1 Wie lange sind Sie bereits bei XXX?

- 0-5 Jahre     6-15 Jahre     16-30 Jahre     mehr als 30 Jahre

P2 Wie lange arbeiten Sie bereits in R&D Abteilungen? (Anmerkung: bitte addieren Sie alle R&D Stationen in Ihrem Berufsleben bei XXX und in einem anderen Unternehmen)

- 0-5 Jahre     6-15 Jahre     16-30 Jahre     mehr als 30 Jahre

P3 Wie alt sind Sie?

- 25-35 Jahre     36-50 Jahre     51-60 Jahre     über 60 Jahre

P4 Welchen Ausbildungshintergrund haben Sie?

- Ingenieurwissenschaften     Naturwissenschaften     Wirtschaftswissenschaften     Andere

P5 Haben Sie studiert?

- ja     nein

P6 Haben Sie promoviert?

- ja     nein

Ich bin zufrieden...								
Unternehmensinformationen	01. ... mit den erhaltenen Informationen zu Unternehmensstrategie und -zielen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	02. ... mit den erhaltenen Informationen zu Regierungsentscheidungen, die mein Unternehmen betreffen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	03. ... mit den erhaltenen Informationen zu Veränderungen im Unternehmen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	04. ... mit den erhaltenen Informationen zu der finanziellen Situation im Unternehmen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	05. ... mit den erhaltenen Informationen zu personellen Änderungen innerhalb des Unternehmens.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	06. ... mit den erhaltenen Informationen zu Bezahlung und Bonus (z.B. Tariftabellen, Bonussystemübersichten).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	07. ... mit den erhaltenen Informationen zu relevanten Marktentwicklungen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R&D Informationen	08. ... mit den erhaltenen Informationen über die Innovationsschwerpunkte im Unternehmen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	09. ... mit den erhaltenen Informationen über Innovationen im Unternehmen, die außerhalb der Forschungsschwerpunkte sind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10. ... inwieweit ich ausreichend Informationen über laufende und abgeschlossene Forschungsaktivitäten in den weiteren R&D Bereichen im Unternehmen bekomme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jobinformationen	11. ... inwieweit ich rechtzeitig relevante Informationen für meine Arbeit erhalte.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12. ... mit den zugehörigen Informationen über Arbeitsabläufe und -aufgaben innerhalb meines Teams.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	13. ... mit den erhaltenen Informationen zu den Anforderungen in meinem Job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infovertraulichkeit	14. ... über die Kennzeichnung der Vertraulichkeitsstufe (z.B. niedrig, hoch) von Dokumenten oder Ideen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	15. ... inwieweit das Unternehmen standardisierte Prozesse hat, die mir helfen, die richtige Balance zwischen „Diskutieren von neuen Ideen und Einhaltung von Vertraulichkeit“ zu finden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	16. ... inwieweit im Unternehmen ein Bewusstsein für das Thema „Vertraulichkeit“ von Informationen vorhanden ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medienqualität	17. ... inwieweit interne Besprechungen (inhaltlich) gut vorbereitet sind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	18. ... inwieweit interne schriftliche Richtlinien und Berichte klar und präzise sind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	19. ... inwieweit die internen Unternehmenszeitschriften interessant und hilfreich sind, um über die Unternehmensaktivitäten aller Bereiche mehr zu erfahren.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	20. ... inwieweit Informationen über Projekte innerhalb des Unternehmens inspirierend sind für eigene, neue Ideen für Innovationen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	21. ... inwieweit interne Medien dazu beitragen, Informationen über andere Kollegen zu erfahren, was deren Arbeitsgebiete sind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	22. ... inwieweit die Kommunikationsmenge im Unternehmen über R&D Themen angemessen ist (z.B. keine Informationsüberladung oder Informationsdefizit).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. → Bei Unzufriedenheit in Frage 22:	Informationsdefizit <input type="checkbox"/> ja <input type="checkbox"/> nein	Informationsüberladung <input type="checkbox"/> ja <input type="checkbox"/> nein						

