Intercultural Competence in the Information System Domain

A Mixed-Methods Approach to investigate the Importance of Intercultural and Technical Competences of IT-Infrastructure Consultants

Inaugural dissertation submitted to attain the academic degree doctor rerum politicarum (Doktor der Wirtschaftswissenschaften) at the ESCP Europe Business School Berlin with the title: "Key Qualification Intercultural Competence in IS A Mixed-Methods Approach to investigate the Importance of Intercultural and Technical Competences of IT-Infrastructure Consultants"

by

Dipl.-Wirt.-Ing. / MBA. Kyung-Hun Ha

born in 15.04.1981 in Berlin

Berlin 2015
Doctoral Committee

Chairman: Dr. Rene Mauer
First Supervisor: Prof. Dr. Markus Bick
Second Supervisor: Prof. Dr. Jan Pawlowski

Date of the thesis defence: 12.22.2015
Abstract

Human assets are one of the most important resources available to any organization. Employee competence largely determines the objectives that an organization can set for itself and to its success in achieving them. Therefore, the demand for effective employees continuously increases. Especially the Information System (IS) workforce is of crucial meaning for any organization and lacks of highly skilled employees in this field. The rapid change in technology and internationalization are important elements forcing IS educators and practitioners to evaluate and adjust their curricula, assessment approaches and competence profiles of today's IS professionals. However, business executives and educators express severe concerns about the status-quo of IS competence profiles and the highly demanded internationalization of IS curricula. Up to now there is only little empirical research on competences in the international IS domain. Indeed, there is no quantitative study that examines the composition and impact of intercultural competences in an organizational IS context. Moreover, there is very fragmented on the competence dimensions and particular competence requirements of today's IS professionals. Therefore, the present thesis aims at addressing these gaps and advancing research in this field by examining intercultural competences and technical competences. This research is applied for the case of IT-Infrastructure consultants. The latter are considered to be one of the most demanded group of IS professionals. Two comprehensive literature reviews provide an overview of the associated competence dimensions of domains, IT-Infrastructure and intercultural competences. Expert interviews provide insights into the competence dimension of IT-Infrastructure consultants which are subsequently analyzed by qualitative content analysis to categorize the competence dimension. Additionally, a comprehensive content analysis of 250 recently published job profiles identifies competences for each of the competence dimension to enable the development of the first holistic IT-Infrastructure competence construct. Providing the necessary input for the quantitative study, 120 structured interviews of IT-Infrastructure consultants and 9 additional interviews of their supervisors are conducted which are analyzed by means of structural equation modeling. The results of the study clearly show that intercultural competences have a major and highly significant impact as well as interaction effect on the job performance of today's IT-Infrastructure consultants. Based on an explorative mul-
tigroup analysis, the results also reveal that age plays a statistically signifi-
cant role with respect to the influence of intercultural competences on job per-
formance. Moreover, the validity and reliability of the newly developed IT-
 Infrastructure competence construct could be confirmed and can be used as a
base for research in the future and for managerial implications.
Acknowledgement

Writing a PhD thesis is a challenging task which requires the support of others to become a success. The underlying thesis has been drafted during my time as a research assistant at the Chair of Business and Information Systems of ESCP Europe Campus Berlin. Therefore, I want to thank my doctor father and mentor Prof. Dr. Markus Bick for not only constantly supporting and encouraging me but also giving me the necessary freedom and space to pursue my research interest. Additionally, I want to thank Prof. Dr. Jan Pawlowski, the second reviewer of this thesis, for having the sparking idea for the “Global Information Systems Competence” project and hence, fundamentally contributing to this research.

I also want to thank my colleagues and friends at the Chair of Business and Information Systems. First of all, Stephanie Ryschka, for proof-reading this thesis and greatly improving it with her smart ideas and recommendations. She has been a big asset to me. Secondly, I truly want to thank Julian Bühler for supporting me on so many occasions. I owe him fundamental thoughts and recommendations on my research model and analysis. His office doors were always open for a critical discussion and target-oriented number crunching. Moreover, I want to thank my wife and soulmate Sahar Ghaedi Bardeh-Ha. She certainly had to take the emotional burden during the last years. Without her patience and mental support I would not have finished this thesis.

Finally, I want to dedicate this thesis to my beloved parents Yoon-Hee Lee and Moon-Soo Ha. They have always been my spiritual source of strength through all the ups and downs we have been through as a family.
List of Content

Abstract ii
Acknowledgement iv
List of Content v
List of Figures viii
List of Tables x
List of Abbreviations xii
List of Symbols xv

Introduction 1
1.1 Main Objective ........................................................................................................ 3
1.1.1 Research Gaps ................................................................................................. 3
1.2 Theoretical Classification and Research Methodology ........................................ 6
1.2.1 Methodology ..................................................................................................... 7
1.2.2 Epistemology of the Thesis ............................................................................. 8
1.3 Structure of the Thesis ............................................................................................ 10

Theoretical Foundation 12
2.1 Culture ...................................................................................................................... 13
2.1.1 Characteristics of Culture ................................................................................. 13
2.1.2 Concepts of Culture ............................................................................................ 15
2.2 Intercultural Competence ....................................................................................... 18
2.2.1 Approaches to Intercultural Competence ......................................................... 19
2.2.2 Models of Intercultural Competence .................................................................. 25
2.2.3 Theories associated with Intercultural Competences ....................................... 31
2.3 The Consulting Sector ............................................................................................. 33
2.3.1 Characteristics and Definition of Consulting ..................................................... 33
5.2 Research Design ................................................................................... 143
  5.2.1 Research Model ........................................................................... 143
  5.2.2 Competence Scales ...................................................................... 146
  5.2.3 Structured Interviews and Methodological Issues .................. 151
5.3 Data Collection ..................................................................................... 158
  5.3.1 Pre-Test ........................................................................................ 158
  5.3.2 Data Collection Approach .......................................................... 165
5.4 Data Analysis ........................................................................................ 167
  5.4.1 Survey Population and Sample Selection ......................... 167
  5.4.2 Assessment of the Measurement Models ......................... 168
  5.4.3 Assessment of the Structural Model ......................... 175
  5.4.4 Summary ...................................................................................... 182

Summary and Outlook  184
  6.1 Main Research Questions ................................................................. 184
  6.2 Limitations of the Studies ................................................................. 188
    6.2.1 Quantitative Survey ................................................................. 188
    6.2.2 Qualitative Survey ................................................................. 190
  6.3 Discussion ......................................................................................... 191
    6.3.1 Theoretical Implications .......................................................... 195
    6.3.2 Practical Implications ................................................................. 197
  6.4 Future Research ................................................................................. 199

List of References  202

Declaration of Academic Honesty  281

Appendix A  A1
Appendix B  B1
Appendix C  C1
Appendix D  D1
Appendix E  E1
Appendix F  F1
List of Figures

Figure 1-1: Studies of the thesis................................................................. 7
Figure 1-2: Structure of the thesis............................................................. 10
Figure 2-1: The Virtual Onion Model....................................................... 18
Figure 2-2: Service typologies................................................................. 34
Figure 2-3: Consulting typology............................................................. 36
Figure 2-4: Roles of consultants.............................................................. 37
Figure 2-6: Service spectrum of IT-Service............................................ 41
Figure 2-7: Managerial conception of consulting................................. 44
Figure 2-8: Structure of ITI................................................................. 51
Figure 2-9: ITI at different organizational levels................................. 52
Figure 2-10: ITI Model................................................................. 53
Figure 2-11: Layers of a SOI................................................................. 55
Figure 3-1: Path analysis model............................................................. 87
Figure 4-1: Types of Interviews........................................................... 95
Figure 4-2: Main types of the content analysis.................................... 99
Figure 4-3: Interview guide................................................................. 100
Figure 4-4: Deductive category application....................................... 103
Figure 4-5: Example of the analysis results........................................ 108
Figure 4-6: ITI Competence Dimensions.......................................... 118
Figure 4-7: Phases of the job profile analysis.................................... 122
Figure 4-8: Extract of the list of relevant job profiles...................... 123
Figure 4-9: Overview on the employers in the job profile............... 126
Figure 5-1: The ITI competence dimensions.................................. 130
Figure 5-2: Exemplary structure of a SEM....................................... 132
Figure 5-3: 4 types of second order constructs.............................. 139
Figure 5-5: Mediation effect............................................................. 142
Figure 5.6: Structural model ................................................................. 145
Figure 5.7: Characteristics of the sample .............................................. 167
Figure 5.8: Results of the main effect model (n=120) ......................... 175
Figure 5.9: Mediation effect significance analysis .............................. 177
Figure 5.10: Moderation effect of the IC construct ............................ 178
List of Tables

Table 1-1: Comparison of the main research paradigms ................................................. 9
Table 2-1: Theories associated with intercultural competences ......................................... 32
Table 2-2: Characteristics of IT-Infrastructure ................................................................ 47
Table 2-3: Theories in ITI research ............................................................................... 57
Table 2-4: Competence classes ...................................................................................... 60
Table 3-1: Advantages and disadvantages of the loci of judgements ............................ 69
Table 3-2: Intercultural competence dimensions .......................................................... 72
Table 3-3: Criteria of the literature analysis .................................................................... 81
Table 3-4: Outcomes of the databases .......................................................................... 81
Table 3-5: Job performance items ................................................................................. 91
Table 3-6: Research gaps of the underlying thesis ....................................................... 92
Table 4-1: Participants of the expert interviews ............................................................. 102
Table 4-2: Competence dimensions and anchor exa .................................................... 105
Table 4-3: Anchor examples for opinion on competence dimensions ....................... 106
Table 4-4: Frequency of the competence dimensions per consul .............................. 107
Table 4-5: Validation of the competence dimensions .................................................. 109
Table 4-6: Criteria of the job profile search ................................................................. 123
Table 4-7: Anchor examples for coding of the ITI dimension ....................................... 125
Table 4-8: Top ten requirements of ITI consultants .................................................... 127
Table 4-9: Top ten tasks and competence categories ................................................... 128
Table 4-10: Number of codes for each ITI dimension ............................................... 129
Table 5-1: Overview of the variables of an SEM .......................................................... 133
Table 5-2: Reflective vs. formative measurement models ......................................... 135
Table 5-3: Decision rules for formative and reflective constructs .............................. 135
Table 5-4: Comparing PLS and LISREL ................................................................. 137
Table 5-5: Main hypotheses (H1 – H4) ................................................................. 145
Table 5-6: First order items ......................................................................................... 149
Table 5-7: Structure of the ITI consultant questionnaire ........................................ 156
Table 5-8: Structure of the supervisor questionnaire ........................................... 157
Table 5-9: Quality criteria for reflective measurement models .......................... 168
Table 5-10: EFA of the intercultural competence dimensions .............................. 169
Table 5-11: Convergence and discriminant validity 1st order IC construct ......... 171
Table 5-12: Loadings and Communalities of IC dimensions ............................... 171
Table 5-13: Convergence and discriminant validity second order construct .... 172
Table 5-14: EFA of the ITI dimensions ............................................................... 172
Table 5-15: Convergence and discriminant validity 1st order ITI constructs .... 173
Table 5-16: Quality criteria for formative measurement models ........................ 174
Table 5-17: Weights, VIF and p-values of the formative measurement .............. 174
Table 5-18: Main values of the structural model .................................................. 176
Table 5-19: Comparison between main effect model and interaction model ..... 178
Table 5-20: Comparison between “Young” and “Old” ....................................... 180
Table 5-21: Results of the hypothesis testing ...................................................... 182
Table A-1: Criteria of the literature analysis ...................................................... A2
Table A-2: List of used keyword combinations ............................................... A3
Table A-3: Outcomes of the databases ......................................................... A3
Table A-4: Overview of the journals and conferences .................................. A4
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Adaptive Control of Thought</td>
</tr>
<tr>
<td>ALM</td>
<td>Application Lifecycle Management</td>
</tr>
<tr>
<td>ANT</td>
<td>Actor Network Theory</td>
</tr>
<tr>
<td>AVE</td>
<td>Average Variance Extracted</td>
</tr>
<tr>
<td>BASIC</td>
<td>Behavioral Assessment Scale for Intercultural Communication</td>
</tr>
<tr>
<td>BDU</td>
<td>Bundesverband Deutscher Unternehmensberater</td>
</tr>
<tr>
<td>CoD</td>
<td>Capacity on Demand</td>
</tr>
<tr>
<td>CIO</td>
<td>Chief Information Officer</td>
</tr>
<tr>
<td>CR</td>
<td>Composite Reliability</td>
</tr>
<tr>
<td>PhD</td>
<td>Doctor of Philosophy</td>
</tr>
<tr>
<td>EAM</td>
<td>Enterprise Architecture Management</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>EFA</td>
<td>Explorative Factor Analysis</td>
</tr>
<tr>
<td>ESB</td>
<td>Enterprise Service Bus</td>
</tr>
<tr>
<td>FLC</td>
<td>Foreign Language Competence</td>
</tr>
<tr>
<td>HCA</td>
<td>Home Cultural Awareness</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resources</td>
</tr>
<tr>
<td>HRM</td>
<td>Human Resource Management</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>ITIL</td>
<td>Information Technology Infrastructure Library</td>
</tr>
<tr>
<td>IaaS</td>
<td>Infrastructure as a Service</td>
</tr>
<tr>
<td>IC</td>
<td>Intercultural Competences</td>
</tr>
<tr>
<td>ICC</td>
<td>Intercultural Communication Competence</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>ISAS</td>
<td>Intercultural Self Awareness Scale</td>
</tr>
<tr>
<td>ISS</td>
<td>Intercultural Sensitivity Scale</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
</tr>
<tr>
<td>ITI</td>
<td>IT-Infrastructure</td>
</tr>
<tr>
<td>ITSM</td>
<td>IT-Servicemanagement</td>
</tr>
<tr>
<td>IS</td>
<td>Information Systems</td>
</tr>
<tr>
<td>KMO</td>
<td>Kaiser-Meyer-Olkin-Kriterium</td>
</tr>
<tr>
<td>KBV</td>
<td>Knowledge-Based View</td>
</tr>
<tr>
<td>KIBS</td>
<td>Knowledge-Intensive Business Services</td>
</tr>
<tr>
<td>MAT-50</td>
<td>Measure of Ambiguity Tolerance</td>
</tr>
<tr>
<td>MSA</td>
<td>Measurement System Analysis</td>
</tr>
<tr>
<td>MDM</td>
<td>Mobile Device Management</td>
</tr>
<tr>
<td>MS</td>
<td>Microsoft</td>
</tr>
<tr>
<td>MSTAT</td>
<td>Multiple Stimulus Types Ambiguity Tolerance</td>
</tr>
<tr>
<td>NC</td>
<td>National Culture</td>
</tr>
<tr>
<td>NVC</td>
<td>Nonverbal Communication Competence</td>
</tr>
<tr>
<td>n.s.</td>
<td>not significant</td>
</tr>
<tr>
<td>OC</td>
<td>Organizational Culture</td>
</tr>
<tr>
<td>PLS</td>
<td>Partial Least Squares</td>
</tr>
<tr>
<td>PSA</td>
<td>Personal Self Awareness</td>
</tr>
<tr>
<td>PaaS</td>
<td>Platform as a Service</td>
</tr>
<tr>
<td>PwC</td>
<td>Pricewaterhouse Coopers</td>
</tr>
<tr>
<td>PFA</td>
<td>Principal Axes Factor Analysis</td>
</tr>
<tr>
<td>QoS</td>
<td>Quality of Services</td>
</tr>
<tr>
<td>RBV</td>
<td>Resource-Based View</td>
</tr>
<tr>
<td>SR</td>
<td>Scientific Realism</td>
</tr>
<tr>
<td>SLA</td>
<td>Service Level Agreements</td>
</tr>
<tr>
<td>SOA</td>
<td>Service-Oriented Architecture</td>
</tr>
<tr>
<td>SOI</td>
<td>Service-Oriented Infrastructure</td>
</tr>
<tr>
<td>SRS</td>
<td>Simple Random Sampling</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium sized Enterprise</td>
</tr>
<tr>
<td>SIT</td>
<td>Social Identity Theory</td>
</tr>
<tr>
<td>SaaS</td>
<td>Software as a Service</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>SSC</td>
<td>Shared Service Center</td>
</tr>
<tr>
<td>SE</td>
<td>Standard Error</td>
</tr>
<tr>
<td>SAN</td>
<td>Storage Area Networks</td>
</tr>
<tr>
<td>SEM</td>
<td>Structured Equation Modelling</td>
</tr>
<tr>
<td>UC</td>
<td>Unified Communication</td>
</tr>
<tr>
<td>VIF</td>
<td>Variance Inflation Factor</td>
</tr>
</tbody>
</table>
## List of Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x_i$</td>
<td>Indicator variable of a latent exogenous variable</td>
</tr>
<tr>
<td>$y_i$</td>
<td>Indicator variable of a latent endogenous variable</td>
</tr>
<tr>
<td>$B$</td>
<td>Parameter matrix of a latent endogenous variable</td>
</tr>
<tr>
<td>$\Gamma$</td>
<td>Parameter matrix of a latent exogenous variable</td>
</tr>
<tr>
<td>$\gamma_i$</td>
<td>Path coefficient between a latent exogenous and a latent endogenous variable</td>
</tr>
<tr>
<td>$\delta_i$</td>
<td>Error term in the exogenous measurement model (residual variable)</td>
</tr>
<tr>
<td>$\epsilon_i$</td>
<td>Error term in the endogenous measurement model (residual variable)</td>
</tr>
<tr>
<td>$\zeta_i$</td>
<td>Error term in the structural model (residual variable)</td>
</tr>
<tr>
<td>$\eta_i$</td>
<td>Latent endogenous variable</td>
</tr>
<tr>
<td>$\lambda_i$</td>
<td>Path coefficient between a latent variable and a reflective indicator variable</td>
</tr>
<tr>
<td>$\xi_i$</td>
<td>Latent exogenous variable</td>
</tr>
<tr>
<td>$\pi_i$</td>
<td>Path coefficient between a latent variable and a formative indicator variable</td>
</tr>
<tr>
<td>$x_i$</td>
<td>Indicator variable of a latent exogenous variable</td>
</tr>
<tr>
<td>$y_i$</td>
<td>Indicator variable of a latent endogenous variable</td>
</tr>
<tr>
<td>$B$</td>
<td>Parameter matrix of a latent endogenous variable</td>
</tr>
<tr>
<td>$\Gamma$</td>
<td>Parameter matrix of a latent exogenous variable</td>
</tr>
<tr>
<td>$\gamma_i$</td>
<td>Path coefficient between a latent exogenous and a latent endogenous variable</td>
</tr>
<tr>
<td>$\delta_i$</td>
<td>Error term in the exogenous measurement model (residual variable)</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

The increasing pace of globalization makes the landscape of project work more complex than ever (Morley and Cerdin, 2010, p. 805), this holds also true for the field of Information Systems (IS). From a practical perspective, these developments lead to intercultural encounter as a common work experience and have therefore increasingly drawn the attention of IS domain for the last 18 years (Stetten et al., 2012a, p. 137). Besides the political and legal environment as well as the degree of technology advancement BRANCHEAU & WETHERBE (1996) have already emphasized the importance of culture as a key challenge for the management and development of IS. While IS researchers have focussed on issues of national, societal, or ethnic culture at the beginning (Gallivan and Srite, 2005), in the last decade the topic of Offshoring¹ became a very prominent research focus within the IS industry in which researchers were examining the mismatch between different cultures affecting the cooperation between organizations and employees (Balaji and Ranganathan, 2007). More recently, STETTEN ET AL. (2012) have investigated the impact of cultural behaviour patterns in multinational Information Technology (IT) project teams and clearly showed that collaboration issues need to be properly addressed by management actions (Stetten et al., 2012a). According to BOES ET AL. (2009) the internationalization in the IS domain are mainly driven by the internationalization of the service industry sector and the establishment of “Shared-Service-Centers”² (SSC) in other countries. This pressure the workforce to interact with foreign partners to deliver services as agreed. Moreover, the results of a comprehensive research study by FREUDENBERG IT (2013) showed that 57% of all surveyed Small and Medium sized Enterprise (SME) managers in the IT sector confirmed the necessity to further increase their internationalization processes (Freudenberg IT, 2013).

---

¹ Offshoring refers to “outsourcing performed outside the client organization’s home country” (King and Gholamreza, 2008, p. 207). It is therefore utilized for the internationalization of the value creation process in an organization (Boes et al., 2011, p. 5).

² The concept of Shared-Service-Centers refers to consolidation of service processes in the context of business process outsourcing (Deimel, 2006, p. 198).
a consequence, the requirements on IS professionals and the necessary set-up for qualifications are exposed to significant changes as well. Consequently, organizations, professionals and in particular educational institutions are required to adjust to these changes (Boes et al., 2011).

This changing mindset has already been successfully addressed in the business domain, for instance, by introducing new curricula that attempt to prepare students for the international job challenges and enhance their employability (Busch, 2009). However, IS researchers have frequently stated that the IS domain has not adapted to this development to adjust their curricula as well (Pawlowski and Holtkamp, 2012). Indeed, despite research studies repeatedly showing the importance for an internationalization of the IS curriculum and the internationalization efforts of the renowned and frequently referred to ACM model curriculum in 2010, the majority of curricula fail to devote serious attention to effectively prepare IS students for an international working environment (Topi et al., 2010b; Pawlowski and Holtkamp, 2012). Due to the highly technical character of this domain, they continuously focus instead on providing technical competences (Gallagher et al., 2010).

However, “being equipped with even the most sophisticated technological knowledge and expertise will not be sufficient …it is incumbent upon us to help facilitate intercultural competence as well” (Howard and Petrone, 2010, p. 71). While scholars from human resource management (HRM) clearly emphasize that competences in cross-national and cultural environments will distinguish winning IS companies in the market place (Busch, 2009), there is a clear need to further research the effects of intercultural competences in the IS domain (Stetten et al., 2012b). Yet, one question remains about how intercultural competences could look like in the IS domain.

Human capital theory recommends that obtaining a fit between human capital3 and the job requirements lead to higher rewards on the job (Joseph et al., 2012). With the ongoing growth and change of the IS domain and the always reoccurring threat of job competence obsolescence4, research community and HR of numerous organizations have increasingly demanded the need for continuously improving the understanding of job requirements and counteracting competence obsolescence (Kempf, 2011; Cedefop, 2012). CHENEY ET AL. (1990) stated in the past: “The changes force IS educators and practitioners to constantly evaluate and upgrade their professional skills” (Cheney et al., 1990, p. 238). While the field of consulting has been considered a highly important and needed IT domain (Chiasson and Davidson, 2005), the position of IT-Infrastructure consultant has been singled out by the renowned market research institution LÜNENDONK as one of the most needed IS profession (Lünendonk, 2013a). Therefore, a better understanding of IT-Infrastructure consultant by building a constitutive profile of the position could help to address this situation.

---

3 According to BECKER (1975) human capital refers to productive competences (Becker, 1975)
4 HRM literature has investigated job obsolescence for more than 50 years. Job obsolescence refers to a situation “when personnel and job requirements no longer match due to changes” (Cheney et al., 1990, p. 238).
In the following introduction chapter 1.1 depicts the main goal of the underlying thesis by showing the gaps in existing literature and deriving the research questions based on the latter. The research methodology is delineated in chapter 1.2.1 before the epistemological foundation of this thesis is introduced in chapter 1.2.2. The first chapter closes with an illustration of the structure of this PhD thesis (see Ch.1.3)

1.1 Main Objective

Main objective of this research is to provide insights to the relevant competence spectrum that have all impact on today’s IT-Infrastructure consultants’ job performance in an international working environment. This involves the identification and assessment of the necessary technical competences on one side and the relevant intercultural competences on the other side. By answering seven main research questions, existing research gaps can be addressed.

1.1.1 Research Gaps

In the knowledge economy, the human capital of any organization, its workforce, characterizes its most essential asset according to the resource-based view (Bassellier and Benbasat, 2004). In the 21st century, quick technological advancements in combination with new business models arising from internationalization have led to continuously altering demands on the workforce of IS professionals and new expectations about the roles of IS professionals within organizations (Ang and Slaughter, 2000; Joseph et al., 2012, p. 428). Ever since, major concerns have been raised by business executives and educators with respect to the necessary knowledge and competences of the IS workforce to effectively perform their work tasks in changing technological and international environments, as well as how existing IS curricula have to be adapted (Lee et al., 1995; Zwieg et al., 2006; Hawk et al., 2012). Todd et al. (1995) have emphasized in the past that “a successful IS professional blends state of the art technical knowledge with a sound understanding of the business while commanding effective interpersonal skills” (Todd et al., 1995, pp. 1–2). The current IS curriculum even explicitly states that “IS professionals must exhibit strong ethical principles and have good interpersonal communication and team skills” (Topi et al., 2010b, p. 17).

There is considerable agreement among practitioners and academic researchers that the job requirements and the associated knowledge/skills needs of the IS professionals are changing rapidly. However, there is still a gap concerning job related competence requirements on one side and the integration of internationalization of the IS curriculum as well as the development and transmission of intercultural competences within IS organizations on the other side (Hawk et al., 2012). With respect to the latter, one of the probably most important reason is that the IS domain is still considered to be an executing domain in which technical skills are the basis for valuing professionals in the first place (Gallagher et al., 2010).
Looking back on three decades of studies, there is a clear lack of research on the effect or value of intercultural competences (IC) on job performance in the IS domain (Stetten et al., 2012b). So far, there are only intercultural or cross-cultural studies in this domain. The majority of these studies use qualitative research designs such as case studies, focus groups or expert interviews and mostly draw on dimensions of national culture (Gallivan and Srite, 2005). Moreover, most of these studies focus on certain organizations and neither takes into account an entire group of profession nor an industry branch. STETTEN (2002) have emphasized that these studies usually show a lack of explanatory power with respect to work-related behaviour (Stetten et al., 2012b). As a matter of fact, up to now there is no single quantitative research study that comprehensively examines the influence of intercultural competences on job performance in the IS domain or with a focus on any IS related group of professions such as the IT-Consulting industry. This lack of research is in particular surprising as the latter has not only been one of the most affected group of professions but also became the most important IS profession within the last decade (Kempf, 2011). PAWLOWSKI & HOLTKAMP (2012) have therefore emphasized that the role of IC needs to be further analyzed in the IS context in order to understand the complexity and composition of this phenomenon and its influence on and relevance for domain specific IS competences. Based on these insights the adaptation process of technical IS competences can be better guided towards an internationalized IS curriculum (Pawlowski and Holtkamp, 2012).

Even though there are broad literature and research insights about IC in general, which provide a variety of conceptualizations and measurement instruments, most of them are not applicable in the field of IS. Consequently, no relevant quantitative study exists that comprehensively focuses on intercultural competences on job performance in the IS domain. Overall, one can emphasize four key challenges that arise with the investigation of this complex phenomenon:

1. several understandings of the conceptualization and corresponding models
2. no consistent understanding on the assignment of intercultural competence variables to one of the three dimensions of the renowned three component model insufficient differentiation
3. overlappings of concepts and traits
4. various operationalization and measurement.

RUMP & EILERS (2005) have explicitly stated the need for conducting more and independent research on intercultural competences in the IS domain. In fact, transferring existing research results in the field of intercultural competences from other domains like Management or HR represents not a sufficient replacement (Rump and Eilers, 2005).

---

5 For reasons of their inapplicability see chapter 3.1.1
As mentioned above, the IS domain faces a lack of on-the-job related competence requirements to match the need of today’s organizations and increase student’s employability. While IT-Consulting represents a heterogeneous industry with different action fields, the field of IT-Infrastructure (ITI) has become the most relevant within the last years. This is due to changes in the business environment and the ever increasing importance of IT operations (Kumar and Stylianou, 2013; PwC, 2013). Therefore, it becomes of crucial meaning to understand this job field, continuously update existing competence specifications and develop a constitutive job profile of the position of ITI consultants. While the importance of the ITI workforce is unquestionable and obviously highly demanded by organizations all over the world (Gartner, 2013b), defining the role of an ITI consultant is becoming increasingly difficult. As IT happens to radically shift and evolve so does the requirements of this profession (Shvetank, 2012). SHVETANK (2012) even states that most organizations are unaware and unprepared for the significant change they are facing. As a matter of fact, there is no unanimously defined profile of an ITI consultant. “Sixty-one percent of the companies haven’t done a comprehensive forecast of the skills they’ll need, and up to 80% don’t provide training or coaching in critical skills. IT leaders must do annual workforce planning to spot skills gaps, target recruitment, and train these professionals” (Shvetank, 2012, p. 2). Even though the topic of ITI and the need for an up-to-date competence set is widely emphasized in practice-oriented journals, GHEYSARI ET AL. (2012) have stated that research literature on ITI in general offers a very fragmented view on this concept. Research shows inconsistent results that need to be systemized (Gheysari et al., 2012). Consequently, the underlying competence dimensions in this field are still not clearly defined. As a corresponding review in chapter 3.2 shows, the ITI literature is mostly characterized by two main research streams, ITI capability and ITI flexibility, which both present the foundation to understand the ITI concept in depth and discover the underlying ITI competence dimensions (Lewis and Byrd, 2003). According to KUMAR (2013) ITI is an important topic in the current business and IT environment. Hence, “research that can lead to an improved understanding of how to achieve a flexible ITI by proper workforce will be of great value to IS researchers and managers” (Kumar and Stylianou, 2013, p. 167). The underlying research thesis aims at contributing to close the existing research gaps which have been presented above. The main research question is to examine the influence of intercultural competences and technical competences on the job performance of ITI consultants. Based on this overall question following research questions can be derived:

**Research Question 1:** What are the underlying structural dimensions that comprehensively represent intercultural competence?

**Research Question 2:** Which competence dimensions exist in the field of IT-Infrastructure?

**Research Question 3:** How can you consolidate competences in the field of IT-Infrastructure?
Research Question 4: Which requirements have to be met by today’s IT-Infrastructure consultants?

Research Question 5: How can an IT-Infrastructure competence construct be operationalized?

Research Question 6: Which dimensions have an impact on the job performance of IT-Infrastructure consultants?

Research Question 7: Are there effects between intercultural and IT-Infrastructure competences?

The underlying thesis and its results are highly relevant for research and practice. While this is the first time that a comprehensive study analyzes the influence of intercultural competences on job performance in the IS domain and provides quantitative insights on the relevance of intercultural competences, it also provides in-depth insights on the needed competences of a very important profession in this domain. From a curriculum development perspective, these insights can be used for more detailed qualitative analysis in subsequent studies to change existing IS curricula towards improved program development and internationalization. Moreover, especially HR departments from organizations can highly benefit from the results as it can support them to improve the development and design of their assessment approaches to identify the best possible workforce. While the latter refers to the employee selection, in-depth knowledge on relevant technical and intercultural competences of professionals can also be used for development and training purposes. It helps them to understand which competences or competence dimensions are needed and really drive the performance of professionals. The results provide insights on the circumstances that have an influence on the relevance of intercultural competences as well. The following chapter shows the research methods that are used for answering the underlying research questions.

1.2 Theoretical Classification and Research Methodology

The following thesis uses literature reviews, qualitative expert interviews, job content analysis and a quantitative survey and combines the different methods for the respective research questions to achieve the most valid results. By that the underlying thesis uses a so called *methodological triangulation*, also referred as mixed-methods, to complement findings and improve confidence in the results (Bryman, 2006). The following chapter presents the research method of the underlying thesis (Ch.1.2.1) before introducing the epistemological background (see Ch.1.2.2).
1.2.1 Methodology

In a first major step the underlying thesis utilizes two comprehensive Literature Reviews to analyze the field of intercultural competences and ITI in detail. This includes a review and selection approach of existing measurement instruments of intercultural competences to identify valid and reliable scaled to eventually measure this phenomenon (research question 1, see figure 1-1). After gaining an understanding of this domain, the ITI literature review is focused on identifying existing requirements or competence dimensions that build the foundation for ITI (research question 2). Overall, both literature reviews employ the methodology by BUHL ET AL. (2011) and PICOLLI & IVES (2005) and use the structure and presentation of the results by WEBSTER & WATSON (2002).

![Figure 1-1: Studies of the thesis](attachment:image.png)

By means of qualitative expert interviews the theoretical insights of the ITI literature review are validated, extended, deepened and updated. All interviews are transcribed and subsequently analyzed by using qualitative content analysis according to MAYRING (2010). The results of the analysis confirm, complement or consolidate the identified dimensions of the literature review on one hand and clearly identify the competence dimensions of today's ITI consultants on the other hand (research question 3) which are used for the quantitative study. However, in order to identify the respective competences for each competence dimension a job content analysis is needed. Therefore, 250 different job profiles of IT-Infrastructure consultants are identified based on TODD (1995) and are systematically analyzed by means of MAYRING'S (2010) qualitative content analysis (research question 4).

The quantitative study is the basis for a causal analysis in order to examine the influence of intercultural competences and IT-Infrastructure competences (ITIC) on the job performance of ITI consultants. Previously established scales of the intercultural competences construct are utilized. However, for the ITIC construct
a card-sorting approach is used in order to systematically develop the measurement instrument based on expert opinion (research question 5). As the underlying thesis aims at comprehensively analyzing the influence of competences, a second order operationalization is used for both exogenous constructs (IC and ITIC). Each construct is composed of several first order dimensions that have been identified in the previous steps. The classic Learning Theory by THORNDIKE (1930) serves as the underlying theoretical concept for the structural model of the quantitative study. The results of the latter cannot only reveal the IC and ITIC have an impact on the job performance of ITI consultants (research question 6) but also provide insights to existing joint effects between both constructs (research question 7).

1.2.2 Epistemology of the Thesis

HEVNER ET AL. (2004) have stated that research in IS is mainly characterized by two paradigms: design science and behavioral science. While the former is mainly concerned with "creating new and innovative artifacts", the latter has its roots in natural science and is focussed on empirical research to develop and confirm theories with respect to phenomena related to business needs in the IS context (Hevner et al., 2004, p. 76). The underlying thesis and its research objectives, however, do not represent a typical IS research topic due to its focus on competences. Therefore, it remains rather difficult to decisively classify the underlying research. Indeed, competence research has been a primary HR research topic ever since its emergence (Farn-dale et al., 2010). Nevertheless, as the underlying thesis is focussing on the field of ITI which represents a typical IS profession and research topic on one hand and aims at providing relevant empirical insights for the internationalization of the IS curricula on the other hand, a bridge to the IS research community still exists. Moreover, because the underlying thesis aims at empirically examining competences of ITI consultants based on a hypothesis system, a behavioural science approach can be assumed without a doubt.

From an epistemological point of view, the underlying thesis uses the scientific realism (SR) as its overall orientation framework, which expects certain ontological assumptions about the constitution of the world and the opportunities to perceive it (Niiniluoto, 1999; Mingers et al., 2013, p. 795):

- SR takes on a powerfully realist ontology that there is an “existing, causally efficacious, world independent” of any one’s knowledge (Mingers et al., 2013, p. 795).

- SR recognizes that it is possible to gain real knowledge about the external world. Nevertheless, only an approximation of the real world can be achieved, science can mainly contribute by testing and confirming.

- SR takes into account that there are different types of objects of knowledge (physical, social, and conceptual). These objects need different research methods and methodologies to access them. This critical
orientation, therefore support the usage of mixed-methods research designs to achieve a more detailed picture (Mingers et al., 2013, p. 795).

Based on the philosophy of science and related assumptions about the world and the cognitive process, different philosophic positions arise, which sometimes require a different methodological spectrum. The underlying thesis integrates different epistemological approaches by using a mixed-method research design that sequentially combines qualitative and quantitative research methods (Creswell and Plano Clark, 2011). While the mixed-method approach can be associated with pragmatism as a philosophy of science (Feilzer, 2010), the quantitative and qualitative research access are each related to other philosophies of science (see table 1·1).

### Table 1·1: Comparison of the main research paradigms (Wrona and Fandel, 2010)

<table>
<thead>
<tr>
<th>Positivism</th>
<th>Constructivism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Way of insight</strong></td>
<td>insights are based on perceptions observations</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>quantitative methods, deductive, experimental, manipulating</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>measuring, falsification</td>
</tr>
</tbody>
</table>

The underlying thesis uses expert interviews and content analysis as its qualitative research methods for gaining a better understanding of the field of ITI. In general, qualitative research has its roots in constructivism and the hermeneutic paradigm, which assume that individuals actively construct their own understanding and knowledge of the world through experiencing things and reflecting their experiences (Glaserfeld, 1996). In this context, expert interviews can help to access ITI consultants’ perceptions and to understand the underlying phenomenon to develop new insights (e.g. models, concepts, hypothesis, and theories). By utilizing qualitative content analysis according to MAYRING a systematic analysis approach is utilized which allows for reducing some of the critics that are related to qualitative research (Lamnek, 2010). Moreover, due to the utilization of guidelines the results of the expert interviews and the job content analysis allow for connecting the results with the subsequent quantitative study according to a mixed-method research design. In fact, the results of the two qualitative studies mainly contribute to the development of the ITIC construct of the causal hypothesis system, which is empirically tested afterwards.

In contrast to the qualitative research studies, the quantitative research methods are related to the positivism and critical rationalism. Both positions assume that there is a social world, in which incidents occur after consistent rules and in which every incident is based on one or several influencing reasons according to causal relationships (Kromrey, 2009). The underlying quantitative study assumes that the job performance of ITI consultants is determined by technical as
well as intercultural competences, which are based on causal relationships. The critical rationalism claims that insights are only valid if the possibility exists for empirically falsifying them. The rejection of hypothesis allows therefore for making the conclusion that a statement is false. However, one cannot assume that a non-falsified hypothesis is correct. Instead, only a temporary validation of a hypothesis is assumed which still contains the possibility to be falsified at a later point of time. Non-falsified hypothesis offer a starting point for further research. By that, new insights are achieved from an epistemological point of view. POPPER (2005) therefore emphasized that research leads to an approximation of certainty but never reaches objective truth (Popper, 2005). Overall, the underlying thesis adeptly combines different research paradigms to develop the best possible insights.

1.3 Structure of the Thesis

This thesis is structured into six main chapters, which are based on each other with respect to content and methodology (see figure 1-2).
Chapter 1 provides an introduction on the existing research gaps, the research objective of the underlying thesis and a classification of the underlying research method.

Chapter 2 provides insights on the theoretical foundation of the thesis. It presents an in-depth overview on the topics culture, intercultural competence, the consulting sector, ITI and competences. By that, a comprehensive understanding of the main concepts and key terminologies is provided.

Chapter 3 not only depicts the conceptual development of the two main constructs intercultural competences and ITI but also the detailed derivation of the underlying research gaps. While the first part of chapter 3 presents a selection approach for the constituting dimensions of the intercultural competences competence construct, the second part focuses on providing details on the in-depth literature review of the ITI domain. Based on the literature review a first ITI categorization system is derived which compose the main input for the qualitative study in chapter 4. Both, the ITI and intercultural competences construct, are used as the main influencing factors, the exogenous variables, for the quantitative causal model in chapter 5. To complete the conceptual insights, the success criterion job performance is presented as the most suitable endogenous construct for the quantitative research study.

Chapter 4 describes the two qualitative studies, expert interviews and job content analysis, and delineates the methodological foundation, the data collection, analysis and results. The results of the qualitative studies enable the systematic development of a holistic ITI competence construct, which directly pours into the quantitative study.

Accordingly, chapter 5 focuses on the quantitative study, the main study of this thesis, and describes the research design, data collection and results of the causal model.

In the final chapter 6, the results of the studies are summarized and related to the main research questions. Moreover, limitations of the studies are presented before the implications are discussed. In a final step, the underlying thesis closes with an outlook on future research opportunities.
Chapter 2

Theoretical Foundation

According to BORTZ & DÖRING (2006) research studies can be characterized based on the research object, research subject and their underlying theories. This thesis is focusing on the influence of intercultural and IT-Infrastructure competences (ITIC) on the job performance of IT-Infrastructure consultants where both, the intercultural and IT-Infrastructure competence, are considered as the research object while the professional group of consultants represents the research subject. The following chapter presents the relevant theoretical foundation for this thesis. As a consequence the contextual components of the research object and the research subject are placed into a theoretical framework.

Chapter 2.1 provides an overview on the field of culture as one of the main research pillars of this thesis. Based on a holistic understanding of culture the concept of intercultural competences is introduced in chapter 2.2 by elaborating in detail on the existing approaches on one side and on the models of intercultural competences on the other side. To emphasize its wide-spread theoretical discussion and importance, the main theories associated with today’s research in this field are presented as well. Chapter 2.3 continues the theoretical discussion and introduces the consulting sector as the research subject of this thesis. By providing insights on the characteristics of this field a working definition is presented in a first step before the consulting process itself is explained afterwards. As this thesis is focusing on the IT-Consulting domain in Germany as a first research step, the IT-Consulting sector is outlined as its main research field. Again, this chapter closes with an illustration on current theories associated with the consulting domain to illustrate its different theoretical approaches.

Chapter 2.4 delves deep into the domain of ITI and provides a working definition as well insights on existing ITI models before presenting theories associated with the ITI domain. Finally, chapter 2.5 closes the theoretical introduction by delineating the domain of competence as the necessary theoretical foundation for the development of a new ITIC construct later on (see Ch.5.2.2). Therefore, an in-depth explanation on the constituting elements of competence is delineated. This chapter introduces the classic theory of learning as the underlying theory base of this thesis and closes with a critical discussion of this theory associated with its predictability of competences on job performance.
Chapter 2

2.1 Culture

Culture represents the main trigger for challenges during an intercultural encounter and constitutes hence, the need for intercultural competences. Therefore, a definition of the phenomenon culture is presented in chapter 2.1.1. Its key elements, characteristics and functions are introduced. To get an understanding on the idea behind, important concepts of culture are explained in chapter 2.1.2.

2.1.1 Characteristics of Culture

Before one can discuss the existing research on intercultural competences, it is mandatory to provide a common understanding of what is 'culture'. Intercultural competence reflects in turn a consequence of the existence of different cultures (cf. Thomas et al., 1997).

Culture has its origins in the field of anthropology (Cullen and Parboteeah, 2005). During the 1980s and 1990s the interest on culture has increased and swept over a wide number of academic disciplines and niches such as psychology and social sciences or literature and communications (Rokeach, 1973; Schwartz and Bilsky, 1987). The ongoing internationalization of companies at the end of the 20th century has continuously led to an increased examination of culture in the field of business and management (Kutschker and Schmid, 2011). Indeed, nowadays culture is considered to be one of the most frequently and variously delineated constructs of social sciences and human society (Porter and Samovar, 2003).

There are numerous and not consistent meanings of the term culture (Geertz, 1973; Huntington and Harrison, 2000; Dorfman, 2004; Kutschker and Schmid, 2011; Kummer et al., 2012; Samovar et al., 2012; Lustig and Koester, 2013). This is due to conceptual developments and a wide range of different scientific fields as well as the multitude of subjective and situational factors influencing the perspective of culture. Tylor defines culture as a “[…] complex whole which includes knowledge, belief, art, morals, laws, customs and any other capabilities and habits acquired by a man as a member of society” (Tylor, 1871, p. 1). Several decades later Kroeber & Kluckhohn (1952) have compiled more than 164 different definitions of culture which proves well founded as there exist “as many meanings of culture as people using terms” (Ajiferuke and Boddeyhn, 1970, p. 154). Indeed, the definitions of culture vary from detailed to a rather general description of it. This is often referred to as an anthropological understanding of culture which exhibits a high degree of abstraction and displays an ideal-typical character (Kluckhohn, 1951, p. 98). One of these protagonists was Hofstede (2001) who describes culture as “[…] the collective programming of the mind which distinguishes the members of one group or category of people from another” (Hofstede, 2001, p. 9). Hofstede declared that culture most importantly contains systems of values, which can be considered as the personality of a human collectivity. At the same time, his concept implies a degree of flexibility allowing an individual to react in a novel, creative, unexpected and sometimes even destructive manner (Hofstede, 1997, p. 3). On one hand he clearly exhibits the existing coherence within culture, and on the other hand he indicates that cognitive and affective processes precede an action. While culture is not an inherent,
genetically grounded construct it is rather learned as a pattern of thinking, feeling and acting (Hofstede, 1997, p. 2).

Culture manipulates all social and individual-psychological processes (Triandis, 2004, p. 89) and induces a common behavior pattern transferred to other generations (Graham, 2009, p. 515). It represents a response to different challenges human beings have overcome over time (Kim and Gudykunst, 1988, p. 103). Thomas (1995) strongly supports this view and further adds that culture functions as a universal, yet dynamic and always evolving, orientation system for the members of a society, organization and group supporting them to overcome challenges related to external adjustment and internal integration (Thomas, 1995, p. 87; Chhokar et al., 2007; Schneider, 2003, p. 34). Culture is therefore never firmly established in one’s mind but rather evolves and shapes itself by social interaction (Schneider and Hirt, 2007). It defines one’s affiliation to the society (Alexander, 1993, p. 380). Keeping this in mind, it is of crucial meaning to include cognitive, affective elements, behavioral aspects as well as their interaction to determine the meaning of culture. Therefore, following understanding of culture is applied for this thesis:

**Culture is a dynamic, over generations transmitted, contextually defined, learned and acquired orientation system shared by human groups that consists of basic assumptions, values, norms, attitudes and beliefs made manifest in artefacts and which not only leads to specific affective and cognitive behavior pattern but also eventually enables its members to integrate to a society and adapt to external challenges.**

This definition implicates that the extent of function can also vary according to situational condition or between cultures (Abramson et al., 1996). Especially the latter is of high relevance during intercultural situations when the elements of culture are only slightly or even not compatible at all leading to misinterpretations or wrong attributions (Stauss and Mang, 1999). A lack of understanding of the function of culture and the interaction between its elements, can lead to wrong conclusion about the arguments between members of different cultures (Sellin, 1938). Following functions are associated with culture and have even been considered as the overall goal of culture (Kutschker and Schmid, 2011, pp. 676–680):

- **Orientation**: Provides the inner logic by which an individual decides what’s right or wrong, good or bad.
- **Endowment with meaning**: Provides action, behavior or experience of individuals with a meaning.
- **Motivation**: Can motivate individuals to act or behave in a certain way.
- **Identity**: Provides a unity within a social group or organization. Thus, it also distances oneself from others.

---

6 Thomas’ understanding of culture also implicitly seizes on Osgood’s classification of culture which differentiates between Perzeptas – conscious and perceptible artefacts and social interaction within a culture – and Konzeptas – non observable and only partially conscious artefacts Osgood (1951, pp. 209–212).
Integration: By providing a sense of unity, it develops a normative force that binds individuals.

Regulation: Creates systems that allow individuals of a collective to provide random or inferior circumstances with a structure. It therefore provides regulation within the relations of a social unit.

Complexity reduction: Represents a filter to reduce the complexity of an action and to understand the underlying interdependencies a lot easier.

Legitimization: Based on fundamental interdependencies between the elements of culture, culture justifies the behavior and action within and towards a culture.

As a matter of fact, conflicts between individuals arise where there is a discrepancy between one or all of these particular functions.

2.1.2 Concepts of Culture

The literature is replete with culture concepts/frameworks/models/theories/connecting the elements and distinct characteristics to each other and thereby attempting to explain culture and to exhibit the dynamics and functions behind the phenomenon (Connaughton and Shuffler, 2007, p. 405). In the following, two important culture concepts are introduced. The first concept by Hofstede (1984) is the most popular model focusing on national culture, the second model by Karahanna et al. (2005) presents the first and most frequently cited holistic approach on culture. While Hofstede's concept influenced the development of the Intercultural Sensitivity construct (see Ch.3.1.2) in the past, the holistic model by Karahanna et al. shows the multidimensionality of culture and hence, corresponding relevance of a multidimensional cultural understanding required for intercultural competence.

**Hofstede’s culture theory**

Research has demonstrated that each nation has a “distinctive, influential and describable” culture which is reflected in its deeply held values and collective beliefs regarding such evaluations as good vs. evil, safe vs. dangerous, rational vs. irrational and wrong vs. false (McSweeney, 2002, p. 89). Even though culture exists in each individual’s mind, it becomes solidified in society's institutions and its material products (Hofstede, 1984, p. 82). The domain of national culture has been mostly concerned with the classification of culture to delimit culture. This knowledge can also be used to understand and predict the behavior of people from different cultural backgrounds and to improve the collaboration between them (Schneider and Meyer, 1991).

Hofstede identified five main dimensions of national culture by which countries can be classified. Hofstede's primary data were extracted from a pre-existing bank of employee attitude surveys, which were conducted, between 1967 and 1973 within IBM subsidiaries in 66 countries resulting in more than 116,000 applicable questionnaires. By means of a factor analysis he identified following dimensions (Hofstede, 1980):
- **Power Distance**: This dimension pertains to the distribution of power within a nation. It mainly focuses on how much an uneven power distribution is expected or even requested by people. In cultures with low power distance, individuals rather accept that power is distributed equally, and are additionally more willing to accept that power is distributed to less powerful individuals. In contrast, people in high power distance cultures will likely both expect and accept inequality and steep hierarchies (Hofstede, 1980, pp. 92–98).

- **Uncertainty Avoidance**: Uncertainty avoidance indicates whether individuals feel threatened by ambiguous and unknown situations or even perceive them as an opportunity. These uncertainties and ambiguities may be handled by an introduction of formal rules or policies, or by a general acceptance of ambiguity in the organizational life (Hofstede, 1980, pp. 154–159).

- **Individualism-Collectivism**: While in individualistic cultures people strive for accomplishing their individual goals and needs, collectivistic cultures are shaped by people who are looking for the welfare of the collective to which each individual belongs. Thus, individuals tend to display a great sense of responsibility towards others. This dimension mainly influenced the development of the Intercultural Sensitivity Index (see Ch.3.1.2).

- **Masculinity-Femininity**: Certain values are usually related to masculine goals and assertiveness such as earnings, advancement, title, or respect. On the other side, more personal and humanistic goals such as pleasant working climate or teamwork are regarded as feminine goals. Depending on which of the goals are of priority, one refers to a masculine or feminine orientation of culture (Hofstede, 1980, pp. 260–266).

- **Short-Term vs. Long-Term Orientation**: The last dimension emphasizes the differences between Western and Asian values. While planning and decision-making processes in Asian countries are rather long-term oriented, western countries usually expose a short-term orientation (Bond and Hofstede, 1998).

Since each individual is the representative and result of various cultural socialization processes (Mae, 2003), Hofstede's assumption that national culture can be summarized across a limited number of dimension and eventually shapes values, beliefs, assumptions, expectations, perceptions and behavior of an individual has been highly questioned among researchers (Alexander and Seidman, 1990; Myers and Tan, 2002). Intensified through globalization processes the idea of national culture changes as individuals have much more opportunity to deal with cultural values and basic assumptions different from their own (Groseschl and Doherty, 2000). In-depth studies of societal culture and organizations have revealed that the relationship between “national” cultural values and culturally-influenced work-related values and attitudes cannot be well explained by Hofstede's culture dimension or by the understanding of national culture as culture per se. Tayeb (1994), for instance, found out that collectivist nations India, Iran and Japan do not behave according to Hofstede's concept. Even though all
three nations are characterized by a strong sense for community, only Japanese employees transferred the collectivism of culture in the form of high commitment and emotional attachment to the organization they work for (Tayeb, 1994). As a result, it has been widely suggested that the concept of culture needs to be modified and adjusted, as the relation between culture and behavior is much more complex (Winch et al., 1997).

Social Identity Theory
Over the last decade researchers increasingly questioned the rather one-dimensional approaches to culture (see e.g., Martinson & Ma 2009; Rai et al. 2009.), and that cultural beliefs and practices are hierarchically ordered (Straub D, 2002; Kummer et al., 2012). These works mainly deal with group cultures, which, for example, occur in communities. The theoretical basis for this complex conceptualization, social identity theory (SIT), expresses the idea of layers of experience and is based on the self-concept (Hogg and Terry, 2000). It takes into account that people characterize themselves as members of an “ingroup” or “outgroup” with respect to numerous reference points (ethnicity, religion, hobby, profession, gender, etc.). SIT is often referred to as a counterpart to the dominating cross-cultural management research and other related fields which are mainly focusing on national culture and not taking other cultural layers into account (Hogg and Terry, 2000). Instead of perceiving culture as simply national culture (NC), organizational culture (OC), or just any facet of a person’s identity, SIT considers how multiple layers of identity come together and interact for each individual (Tajfel, 1970). STRAUB ET AL. (2002) characterize this layering through the virtual onion metaphor because the various layers of culture, and their relative importance in shaping specific beliefs and behavior, may occur in a different sequence, depending on the individual in question and the specific point in time. The theory recognizes that the various identity groups with which an individual is affiliated (e.g., gender, profession, hobby) have corresponding levels of importance on different attitudes and behaviors. They finally determine the overall identity of an individual.

Since certain social identity layers are essential under specific circumstances (e.g., during project work, during conflicts, at a family event) a hierarchical ordering of the layers is not relevant. Moreover, ethnic culture can bridge national borders (e.g., individuals of Korean heritage who live in Germany), but ethnic culture may also represent a subset of individuals in a single country (e.g., Romanas in Romania). Therefore, there is no simple one-to-one or one-to-many hierarchical bond between ethnic culture and nationalities (Myers and Tan, 2002). The same applies to religious, linguistic, professional identity, and other layers of culture: each of these may be a subset of NC in some situations (e.g., many languages coexist in a country), but each cultural identity attribute may also be a super-set of NC (e.g., many countries speak a certain language).

Based on STRAUB ET AL. (2002) KARAHANNA ET AL. (2005) have illustrated the virtual onion metaphor in their "virtual onion model" in which every individual can be defined as the result of various identity layers. The cultures that enfold each person interact to form his or her unique culture (Karahananna et al., 2005). Figure 2-1 shows an individual (grey ellipse) who is the result of the various layers of culture interacting with other people and their respective layers of culture:
As an example, an employee of a company may hold a manager position, has an MBA degree, is a vivid local soccer club fan and is a male. Each of these characteristics might be tied to an affiliation with an organizational subculture which elicits psychological discrepancy and conflict at the individual level of analysis. Other than that, subcultural identifications may be right-angled to the leading culture, exhibiting ethnic, professionals, religious or any other affiliation. By considering several cultural layers into a holistic approach, a comprehensive understanding of an individual’s culture can be achieved. The virtual onion model displays an accurate and widely accepted way to depict the dynamic and complex forces behind individual’s attitude and behavior. Its holistic model not only reflects that culture is a set of “contested, emergent and temporal” practices (Kahn, 1989, p. 13) but also depicts the existence, application and particularly interaction of different reference points or layers which eventually constitute the phenomenon culture as a whole (Scholz, 2000; Hofstede, 2001). Consequently, in this thesis the virtual onion model as well as the underlying SIT serves as the theoretical framework for explaining the existence of multifaceted cultural differences of individuals which often lead to corresponding issues.

2.2 Intercultural Competence

The underlying thesis examines the influence of intercultural competences for the highly technical profession of IT-Infrastructure consultants. With the growing pace of internationalization and the shifting shapes of globalization, the intercultural interaction and hence, the influence of culture and its complexity, is becoming a more and more common experience in a larger number of professions as well as educational and work settings all over the world. Especially in the professional area, intercultural competence, at the individual level, in the form of individual characteristics, knowledge and skills, is claimed to be associated with international career success. At the organizational level it is linked to busi-
ness success through the more effective management of business operations in the ongoing growth of subsidiaries. Yet, the cumulative proof on these fronts from the international, comparative and cross-cultural literatures remains mixed. Unfortunately, conceptual, definitional, and resulting psychometric issues are commonplace. The following chapter discusses the topic of intercultural competence by providing an understanding on the different approaches to intercultural competence in general. Afterwards, the main model conceptualizations of intercultural competence are delineated before the main theories associated with today’s intercultural competence research are presented.

2.2.1 Approaches to Intercultural Competence

Similar to the definition of culture, intercultural competence has been used and defined by various scholars over the last decades, while no single definition has been agreed upon (Deardorff, 2011). In contrast to the term ‘culture’, the research topic itself is not even consistently delimited as there is a lack of clearly defined and consistently agreed terms. Researchers use terms interchangeably and there is a paucity of discussion as to the meanings of these terms (Sullivan and Cottone, 2010). Within the Anglo-Saxon literature there exist different notations for intercultural competence (Martin, 2010; Morley and Cerdin, 2010, p. 806): Cross-cultural competence (Ruben, 1989), cross-cultural effectiveness (Kealey, 1989), intercultural communication competence (Spitzberg, 1989), cross-cultural adjustment (Benson, 1978), intercultural effectiveness (Cui and van Den Berg, 1991; Hammer et al., 1978; Hannigan, 1990), intercultural competence (Dinges, 1983), multicultural competence (Hansen et al., 2000), multicultural effectiveness (van Oudenhoven and van der Zee, 2002), global mindset (Nummela and Saarenketo, 2004) or cultural intelligence (Earley and Mosakowski, 2004; MacNab, 2012). At the beginning the field of intercultural competence has been highly influenced by psychologists, social and communication scientist and anthropologists. With the increasing globalization, management and education researchers have more and more focused on this topic (Dinges, 1983). In management research intercultural competence has been mostly approached by HRM either through the instrument of intercultural training to advance training and education of employees or through the analysis of expatriates’ foreign country success to identify the corresponding predictors of success (Müller and Gelbrich, 2001, p. 247).

DEARDORFF (2006) was the first to elaborate on a commonly agreed set of intercultural skills. By means of a comprehensive Delphi survey, 23 leading researchers in the field of intercultural competence have been asked to define intercultural competence and name the necessary skills required for it (Deardorff, 2006a). All researchers confirmed a multidimensional structure of intercultural competence, which can be built upon three necessary, but not sufficient dimensions (Deardorff, 2004, p. 198). The first dimension is defined by attitudes and a positive mindset such as respect for a different ideology, ambiguity tolerance or

---

7 See LEVITT (1983)
appreciation for diversity in general. The second dimension takes into account the knowledge and abilities regarding intercultural situations such as knowledge about one’s own and foreign culture, communication abilities and sociolinguistic awareness. The last dimension describes the reflection upon oneself by not taking one’s own cultural, religious or ethnocentric world view for granted, which can eventually lead to a reassessment of the foreign mindset and behavior (Deardorff, 2006b, pp. 8–10). Taking a variety of interpretations into account, intercultural competence involves the ability to interact effectively and appropriately with people from other cultures or subcultures based on one’s own intercultural knowledge, attitudes, skills and behaviors (Müller and Gelbrich, 2001, p. 246; Deardorff, 2006a; Tirmizi and Fantini, 2006, p. 12; Perry and Southwell, 2011, p. 455). Accordingly, on one hand individuals, or mostly expatriates and intercultural project workers, are evaluated on their achievement to reach their own and the organization’s goal (efficiency) and on the other hand to respect the goals of their opposite and agree with the socio-cultural values and norms which are important to them (appropriateness) (Moosmüller, 1996; Müller and Gelbrich, 2001, pp. 246–249; Thomas, 2003, p. 141; Spitzberg, 2006, p. 383; Bird et al., 2010; Holmes and O’Neill, 2012). Both evaluation dimensions are not independently of one another as appropriateness influences efficiency (Holmes and O’Neill, 2012).

The underlying understanding of intercultural competence orientates itself towards the definition of intercultural competence by Deardorff (2006). It emphasizes the importance of efficiency and appropriateness and meets the author’s idea to understand intercultural competence as a multidimensional and multilayered construct, consisting of discrete competencies and is composed of knowledge, skills and attitudes. The conceptualization of intercultural competence offers different approaches indicating a paradigm shift. Even though there is not a clear chronological order and even numerous classifications of approaches exist, there can be three major approaches identified: the personality approach, adjustment approach and communication based approach.

**Personality Approach**

Especially at the very beginning of this research stream, researchers attempted to connect skills, competences and traits with the accomplishments of professionals abroad (Stening, 1979). As one of the first scholars Lysgaard (1955) analyzed the individual characteristics of Norwegian students in the US. Main goal of the personality approach is to identify and define the profile of a successful expatriate. Studies could show that there are professionals who possess a more effective skills and trait set for a successful intercultural interaction than others. Traits such as empathy, tolerance, flexibility (Ruben, 1977; Hawes and Kealey, 1978).

---

8 There also exists another popular classification between partial (affective, cognitive and conative) and comprehensive approaches (Müller and Gelbrich, 2001). Bird et al. (2010) introduced the three dimensions perception management, relationship management and self-management in the domain of intercultural competence. However, these dimensions not only address the three approaches discussed within this thesis but also focus on the context of global leadership. In general, it needs to be emphasized that a clear distinction between the approaches is not always possible (Rathje, 2006).
1980), independence (Ivancevich, 1969), dealing with prejudice, stereotypes and ethnocentrism (Brislin, 1981) as well as intelligence and initiative (Guthrie and Zektick, 1967) have proven to be predictors for intercultural competent behavior. In general, personality approaches have resulted in multiple lists of traits or typologies describing the construct intercultural competence (Bolten, 2012, p. 21). However, these lists have been claimed as incomprehensive and questionable as they do not prioritize between the traits and don’t consider factors influencing the perception of competence by the co-acting individual (Stahl, 1998). Furthermore, due to the explorative nature and the lack of a solid theoretical underpinning the personality approach has been criticized (Müller and Gelbrich, 2001). Researchers have argued that traits cannot be the sole predictors for intercultural competence because of the inconsistency these traits have shown in their cross-contextual influence on the behavior of communicators (Gudykunst and Kim, 2003; Sullivan and Cottone, 2010).

**Adjustment Approach**

In contrast to a trait-focused personality approach, there has been a change towards a situative approach, mostly known as adjustment approach (David, 1972, p. 34). According to it, the living condition and working environment primarily determine a professional’s success at intercultural situations overseas. By constantly exposing oneself to a foreign setting and imitating appropriate behavior over and over again, individuals learn through experience (Guthrie, 1975). The latter “shapes” an individual as it is mainly responsible for developing intercultural competence. The more experienced and thus, better adjusted professionals are to their new environment, the more likely they succeed (Lee and Sukoco, 2010; MacNab et al., 2012). As a consequence, associated researchers strongly argue that intercultural competence should be learned and can be trained (Müller and Gelbrich, 2001, p. 250; MacNab et al., 2012, p. 1335).

Building on this idea, OBERG (1960) generally describes expatriates’ adjustment in foreign cultures as a four phase process. The first phase, the *honeymoon phase* is characterized by a positive attitude and mind of the expatriates towards the host country, its culture and everything new and unknown. Afterwards the expatriate experiences a *culture shock* or *occupational disease* due to his constant interaction with the new environment and culture. During the subsequent *recovery phase*, however, individuals get acquainted with the host country language and culture to gradually overcome the challenges of living abroad. At the final adjustment phase, expatriates not only appreciate and adjust to the differences but are also able to effectively focus on their job (Marx, 2001). While OBERG’s adjustment model has been empirically confirmed, CHEN (2011) could show that culture shock has a positive impact on the performance of individuals (Chen et al., 2011). Moreover, the less one questions his own identity and the less one considers his values to be generally accepted, the less the culture shock

---

9 Communicators are simultaneously en- and decoders of information and exchange messages through corresponding communication channels (DeVito, 2011).

10 In literature instead of stating living condition and working environment, it is often referred to as situational factors influencing the success at intercultural situations (Benson, 1978).
will be (van der Zee and van Oudenhoven, 2013). However, critics of the adjustment approach emphasize that situational variables – combinations of people, places and incidents which happen abroad – don’t necessarily determine successful overseas assignment but rather an effective handling of these variables (Stahl, 1998; Thomas, 2003). Indeed, personality traits and other approaches are necessary for a more in-depth understanding (Kealey, 1996, p. 93; Palthe, 2004). After all, the adjustment approach exposed rather not convincing empirical results over an extended period of time (Oguri and Gudykunst, 2002; Graf, 2004b, p. 274).

Communication Approach

Effective information exchange between interacting individuals of different cultures is widely considered to be the most indicative success criterion for intercultural competence (Gudykunst, 2004). The so-called communication approach links intercultural competence with the ability to exhibit appropriate and effective communication behavior at intercultural situations (Lustig and Koester, 2010). In a nutshell, in order to be able to follow the norms of a cultural group and attain mutually satisfying results one must be communicatively competent (Kupka et al., 2008). The development of intercultural communication competence (ICC), however, requires the ability of individuals to develop contextually clear and stable cultural identities. As soon as an individual identifies with the norms, values, symbols and goals of any given culture, a cultural identity starts to develop (Collier and Thomas M., 1988). Since culture influences any entity of differing characteristics (ethnicity, religion, politics, socio-economic status, etc.) and every person is associated with multiple of these interacting groups (see Ch.2.1.2), each person also internalizes various cultural identities which contextually change in their scope, relative importance and intensity (Collier, 1989, p. 113). Wiemann (1977) claims that communication shape and maintain an individual’s identity, which in turn facilitates the development and perception of communication competence. Furthermore, highly competent intercultural communicators have success with interactions (e.g. confirmation of one’s cultural identity, desire to maintain the affiliation to the interlocutor, and goal realization) through appropriate and effective, contextualized behaviors (Collier and Thomas M., 1988). It is generally agreed that exhibiting appropriate communication behavior is based on expressing respect and empathy towards others and implies flexibility as well as the intention to listen (Ruben, 1977).

ICC is, however, not only behaviorally displayed but also perceived by the peers (Martin and Hammer, 1989). The greater the cultural distance the more likely misinterpretations can arise requiring more ICC as well (Black and Stephens, 1989; Baruch et al., 2013). Therefore, the right decoding of information plays a decisive part during an intercultural interaction situation. As communication expresses culture, an effective intercultural communicator is able to decode any verbal and non-verbal message of his peers at all times and reduces the chances

---

11 Language and symbols are considered to be observable elements or artefacts of a culture (Geertz, 1983)
of communicative break-downs\textsuperscript{12} (Hall, 1959). Both, appropriate and effective communication behaviors, aim at maintaining one’s cultural identity and validating the identity of the co-communicator and are a necessity to being perceived as a competent actor in intercultural encounters.

As indicated above, several studies revealed that personality and adjustment based approaches should be combined. This view is commonly accepted to this date and has been labeled the \textit{interaction concept} (Hatzer, 2009, p. 144). Due to the fact that the interaction concept is closely intertwined with the communication based approach, both streams have often been interchangeably used by many researchers (Lesenciu and Codreanu, 2012, p. 128). Building on the achievements of Brislin (1981), Ruben (1989) and Gudykunst (1995), Spitzberg (2000) has developed the most influential concept of intercultural competence based on the interaction approach which is used by many different studies up to now (Panggabean et al., 2013; Toomey et al., 2013). Spitzberg (2006) denotes his model of ICC as “a theory of interpersonal competence in intercultural contexts” (Spitzberg, 2006, p. 380; Cupach, 1993). His understanding of ICC is based on the hypothesis of intercultural interactions being a contextually defined, transactional, and systemic process. To be seized as a contextually competent communicator individuals need to obtain 1) knowledge (language, culture, rules etc.) 2) motivation (feelings, intentions, needs, and drives associated with the anticipation of or actual engagement in intercultural communication” Wiseman, 2002, p. 211), and 3) skills (respect, knowledge orientation, role flexibility, speech accommodation, facework\textsuperscript{13} etc.) that have to be executed consciously and consistently during intercultural situations (Wiseman, 2002; Gudykunst, 2004).

Within the ICC model the concept of contextual dependence is reflected by the remaining two factors of 4) appropriateness and 5) effectiveness which represent quality indicators of the intercultural communication (Spitzberg, 2006; Wiseman, 2002). In this context, appropriateness is understood as “the valued rules, norms, and expectancies of the relationship” which need to be respected. Effectiveness is delimited as the success of goals or rewards relative to effort (Spitzberg, 2006, p. 380)\textsuperscript{14}. ICC is an acquired feature as none of these five components are inherent (Spitzberg, 2006; Wiseman, 2002; Vries et al., 2013). In the course of a tedious acculturation process, members of a cultural entity achieve a corresponding level of communication competence, which effectively prepares them for the internal and external environment (Arasaratnam, 2005). Nevertheless, once cultural differences become salient the complexity of intercultural interac-

\textsuperscript{12} Communication is effective “to the extent that the person interpreting the message attaches a meaning to the message that is similar to what was intended by the person transmitting it” (Gudykunst, 1995, p. 15)

\textsuperscript{13} Maintaining one’s face requires facework. Goffman (1967) and Brown & Levinson (1987) depict that it is a universal and therefore, cross-cultural desire to maintain face since face is mutually vulnerable and can be threatened either by one’s own actions or by others in communicative interactions. Face is required to have a feeling of self-worth and self-respect (Goffman and Best, 2008; Brown and Levinson, 2011).

\textsuperscript{14} Effectiveness and appropriateness have been widely accepted to be the success indicators for intercultural communication competence and therefore, both have been even regarded as success indicators of intercultural competence (Chen and Starosta, 1996, p. 356; Graf, 2004b, p. 54).
tions appears in the variety of contexts and their related perceptual and proce-
dural rules (Baruch et al., 2013). Even though literature argues that the concept
of “national culture(s)” is becoming obsolete due to cultural convergence of the
globalization, studies have shown that without cultural knowledge, the neces-
sary skills to apply it under different circumstances and the motivation to apply
these skills, both, appropriateness and effectiveness, cannot be achieved

SPITZBERG’S ICC model incorporates a series of propositions that show the hier-
archical levels of the relationship between communicating partners, ranging
from the individual, to the episodic, and finally the relational system. First, at
the individual level, the necessary qualities of a communicator are specified.
These characteristics facilitate the impression of competence from the co-
communicator’s point of view. High motivation, low social anxiety in different
environments, high contextual self-efficacy, well-developed communicative and
cultural affinity, high expectations of valued results from intercultural interac-
tions, strong cultural knowledge about different fields (procedural, knowledge
acquisition, self-image, role diversity, knowledge processing capacity and dispo-
sition) and contexts, durable and goal-oriented communicative skills in different
intercultural settings (altercentrism, conversation management, composure,
expressiveness, adaptation) determine the individual level of SPITZBERG’S ICC
model. Second, the episodic level focuses on the impression management of in-
tercultural interaction during specific episodes since personal characteristics at
the individual level influence the impressions of the co-communicator (Spitzberg,
2006). In fact, elevated communicative status, refined communicators’
knowledge, skills, and others lead to the impression of a competent communica-
tor. The evaluation of an individual’s intercultural competence is therefore de-
pendent from the assessing person and if his expectations are met (Spitzberg
and Cupach, 1989, p. 260). Third and last, SPITZBERG characterizes the relation-
al system as “an index of the mutual adaptation and satisfaction achieved by a
relationship” which embraces the various individual qualities and episodic char-
acteristics to develop relational competence (Spitzberg, 2006, p. 389). Relational
competence delineates a certain “level of communication quality in an estab-
lished relationship” which is enhanced by many factors such as efficient man-
agement of mutual autonomy and intimacy needs, increasing responded affinity,
growing trust or integration of various social group memberships of interacting
individuals (Spitzberg, 2006, p. 389). An excess of these drivers can be even ad-
verse for the perception of competence.

SPITZBERG’S model provides a great theoretical foundation for the understanding
of the construct of intercultural communication and presents a guideline for
practical applications of the principles in training and education environments
(Kupka et al., 2008). Due to its comprehensiveness and widely accepted theoreti-
cal underpinning, the underlying thesis follows SPITZBERG’S model of intercul-
tural competence as its main base for the development of its intercultural com-
petence construct (see Ch.3.2). Therefore, this thesis’ multidimensional intercul-
tural competence construct clearly reflects the focal elements of SPITZBERG’S
understanding of an intercultural competent individual (see Ch.3.1.2).
2.2.2 Models of Intercultural Competence

Over the past decades, the aforementioned approaches are associated with models and measures of intercultural competence. Many sophisticated research efforts were conducted to develop, validate, and constantly improve measures of intercultural competence (e.g., Hammer et al., 1978; Abe and Wiseman, 1983; Gudykunst and Hammer, 1984; Köester an Olebe, 1988; Martin and Hammer, 1989). These studies consensually exposed that even though the core concept of adaptability\textsuperscript{15} of individuals may inevitably activate intercultural competence, any comprehensive measure of this construct would be without a doubt multidimensional (Arasaratnam and Doerfel, 2009, p. 137). There was rather the question of which dimensions and why they should be chosen. In the course of the development of theoretically more conceived models which follow a deductive research paradigm, the majority of studies conceptualized intercultural competence based on three structural dimensions since intercultural competence involves interaction between people who represent different or divergent affective, cognitive, and behavioral orientations to the world (Gudykunst et al., 1977; Spitzberg and Changnon, 2009). This understanding is linked to the classic three component model of attitude from psychology\textsuperscript{16} (Wolfgang F. and Möllenberg, 2003, p. 2), and allows for an affective or emotional, a cognitive, and behavioral structural dimension that has been implemented by different researchers (e.g., Cui and Berg, 1991; Chen and Starosta, 1996; Fritz et al., 2002; Wiseman 2002; Byram 2003; Fritz et al. 2004; Prechtl and Lund 2007).

In general the affective dimension of intercultural competence reflects the emotional attitude towards cultural differences within an intercultural interaction; the cognitive dimension relates to general or specific knowledge about one's own or foreign culture which eventually facilitates intercultural encounters; and the behavioral dimension represent mainly communicative and social abilities for successful interaction (Gertsen, 1990, p. 346; Festing, 2012, p. 62). However, one needs to note that a clear distinction between the dimensions is not always possible and an overlapping of dimensions is apparent (Behrnd and Porzelt, 2012, p. 215). A detailed literature review of the conceptualization of intercultural competence based on the these structural dimensions reveals an evolution from the partial approaches, focusing mainly on one dimension for the conceptualization of intercultural competence, towards an integrative approach, presuming an integration and interaction of all structural dimensions to achieve a comprehensive characterization of intercultural competence (Müller and Kornmeier M., 2001, p. 242)\textsuperscript{17}.

\textsuperscript{15} According to Kim (1991) adaptability denotes "the capacity of an individual's internal psychic system to alter its existing attributes and structures to accommodate the demands of the environment" (Kim, 1991, p.268).

\textsuperscript{16} See Rosenberg & Hovland (1960)

\textsuperscript{17} Spitzberg & Changnon (2009) rather prefer to divide the vast number of existing models of intercultural competence into the categories: compositional, co-orientational, developmental, adaptational, and causal process. They state that this differentiation is subjective in order to group similarities.
Partial Models

The focus on particular dimensions of intercultural competence led to more theoretically sound research insights (Landsberg and Wölke, 1985). With respect to the **affective structural dimension**, many researchers have addressed this facet in the past (e.g., Gudykunst et al., 1977; Abe and Wisemann, 1983; Spitzberg and Cupach, 1984; Wiseman and Abe, 1984; Hammer, 1987; Gertsen, 1990; Chen and Starosta, 1996, Hamilton et al., 1998). In general, research reveals that there is not a consistent understanding of what is really understood by the affective structure dimension. Concepts such as **empathy** (Cui and van Den Berg, 1991, p. 228; Cui and Awa, 1992, p. 312; Arasaratnam, 2006, p. 96; Behrnd and Porzelt, 2012, p. 214) – referring to the ability to view a situation from someone else’s point of view (Swift, 2002, p. 6) – or **openness** to encounter other cultures and impartiality towards any worldview (McEnery, 1990; Chen and Starosta W.J., 1996; Baumann and Shelley, 2006) have been widely associated with it. However, the majority of the investigated studies consider **motivation or intercultural sensitivity** as the two most important emotional facets of intercultural competence (Graf, 2004b, pp. 47–49; Arasaratnam, 2006, p. 155). Motivation in this context is delineated as “the set of feelings, intentions, needs, and drives associated with the anticipation of or actual engagement in intercultural communication” (Wiseman, 2002, p. 211; Martin and Nakayama, 2013, p. 465). As a consequence, it highly influences whether the skills and knowledge for a successful intercultural interaction are acquired and are eventually applied in the interaction episode (Imahori and Lanigan, 1989; DeVito, 2011). With respect to a rigor measurement of this factor, there is only the **Intercultural Communication Motivation Scale** by KUPKA ET AL. (2009) that could be empirically tested and validated in a comprehensive research study. Intercultural sensitivity in turn refers to the ability to understand the values, identities, behaviors, and situations of culturally different groups and to actively consider them during one’s own behavior (Ting-Toomey, 1999, p. 267; Hammer et al., 2003). A comprehensive discussion of this factor follows in chapter 3.1.2.

Indeed, there is no model that solely examines this particular dimension of intercultural competence (Müller and Gelbrich, 2001; Huber and Brotto, 2012). The only study that at least focuses on the affective dimension is the **Third Culture Approach** by GUDYKUNST ET AL. (1977) which utilized the classic three component model of attitude as its underlying theoretical base as well. The Third Culture Approach constitutes therefore, more than a partial approach but to a certain extent a rather comprehensive and integrative approach (see below) (Senyshyn, 2002, p. 47). While in the integrative approach all dimensions are of equal importance, this model explicitly emphasizes the affective dimension which is referred to as cultural sensitivity. The latter is responsible for generating positive stereotypes towards the interaction partner (cognitive dimension) and developing certain behavioral skills (behavioral dimension) (Gudykunst et al., 1977). Many researchers consider cultural sensitivity as a psychological linking between different cultures of interacting people, as well as the core element for the development of knowledge and skills needed to successfully operate in culturally overlapping situations (Shapiro et al., 2007). Under the Third Culture Approach, an individual displays corresponding cultural competence, when he shows a culturally-neutral attitude and refrains from any premature judgment (Shokef and Erez, 2006). However, this model doesn’t
disclose the operationalization of the structure dimensions which often lead to methodological doubts (Casnir, 1999, p. 47). Nevertheless, GUDYKUNST ET AL. (1977) are considered to be pioneers for to not only implying a causal relationship between intercultural competence and a relevant external criterion or dependent variable (satisfaction) but also empirically examines this relationship based on a path model (Müller and Gelbrich, 2001, p. 255). By that, the authors could stress the criterion validity of their approach.

There are a large number of scholars focusing on the cognitive structural dimension. It comprises knowledge about the norms, the context, the communication rules, and the normative expectations governing the interaction with persons from a foreign culture, allowing the individual to realize differences between cultures and thus, minimizes misunderstandings and breach of culture-specific rules with individuals from other cultures (Wiseman et al., 1989, p. 350; Staber, 2006, p. 196). By expediently internalizing this knowledge, one can even detect the reasons for potential incidents and learn from it in the long term (Wiseman, 2002, p. 212). GRAF (2004) characterizes the cognitive dimension as the ability of an individual to recognize the cultural bond of his foreign interaction partner and to aptly interpret his counterpart’s behavior and actions. For example, if individuals from Western countries such as Germany know the Japanese culture, they are aware of the fact that Japanese people smile in unpleasant situations as a mean of expressing anger, sadness or dislike (Ishii et al., 2011). As already emphasized, the cognitive dimension especially acknowledges the importance of communication rules and accordingly takes the knowledge of language into account (Cui and van Den Berg, 1991, p. 229; Mol et al., 2005, p. 347; Masgoret, 2006, p. 324). Following a line of constructivist research, WISEMAN & ABE (1986) were among the first pioneers to focus on the cognitive dimension by examining the influence of cognitive complexity on intercultural effectiveness.

In contrast, however, to any theoretical pre-considerations, their empirical results revealed that an individual, who is aware of the personal and subjective nature of his perceptions, knowledge, and values, rather faces difficulties (Wisemann and Abe, 1986, pp. 618–621). In contrast, COLLIER (1988) focused on intercultural conversational competencies for Mexican Americans, Black Americans and White Americans. Besides the exception of Mexican Americans, who perceived similar rules in intracultural and intercultural conversations, she clearly confirmed that rules for speaking with members of one’s own group were different from rules for intercultural conversations (Collier, 1988, p. 136). However, several authors emphasize the fact that the cognitive facet constitutes a

---

18 For the measurement of intercultural effectiveness see also HAMMER ET AL. (1978).
19 The empirical results were more of a surprise for the author and could only be explained that the cognitive more complex persons: a) are probably more overloaded with information and might not be able to integrate the information into a consistent view, b) are more aware of their interaction partners and might be affected by ambiguous information and views, c) are more sensitive to communication difficulties and therefore provided a diminished assessment of the intercultural effectiveness of the interaction (Wisemann and Abe, 1986, pp. 618–621)
20 Mexican Americans emphasized relational climate more frequently than both other groups, Black Americans emphasized individuality in politeness and expression and White Americans showed a distinct emphasis on verbal content (Collier and Thomas, 1988, p. 99).
necessary, but not by any means a sufficient condition for communication competence and intercultural competence (McCroskey, 1982; Matveev and Nelson, 2004).

In the past, many researchers have even put competence and behavior on the same level which led to a focus on the behavioral structural dimension (Ruben, 1977, p. 336; Wisemann and Abe, 1986; Hammer, 1987). As proven multiple times, a person’s attitude toward an object might influence his overall pattern of his responses but doesn’t necessarily lead to action (Ajzen and Fishbein, 1977, p. 888). In this sense, high affective or cognitive structure dimensions don’t inevitably lead to intercultural competent action. However, in order to draw the right conclusion about the behavior of one’s counterpart, the observable behavior can only be the relevant dimension to measure intercultural competence (Bergemann and Bergemann, 2005, p. 64). One of the earlier protagonist and guiding researcher supporting the behavioral approach of intercultural competence was RUBEN (1976) whose work was mainly based on GOFFMAN (1959, 1963, 1967) and HALL (1959). His research identified seven skills that a person should display in order to be effective in intercultural interaction (Ruben and Kealey, 1979):

1) display of respect
2) interaction posture, i.e., being non-judgmental
3) empathy
4) self-oriented role behavior (i.e., flexibility in taking and fulfilling group roles)
5) interaction management (i.e., turn taking)
6) tolerance for ambiguity (i.e., reacting calmly to ambiguity)
7) orientation to knowledge

He emphasized that the main goal of the behavioral structure dimension is to methodically accumulate and analyze the behavior of individuals in any situation and are similar to those for which they are being trained or chosen. Thus, it allows for valid prediction about an individual’s behavior in common situations in the future (Ruben, 1976, p. 337). In accordance with a positivist research methodology, each of the seven factors has been operationalized with multiple indicators to evaluate the performance of international assignees by combination of self-assessments and behavioral observations (Kupka, 2007). By that, the influence of these skills on the degree of adaptation to a foreign culture, culture

---

21 In contrast to what has been widely believed, research has revealed that there is a low or non-significant relation between attitudinal predictors and behavioural criteria. AJZEN & FISCHBEIN (1977) showed that an individual’s “attitude has a consistently strong relation with his behavior when it is directed at the same target and when it involves the same action. In general low and inconsistent relations are observed when the attitudinal and behavioural entities fail to correspond in one or both of these elements” (Ajzen and Fishbein, 1977, p. 912).

22 It needs to be noted that the last skill, orientation to knowledge, is not exactly a skill but rather a cognitive disposition and antecedent to behavioral adjustment.
shock, or the effectiveness of the overseas assignment could be demonstrated (Ruben and Kealey, 1979; Dongfeng, 2012; Chen, 2013).

Hammer et al. (1978) delineate another important research example focusing on the behavioral dimension. They identified 24 skills and subsequently extracted three generic dimensions of intercultural effectiveness by applying statistical factor analysis:

1. the ability to deal with psychological stress;
2. the ability to communicate effectively; and
3. the ability to establish interpersonal relationships (Hammer et al., 1978, p. 382). By displaying these dimensions, individuals can more effectively integrate themselves into a foreign culture and follow their needs and concerns. Individuals exhibiting these skill dimensions abroad, usually adapt quicker to the host culture, are more productive, and successful (Caligiuri et al., 2000, p. 39). Again, despite the convenience of these skills set they can never be complete, are mostly inconsistently defined and operationalized, are based on a small random sample — allowing neither any calculation of correlations or multivariate techniques — and most importantly often lack a theoretically solid underpinning (Lustig and Spitzberg, 1993). Most of the identified behavioral dimensions even result from previous descriptive research studies and adopt these shortcomings without any detailed cross-checking (Johnson et al., 2006; Rathje, 2007). With respect to a behavioral skill set, skills such as tolerance for ambiguity, flexibility, respect, as well as knowledge of different communication styles and non-verbal communication have been widely accepted by the research community (Müller and Gelberich, 1999, pp. 56–58; Mayerhofer et al., 2004; Lloyd and Härtel, 2010; Chongruksa and Prinyapol, 2011).

**Holistic Model**

Within the last two decades research has almost unanimously superseded its focus on one multifactorial dimension — as pursued by the partial approaches — and have searched for a more appropriate model of intercultural competence (Müller and Gelbrich, 2001, p. 256). Despite a broad literature base in this stream of research, scholars did not only oftentimes fail to develop a valid and reliable intercultural competence instrument but were also unable to provide a consistent framework for understanding the notion of interdependence and interconnectedness of the multifaceted intercultural dynamics (King and Baxter Magolda, 2005). Therefore, researchers began to conceptualize intercultural competence as a multidimensional construct consisting of the affective, cognitive and behavioral dimensions which are the interdependent and indispensable parts of it (Cui and van Den Berg, 1991, p. 230; Müller and Gelberich, 1999, pp. 34-11; Deardorff, 2006a). This is also known as an integrative approach to intercultural competence (Bennett, 1986a; Müller and Gelbrich, 2001).

One of the first examples considering all structural dimension studies has been suggested by Gertesen (1990). While her work represents a critical review on the concept of intercultural competence and concludes in an attempt at a more

---

23 Main aim of the factor analysis is to "summarize the interrelationships among the variables in a concise but accurate manner as an aid in conceptualization", so that a certain number of observable variable mainly reflect the variations in fewer observed variables (Gorsuch, 2013, p. 3).
precise formulation of the concept, she also takes contextual factors such as the importance of family, health, and physical environment into account since people don’t fail because of their lack of the necessary competence but rather as a consequence of personal problems (Gertsen, 1990, p. 8).

Building on the extensive knowledge about the communication based approach (see above) of competence in the past, CHEN & STAROSTA (1996) have introduced the probably most elaborated attempt to present a holistic approach of intercultural competence which has even been confirmed in Germany by FRITZ ET AL. (2004)\(^{24}\). After scrutinizing the existing approaches to the study of ICC, the authors synthesized them into a model targeting at promoting individuals’ ability to acknowledge, respect, tolerate, and integrate cultural differences to be qualified for enlightened global citizenship (Chen and Starosta, 1996). This model describes interdependent processes which are based on three, equally important and inseparable pillars (Chen and Starosta, 1996, p. 376): 1) affective intercultural sensitivity, 2) cognitive intercultural awareness, and 3) behavioral intercultural adroitness. The affective facet of intercultural communication competence focuses on individual emotions or the changes in feelings that are originated by certain circumstances, people, and environments. Four personal characteristics contribute to build this structural dimension: positive self-concept, open mindedness, non-judgmentalism, and social relaxation. The cognitive dimension – referred to as intercultural awareness – provides an opportunity to increase an awareness of cultural dynamics, and to distinguish between numerous personalities in order to sustain a certain level of multicultural coexistence. As thoroughly discussed by PRUEGER & ROGERS (1993) this ability is composed of self-awareness and cultural awareness, which on one side facilitates to stay particularly sensitive to the foreign culture’s counterpart and on the other side to understand the conventions of one’s own and foreign cultures to more easily adjust to the foreign cultures (Berger, 1982; Chen, 1995). The behavioral nature of intercultural competence denotes the ability to attain communication and activity goals in intercultural interactions. CHEN & STARTOSA (1996) claim that this involves verbal and nonverbal behaviors such as message skills (language skills and the ability to use it), appropriate self-disclosure (the ability to initiate and terminate the conversation appropriately), behavioral flexibility (the ability to show different kinds of intimate verbal behaviors), interaction management (the ability to speak in turn in conversation and to initiate and terminate the conversation appropriately), empathy, and identity maintenance (to maintain the counterpart’s identity) (Chen and Starosta, 1996, pp. 366–369). Unfortunately, the authors only provided the conceptual and theoretical foundation for their model and neither provided corresponding scales nor empirically tested it. However, a few years later, both authors took the opportunity to develop and assess reliability and validity of a new instrument, the Intercultural Sensitivity Scale (ISS) which represents the affective dimension (Chen and Portalla, 2010, p. 1). To generate the underlying factors of the intercultural sensitivity, the authors performed a factor analysis which leads to five factors’ interaction engagement,

\(^{24}\) Unfortunately, the confirmatory analysis of the model has only resulted in weak scale values (Fritz et al., 2004)
respect for cultural differences, interaction confidence, interaction enjoyment, and interaction attentiveness (Chen and Starosta, 2000, p. 11).

The underlying thesis uses CHEN & STAROSTA’S (1996) model of intercultural competence as its underlying orientation for developing a holistic and multidimensional intercultural competence construct that specifically addresses each of the three main perspectives or dimensions of their model by contributing corresponding matching constructs. Even though CHEN & STAROSTA (1996) have not explicitly influenced SPITZBERG’S (2000) understanding of ICC, the existing parallels of both models are obvious in terms of complexity and necessary skill set. This can be observed within this thesis’ conceptualization of the multidimensional intercultural competence construct.

2.2.3 Theories associated with Intercultural Competences

Nowadays, theories associated with intercultural competences comprise a spectrum of different research efforts and goals. Nevertheless, in accordance with RUBEN (1989) research in this field can be still positioned around following main research objectives: to explain overseas failure, to predict overseas success, to develop selection strategies for the HR department, or to design, implement and test expatriates training and preparation methodologies (Ruben, 1989, p. 230). Furthermore, to answer these main or corresponding questions empirical research in the field of intercultural competences can be categorized into two main fields of theories under which most of the theories in the context of intercultural competences can be assigned to. Reviewing existing literature from a theoretical perspective, one notices that the majority of research studies in this field are associated with the communication approach (see above) and hence, with communication theories which basically focus on the transmission of information between people (Griffin, 2012). Following theories can be considered the most prominent and consistently applied ones:

- **Anxiety/Uncertainty Management Theory** by GUDYKUNST (2005) argues that humans face anxiety and uncertainty when interacting with unfamiliar cultures. In order to succeed and adjust to the foreign culture, individuals need to develop the corresponding competence to deal with their anxiety by means of mindfulness which includes identifying and focusing on the reasons for anxiety (Sinicrope et al., 2007, p. 11).

- **Face-Negotiation Theory** by TING-TOOMEY (1988) argues that individuals of every culture, individualistic or collectivistic, are concerned with the presentation of their face or self-image. This theory focuses on understanding how individuals manage their face in conflict situations, especially during intercultural interactions (Ting-Toomey and Kurogi, 1998).

- **Communication Accommodation Theory** by GALOIS ET AL (1988) focuses on the relation between language, context and identity and states that individuals adjust their communication and behavior to others in interaction situations (Giles, 2008).
- *Coordinated Management Theory* by *PEARCE & CRONEN* (1980) argues that during any interaction individuals construct their personal social reality and take actions based on their understanding of the situation (Pearce and Cronen, 2005).

Besides the dominant stream of communication theories, social theories describe the second prominent stream of theories. Again, while there are many theories associated with it, following theories can be considered the most influential theories in this context:

- *Social Networking Theory* by *GRANOVETTER* (1973) emphasizes that social relationships can be viewed as a network consisting of nodes and ties. Accordingly, social network theory describes a prominent view on social interactions, where the attributes of individuals are not as important as their interactions and ties with other stakeholders within the network (Williams and Durrance, 2008).

- *Social Exchange Theory* by *HOMANS* (1958) shows that in every social interaction individuals will choose their behavior in order to maximize the “likelihood of meeting self-interests in those situations” (Chibucos et al., 2005, p. 137).

- *Social Capital Theory* by *COLEMAN* (1988) delineates social capital as resources that enable individual or collective actions within any social structure (Portes, 1998). It can be thus, regarded as the underlying value of social networks (Souza Briggs, 1997).

- *Cross-Cultural Adaptation Theory* by *KIM* (1995) states that adaptation to a foreign culture is understood as “the process of learning and acquiring the elements of the host culture” (Kim, 1995, p. 175). By emphasizing the importance of being competent in the foreign communication practices, this theory offers a number of variables that predict the degree of adjustment to foreign cultures.

In contrast to most theories both, social networking theory, social exchange theory and social capital theory, focus on the relationship between individuals and not the individual himself. By assuming that intercultural competence enables and consolidates social relationships it features the potential to substantially increase social capital of individuals (Liu, 2005). Table 2-1 provides an overview on the theories and publications associated with intercultural competence research.

Table 2-1: Theories associated with intercultural competences

<table>
<thead>
<tr>
<th>Field of Research</th>
<th>Theories</th>
<th>Publications*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>anxiety/uncertainty management theory</td>
<td>(Gallois, 1988; Lustig, 1993; Luszczynska, 1993; Milhouse, 1993; Ting-Toomey, 1998; Müller, 2001; Roth, 2001; van der Zee, 2000; van Oudenhoven, 2002; Gudykunst, 2005; Pearce, 2005;</td>
</tr>
</tbody>
</table>
CHAPTER 2

2.3 The Consulting Sector

After clarifying the concept of intercultural competence and its composing elements, an investigation of the consulting domain is introduced to provide an understanding of the underlying working approach and environment. Based on a working definition and the emphasis on the degree of problem awareness of clients, insights on consulting typologies and the different roles consultants can take are presented. Subsequently, this chapter exhibits the general consulting process and concludes with a current overview on the consulting domain in Germany.

2.3.1 Characteristics and Definition of Consulting

The ongoing globalization, cross-linking of value chains, accelerated technological development, changed information processes, and new competitors have led to an increased demand of consulting services in order to react faster and more efficiently to the complex international environment (Welsch, 2010). In Germany, the revenue of the consulting industry has exceeded 22.3 billion Euro in 2012 and could register an additional revenue increase by eight percent compared to 2011 which makes the consulting industry the third most increasing industry of the service sector (BDU, 2013, p. 5). Currently, more than 95,000 employees are employed by 15,000 consulting companies whereas the 25 top-selling companies employ approximately 23.3% of all employees (Lippl, 2013, p. 16).

The consulting industry belongs to a special class of services. Services are characterized by the four key characteristics intangibility, inseparability, heterogeneity and perishability (Rathmell, 1966; Zeithaml et al., 1985; Bitner et al., 1993).
While intangibility mainly refers to the fact that services are “activities, benefits or satisfactions” for sale, inseparability reflects the consumption on the point of sale (Regan, 1963). Furthermore, as services are oftentimes provided by different people their degree of quality can be variable and heterogeneous. Finally, perishability claims that services cannot be stored and are thus, “time dependent” (Onkvisit and Shaw, 1991, p. 4). Figure 2-2 shows an overall service typology.

<table>
<thead>
<tr>
<th>Degree of Labor Interaction and Customization</th>
<th>Service Shops</th>
<th>Professional Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>• Hospitals</td>
<td>• Consulting</td>
</tr>
<tr>
<td></td>
<td>• Auto repair</td>
<td>• Banking</td>
</tr>
<tr>
<td></td>
<td>• Other repair services</td>
<td>• Management training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Legal services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• etc..</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree of Labor Interaction and Customization</th>
<th>Service Factory</th>
<th>Mass Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>• Airlines</td>
<td>• Retailing</td>
</tr>
<tr>
<td></td>
<td>• Trucking</td>
<td>• Wholesaling</td>
</tr>
<tr>
<td></td>
<td>• Hotels</td>
<td>• Schools</td>
</tr>
<tr>
<td></td>
<td>• Resorts and recreation</td>
<td>• Retail aspects of commercial banks</td>
</tr>
</tbody>
</table>

| Degree of Labor Intensity | Low | High |

Figure 2-2: Service typologies (Schmenner, 1986, p. 25)

Following STRAMBACH (2001) the consulting industry belongs to one of the sectors of the Knowledge-Intensive Business Services (KIBS). In general, KIBS are predominantly characterized by offering knowledge-intensive contributions for other organization’s processes which involves both the public and private sector (Muller and Doloreux, 2007). While the term KIBS has been introduced by MILES et al. (1995) in the first place, BETTENCOURT ET AL. (2002) define KIBS as: “enterprises whose primary value-added activities consist of the accumulation, creation, or dissemination of knowledge for the purpose of developing a customized service or product solution to satisfy the client’s needs” (Bettencourt et al., 2002, pp. 100–101). KIBS are either primary producers of professional knowledge or use this knowledge or information to generate transitional services for their clients (Miles et al., p. 18). In both cases, the business model

---

25 See also DOLOREUX & SHEARMUR (2013)
of KIBS is always dependent on specialized services that are built on traditional professional knowledge (related to the business and management industry, legal accounting and activities, market research, etc.) or technology based knowledge (related to IT domain, engineering etc.) where the human capital plays the decisive role (Alvesson, 1995; Miles, 2005; Nüttgens and Blinn, 2009).

In close relation to a knowledge-intensive categorization, the consulting industry has been also liked to another popular service typology which refers to it as part of the professional services (Grewe, 2008). According to FITZGERALD & MOON (1996) professional services are distinct from mass services (e.g. retailing), service shops (e.g. hospitals) or service factories (e.g. airlines) by three criteria: the high knowledge and workforce-intensity, the strong focus on processes of the service provision and the customer-orientation. As the human workforce constitutes the main pillar of the service provision, the situation and customer-specific professional service process is highly characterized by subjectivity and intangibility (Grewe, 2008, p. 22). Over the years, literature has established three main characteristics of professional services (Ringsletter et al., 2007): First, they are generally highly complex and individual services, which impose special requirements on the abilities and competences of the workforce such as the problem-solving competence (Maister, 1997). Another key characteristic is the ability to interact with the customer during the entire service provision process. As professional services display a high information asymmetry between service provider and customer, professionals need to be able to effectively transfer their knowledge or exchange knowledge (Lorsch and Tierney, 2002). Finally, professional service firms need to reduce the uncertainty concerning the service provision on customer side. Due to the necessary advancement in professional knowledge towards the clients, reputation has been established as a valuable quality indicator and characterizing pillar of professional service firms (Büschen, 1999).

With respect to the consulting industry, a clear categorization can only hardly be provided as there are many overlappings of the various consulting segments. In Germany, one of the most popular consulting typologies has been provided by the Bundesverband Deutscher Unternehmensberater (BDU), the professional association of consultants in Germany. According to the BDU (2013) the consulting industry consists of strategy consulting, organizational and process consulting, IT-Consulting and Human Resource Consulting. While each of the segments is further detailed based on fields of activities, the IT-Consulting sector remains general and involves any consulting related to IT. However, oftentimes literature only distinguishes between strategic and functional consulting (Peterson, 2001, pp. 40–41). While strategic consulting is characterized by unstructured problems and high requirements on innovative solutions contracted by the management of the customer, functional consulting are

---

26 SCOTT (1998) provides a comprehensive infrastructure of the various professional service firms. Next to the entire consulting industry and its subcategories, he also lists audit, accounting and tax advisory, legal and engineering services, banking industry, management training and market research (Scott, 1998, pp. 9–14).
rather denoted by specific problems of a certain department or business unit (Peterson, 2001, pp. 44–48). This general classification is a first reference point among a few prominent structuring approaches in literature. By using a more functional typology STREICHER & LÜNENDOK (2000) differentiate between organization and leadership consulting, “classic” management consulting, logistics consulting, marketing consulting, finance consulting, technology consulting as well as education and training (Streicher and Lüendonk, 2000). Over the past years FINK & KNOBLACH (2003) introduced a market-oriented classification which is most commonly used in consulting literature (see figure 2-3):

![Consulting Typology Diagram](image)

**Figure 2-3: Consulting typology (Fink and Knoblach, 2003, p. 7)**

Under the IT-Consulting sector the authors comprise consulting services around the planning, development, implementation and operation of IT software and systems (see Ch.2.3.3). Management-Consulting supports the management of an organization with strategic and organizational issues and with realizing change management processes. Under Human Resource Consulting FINK & KNOBLACH (2003) understand HR related topics like acquisition of workforce, outplacement, wage and contracting design, staff development etc.

Based on the theoretical insights of the consulting industry and its service classification, following understanding of the term is in accordance to ENKE & GRESCHUMA (2005): “Consulting describes a temporarily, individually, and intensively provided service by one or several qualified, external consultants. Main goal is to support other companies in identifying and solving a business related problem and if necessary to supervise permanent processes of change” (Enke, 2005, p. 8).

### 2.3.2 The Roles of Consultants and the Consulting Process

Literature on consulting research offers a broad spectrum for consultant roles that primarily indicate to what degree a consultant can influence the solution of

---

27 Wickham & Wickham (2008) present details on the tools and processes involved with management consulting

28 See also a more detailed elaboration on this topic by Heidelberger & Kornherr (2014)
a problem (Läubli et al., 1985; Elfgen and Klaile, 1987; Carqueville and Hofmann, 1991; Strasser, 1993; Clark, 1995). The probably most cited consultant classification has been suggested by WOHLGEMUTH (1991) and has been further developed by LIPPIT & LIPPIT (1999) in which the authors distinguish clearly between different roles of consultants that are portrayed based on leadership initiative or influence on problem solving along a scale from directive to non-directive (Wohlgemuth, 1991; Lippitt and Lippitt, 1999)(see figure 2-4).

<table>
<thead>
<tr>
<th>Crisis Manager</th>
<th>Problem Solver</th>
<th>Promoter</th>
<th>Process Consultant</th>
<th>Neutral Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>The consultant takes the role of a “trouble shooter” in an organization. He holds a high decision-making power and is supposed to solve the problem quickly. The client obtains a passive role.</td>
<td>The consultant develops proposals for a solution based on comprehensive analysis. There is only little communication between the client and consultant.</td>
<td>The consultant actively supports the problem finding process. Goals are provided by the client, whereas the consultant further supports the problem-solving process. The consultant depends on the client.</td>
<td>The consultant provides the necessary methods to solve the problem. The consultant is a process specialist and is not directly responsible for solving the problem.</td>
<td>The consultant supports by asking specific questions. The consultant takes a stand with respect to the content. By searching for the answers, the client will find a solution himself.</td>
</tr>
</tbody>
</table>

Figure 2-4: Roles of consultants (Wohlgemuth, 1991)

The authors provide a classification that is especially useful to show the knowledge and experience intensity of the consultant and thus, the competence development of a consultant during the consulting process. While taking the lead of the entire consulting process, the consultant occupies a directive role in the observation of the particular circumstances of an organization and a non-directive role by providing first suggestions. LIPPITTS & LIPPITTS (1999) typology not only shows the decreasing influence of the consultant on the problem-solving process on one side but also illustrates the increasing problem awareness by the client peaking when the consultant takes the role as a neutral third. The employment of different roles of consultants within a consulting process remains situational and requires flexibility and adjustability by the consultant (Zander, 1975). Indeed, the types of roles are not mutually exclusive and don’t represent separate modes of behavior. Contingent on the respective phase of the consulting process, each role can be differently utilized and captured by different consultants (Elfgen and Klaile, 1987, p. 38). To capture a certain role is always influenced by the consultant and his education as well as experience from previous consulting assignments. Especially at larger projects a hierarchical differentiation between roles of consultant is made in which the higher hierarchies capture the directive and controlling positions and the other consultants take the non-directive roles (Lippitt and Lippitt, 1999). The latter are of particular interest for the underlying thesis and the empirical quantitative study later on. Indeed, for a highly technical domain such as IT-Infrastructure (see Ch.3.2.1) these consultants are widely characterized by their technical rather than their intercultural competences. Even though consultants need to have a clear conceptual and operational understanding of their role as a consultant, the process steps of con-
sulting are eventually where the competencies of a consultant are needed (Kurpius et al., 1993, p. 601). Therefore, in the following the phases and the associated activities are presented. Since there are many professional types of consultants with substantially different work focus, each step of a consulting process is usually designed towards the client (Köppen, 2000). Nevertheless, several main activities can be summarized to an ideal type of consulting process consisting of phases which can overlap, fluently transition, mutually (Kubr, 2002, p. 22). In the following the modified consulting process based on Szyperski & Klaile (1982) is presented as it describes a general and most of the time applicable description on one side and suitable references to intercultural project settings on the other side.

The Entry
Signing a consulting contract requires the client to recognize the need and benefit of employing a consultant in the first place (Köppen, 2000, p. 91). Afterwards, regardless of the initial contact between client and consultant, the entry stage usually involves a first problem exploration, an assignment proposal, and subsequent contracting (Kubr, 2002, p. 2). Usually the client communicates a problem to discuss for which he already knows or at least is aware of and might have even applied a solution for (Kurpius et al., 1993, p. 602). In this context, the client provides detailed information on his view and stage of the problem as well as his failed interventions, in turn the consultant delineates his conceptualization of consulting, i.e., the resources, technical tools, models, methods, and theories to draw on, and how he might proceed to offer a first problem diagnosis, which often requires extensive inquiry into the problem and relevant intercultural competences in an international project setting (Hafner and Reineke, 1992, p. 43). Since the situation and circumstances can quickly change, this planning requires flexibility of the consultants to allow the adjustment and detailing for certain tasks later on. Due to their greater experience and understanding of the consulting practice, consultants of higher hierarchy such as managers or partners are primarily employed at this initial stage. While consultants generally need to be competent in multiple fields exhibiting unusual insights, special knowledge and skills, it appears to be of crucial meaning to possess a high level of social-communicative competences or corresponding intercultural competences at the entry stage to successfully reach a mutually satisfying agreement (Forster, 2000, p. 23).

Diagnosis and Action Planning
The subsequent elaboration of a detailed problem-solving concept begins with the gathering process of high quality data to clearly define the problem (Kratochwill and Bergan, 1990; Köppen, 2000). Therefore, valid and reliable data is needed, whereas client and consultant usually share the responsibility of gathering, analyzing, and synthesizing the data (Kurpius et al., 1993, p. 603). One important aspect is that the consultant needs to identify and interpret existing implicit and explicit knowledge of the client’s organization (Sommerlatte, 2000, p. 121). By that, a detailed understanding of the problem can be developed that includes a comprehensive problem diagnosis in contrast to a first problem assessment at the entry stage. Once the problem is defined, a solution or approach can be prepared to efficiently solve the problem. McClelland (1989)
emphasizes that one of the main reasons for interventions to fail are misunderstandings the client and the problem environment (McClelland et al., 1989, pp. 695–698). It becomes clear, that especially in an intercultural project setting the gathering of requirements is strongly dependent on an in-depth exchange of both parties which requires the availability of a consultant’s intercultural competencies to deliver expected results from the client (Kurpius et al., 1993, p. 604).

**Implementation**

Depending on the contract and type of consulting project, the implementation phase either depicts a major part of the consulting contract or is pursued by the client if he possesses the necessary competence set for implementation (Hafner and Reineke, 1992). Consulting projects that mainly require technical interventions such as IT-Infrastructure projects belong to the first category of implementation-focused consulting services in which the technical competences and corresponding know-how of these consultants claim the main employment factor from a client’s perspective. Therefore, consultants usually implement the chosen solution approach by following a separate intervention project plan and strategy (Kubr, 2002). However, unexpected new problems and obstacles may occur and even wrong assumptions or planning mistakes may be revealed which require an interaction with the client and again corresponding intercultural competences in an international project setting (Kurpius et al., 1993, p. 605).

To conclude, the eventual realization of the consulting process depends on many influencing factors such as the problem awareness of the client, role of the consultant and client, consulting conceptualization, industrial sector of the client’s organization, political, cultural, and economic environment (Althaus, 1994, pp. 55–59).

**2.3.3 IT-Consulting Industry**

The underlying thesis focuses on the analysis of intercultural competences on one side and technical competences of IT-Infrastructure consultants on the other side. Therefore, the IT-Consulting industry and in particular IT-Infrastructure consulting are obviously of particular interest. The IT industry has changed over the past decades by not only becoming a global field but also developing from a cost factor to a complex value adding factor which nowadays most companies are heavily emphasizing on (Boes et al., 2011). Therefore, there is a steadily increasing demand for addressing a variety of problems and needs in the IT domain which requires highly competent consultants (Nissen and Kinne, 2008). Nowadays IT-Consulting represents the second most required service after software development in the IT industry (Kempf, 2011).

According to literature and common practice, the IT-Consulting industry can be overall categorized into two main fields: “run the business” and “change the business” services (Drews, 2012, p. 360; Lünendonk, 2013a, p. 5). The first category, “run the business” services, focuses primarily on the operation and advancement of the IT-Infrastructure and application domain of an organization and is commonly labeled as “IT-Consulting and System Integration” by practitioners (Lünendonk, 2013a, pp. 51–52). Figure 2-5 portrays the service spectrum
of this market sector and the basic average as well as the weighted average of sales of the respective activities in Germany in 2012.

It clearly displays that the core topics of this first IT-Consulting category account for 77.2% of the overall sales volume, where classic “IT-Consulting” services – that is mainly requirement analysis, conceptual development, and adjustment of standard software – obviously has the highest share with 26.5%, followed by “individual software development” with 14.0%, and “system integration” – which is mainly focusing on Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems – with 12.3% in stake. In the last few years, however, customers asked more and more for bundled services from one IT-Consulting company offering holistic services from “management consulting”, via “classic IT-Consulting” to “outsourcing” services (Accenture, 2010, p. 2). As a consequence, it becomes often difficult to distinguish these mostly large companies from traditional non IT-related management consulting companies (Deelmann, 2006, p. 41).

Figure 2-6 shows the second IT-Consulting category, “change the business” services, which is primarily concerned with adjusting, accelerating, or updating business processes to challenges of internationalization, new product lines and sales channels, or to the utilization of modern technologies like social media, business analytics, or cloud (Lünendonk, 2013a, p. 53). Business practice commonly uses the term “IT-Service” instead to refer to the associated activities
which typically require the implementation of IT-Consulting methods\(^ {29}\), Best Practices, as well as the selection and implementation of modern IT technologies and applications (Drews, 2012, p. 360).

**Figure 2-6: Service spectrum of IT-Service** (Lünendonk, 2013a, p. 52)

\(^{29}\) IT-Consulting methods can be assigned to three main classes: 1) Topic specific includes methods and frameworks such as business process modelling, ITIL, or Cobit; 2) Soft Skills refers to moderation techniques, conducting negotiations, or interview techniques; 3) Specific IT-Consulting methods only developed for the IT-Consulting domain such as Enterprise Architecture Management (EAM) methods, agile methods, Application Lifecycle Management (ALM) methods and so on (Drews, 2013).
Furthermore, the IT-Service market sector also addresses the maintenance and improvement of IT applications and systems, which are supporting the operative business, by early identifying errors in the IT processes or stopping dysfunctions once the user has reported them (Pelkmann, 2011). While some IT-Consultants have specialized at either providing pure consulting and transformation projects (IT-Consulting and System Integration) or operation efficiency (IT-Service), others offer a broad portfolio of management and IT-Consulting, system development and implementation, up to data warehouse operation. Figure 2-6 shows that the core topics of the IT-Service industry (Managed Services, Outsourcing, Desktop Management/Client Management, Telecommunication Services and Business Process Optimization), namely IT operating services, account for 48% of the sales volume. Classic implementation tasks such as “individual software development”, “standard software development”, and “system integration” accumulate approximately 27% of overall sales and indicate that many IT-Service companies not solely focus on the operation efficiency of the IT domain but also diversify their business focus by integrating IT-Consulting and System Integration services into their portfolio as well (Frontrage, 2013). Compared with the average sales, the weighted average of sales reveals a significant difference of “IT-Infrastructure outsourcing”, “telecommunication services”, “system integration”, and “desktop management” at larger organizations, due to the fact that these type of services hold a high contract volume and are contracted over longer periods of time.

In any case, the IT-Consulting industry is expected to continuously grow in Germany within the next five years (CIO, 2013). While the IT-Consulting and System Integration market will presumably display an average annual growth rate of almost 5% and an increase of its annual sales by 7,5%, the IT-Service industry is expected to have a market growth of 3,4% and an increase of sales by 5,4% (Lünendonk, 2013a). These positive expectations are driven by key factors, mostly embedded in the field of IT-Infrastructure, leading to a rising demand for particular services from different industries (Lünendonk, 2012). Not surprisingly, one of the main drivers is growth and expansion efforts of companies, in which the establishment of new subsidiaries, production plants, or sales offices requires a comprehensive IT system landscape and its connection to the business processes (Gens, 2013). As a consequence, in the intermediate future market experts anticipate the increasing need for the development and implementation of IT-Infrastructure services (see Ch.2.4) and the allocation of experts. They also understand the need for supporting the implementation of user-optimized applications. Furthermore, the reduction of cost can be regarded as the second main driver (Lünendonk, 2012). Among the various available services to reduce costs in an organization, the business processes optimization is among the most important tools for the IT-Consulting industry (Accenture, 2012; Lünendonk, 2012). In today’s enterprises IT-Infrastructure plays a key role in supporting core business processes and therefore, is at the heart of any improvement effort (Grover et al., 1993b). Here, the standardization and consolidation of the IT landscape is considered to have a key optimization potential (Butters, 2005, p. 2). Corporate decision makers have recognized the massive saving potential and strategic advantage that organization-wide centralized IT services and standardized IT-Infrastructure can achieve under appropriate circumstances (Hurd, 2008).
The demand for IT-Consulting and IT-Service will be increasing in the next few years as the role of IT will become even more important than it currently is (Gartner, 2013a). Changed business models and international expansion will require the IT connection of new locations of business and cooperation partners to the business processes of an organization (Capgemini, 2013). Furthermore, efficiency efforts such as business process optimization, standardization, consolidation, and virtualization will accelerate IT processes and reduce operation costs leading to an increase of IT projects. IT-Consulting companies continue to highly benefit from these developments as organizations will outsource a significant part of the IT projects to consulting companies in order to guarantee the implementation success on one side and to bring in technological innovations on the other side (EITO, 2013, pp. 2–5). Among the various challenges for organizations in the near future, the broad field of IT-Infrastructure and all potential issues around will be of major interest as the aforementioned areas have shown (BDU, 2013). Therefore, to expediently narrow down the research focus, this thesis concentrates on analyzing this particular technical area in the following. Since the complexity of IT projects increases involving not only pure IT content but also organization specific processes especially in an international context, IT-Consulting companies are expected to offer a comprehensive set of competences which goes beyond pure technical competence and includes social competences such as intercultural competences as well (Boes et al., 2011). This thesis brings the two fields of IT-Infrastructure competences and intercultural competences together to eventually analyze the influence and interaction of both within one structural framework.

2.3.4 Theories associated with Consulting

Despite the great importance of the consulting industry the research and education community has just slowly started to deal with this field since the last decade (Ringlstetter et al., 2004). Consulting practice rather influences research (Shugan, 2004, p. 174). Moreover, the majority of research publications on consulting usually addresses large strategy or organizational consulting companies and displays a lack of research insights on the field of IT-Consulting and HR-Consulting as well as on small and medium-sized consulting companies (Nissen, 2007, p. 11). At the same time however, more than 50% of consulting turnover is allotted to both consulting service domains as well as the small and medium-sized consulting companies (BDU, 2013). WOLF (2000) has intensively argued for a stronger theoretical foundation of the consulting business. Continuous academic assistance can revise the fundamental misperceptions (e.g. the independence of consultants) and gaps of consulting in practice and avoids a potential crisis of the consulting industry. As a matter of fact, most of the authors rather focus on the different forms of the consulting process, the problems of the cooperation between client and consulting company and on developing guidelines for consultants (Fink and Knoblach, 2003). However, besides these practice-oriented publications consulting research represents a particular stream of research. “Consulting Research delineates the academic engagement with the consulting service industry and all associated market partners (Nissen, 2007, p. 13). “Consulting research is supposed to be aiming at producing true knowledge whereas consulting practice is supposed to bring this knowledge to
application" (Niehaves and Becker, 2006, p. 9). By that, it can be considered as an academic conception of the consulting industry. In addition to the consulting research, literature also distinguishes between two other managerial consulting conceptions: the entrepreneurial and the problem-solving perspective (see figure 2-7).

![Managerial Conceptions Of Consulting](image)

According to NISSEN (2007) the entrepreneurial perspective represents the management view on the consulting company and primarily focuses on successfully dealing with entrepreneurial topics like recruitment or strategic planning, making profit and ensuring the long-term economic survival of the company. In the context of the problem-solving perspective the consulting company develops appropriate solution approaches based on individual customer problems (Nissen, 2007, p. 14). In the following the most applied research approaches and theoretical conceptions with respect to the consulting industry are presented. FINK & KNOBLACH (2003) refer to these as "consulting schools" which are based on fundamental theories and are characterized by different consulting foci and methods (Fink and Knoblach, 2003).

Consulting approaches that are based upon systems theory are known as systemic consulting. According to LUHMANN (1987), organizations are understood as social autopoietic systems which are "recursively closed" and hence, self-regulated. As a consequence, a direct, goal-oriented and external manipulation is not or only limitedly possible. WIMMER (1995) emphasizes three related goals of systemic consulting companies (Wimmer, 2003, pp. 86–87):

- Supporting the client to generate an appropriate view on its underlying problem to maintain the chances of economic survival

---

30 See also BERGHAUS (2003) who elaborates more on the topic of autopoiesis of the systems theory.
• Based on a modified problem view to stimulate the development of various approaches in dealing with the problem
• Encouraging an intra-organizational process which mobilizes the system potential to deal with the problem and to increase the customer's capacity to solve the problem

The consultant is understood as an observer of the client’s system who attempts to understand the meaning of the observable structures and processes on one side as well as the central norms and values on the other side (Elfgen and Klaile, 1987, p. 273). Thus, consulting from a systems theory perspective is based on mutual communication between both, the consulting system and client system, to initiate self-reflection of the client and eventually leads to a change of the client system.

The new institutional economics comprises several theories but mainly accounts for the principal-agent theory, transaction theory and property-rights theory. It assumes imperfect markets in which participants have imperfect information and generally act opportunistic by taking advantage of existing information asymmetries (Klaas, 1995). As a consequence, transaction costs emerge. From a new institutional economics perspective the consulting company represents the agent while the client is considered as a principal. Due to the underlying market assumptions vast transaction costs associated with initiation, negotiations, controlling and adjustment of the contractual relationship between both parties emerge. To overcome and explain information asymmetries the new institutional economics develops efficient institutional arrangements and concepts. By that transaction costs can be significantly lowered by means of institutions such as contract regulations, communications policy or dynamic contract management (Nissen, 2007, p. 23).

Despite its inconsistent understanding in management literature, procurement theory is another important research theory associated with consulting research. Main aim of the procurement theory is to provide reference and descriptive models for explaining and designing activities associated with the provision of materials, especially to develop and analyze procedures for the requirements, order and time planning (Melzer-Riding, 2008, pp. 16–18). From a procurement theory perspective consulting services are considered as premium capital investments (Nissen, 2007, p. 23). In contrast to other goods the procurement process of consulting services goes beyond the selection of an appropriate transaction partner since the interactive service provision usually involves several individuals of the client and the consulting company (Kissling, 1999). Moreover, the procurement situation (e.g. perceived risk) and the organization-related context factors (e.g. size of the client’s company) impact the transaction behavior during the different process phases. A procurement per-

31 See also EBERS & GOSCH (2002) who extensively elaborate on the main theories of the new institutional economics
32 See also MELZER-RIDINGER (2004) on procurement management and theory.
spective can provide implications for customer relationship of consulting companies or the project management during the consulting process. Many sociological theories have already been applied to consulting services. The sociological research is characterized by its focus on values, norms and social relationships in the context of individual decisions. The latter are not rationally made but are based on experiences and internalized behavior patterns (Nissen, 2007, pp. 26–27). Armbrüster et al. (2001) examine consulting from the sociological perspective of embeddedness. The embeddedness approach understands the importance of social networks on the actions of individuals and larger economic units (Granovetter, 1985). Consulting is particularly characterized by its associated uncertainty. Trust in the market system and in the institutions of the consulting market is considerably low among the market participants. Thus, informal social institutions (e.g., previous experiences with the transaction partner or truthful recommendations from friends and family) have a great impact on diminishing the uncertainty (Barchewitz and Armbrüster, 2004, pp. 50–52). According to Nissen (2007) the success of a consulting company depends mainly on its ability to establish, maintain and take advantage of a social relationship with the client organization (Nissen, 2007, p. 26). The embeddedness approach has great explication and design potential for the consulting marketing, customer-relationship management and selection of the consultant.

The resource-based view (RBV) takes a fairly different approach and argues that profitability differences between organizations are based on their availability of strategic relevant resources which facilitate long-term competitive advantage (Salancik and Pfeffer, 1978; Barney, 1991, pp. 102–105). These resources are either physical or immaterial assets like knowledge and capabilities. The resource-based view can generate valuable research insights for the consulting industry especially in following fields:

- Development of unique selling propositions (USP) of the consulting companies for competition (Nissen, 2007, p. 25). The USP for consulting companies refers to the competences of the consultants as their major asset.
- Strategic planning for the consulting companies (Binnewies, 2002)
- Knowledge management, designing the conditions for individual and organizational learning in consulting companies (Peterson, 2001)

To conclude, despite its upward tendency research in the field of consulting is still scarce displaying little importance to consulting practice (Nissen, 2007, p. 31). The underlying thesis uses the RBV as its guiding approach to the consulting industry. By developing and examining relevant competences for the IT-Infrastructure consulting industry, an in-depth understanding for the USP of this highly important domain is developed which eventually have a great impact for practice.

This chapter presented theoretical insights to the field of the consulting industry, especially to the characteristics of the IT-Consulting industry in Germany, and provided an overview on the classification of the consulting industry as well as on the consulting process and the most prominent theories involved. The fol-
lowing chapter focuses on the IT-Infrastructure in particular and starts with deriving a theoretically sound working definition of this field one side and subsequently presents the main IT-Infrastructure models on the other side to conclude again with an examination on the theories associated with this field.

2.4 The IT-Infrastructure

The field of IT-Infrastructure (ITI) is of major interest for the IT-Consulting industry and all companies in general (Hughes and Kaplan, 2009). In addition to the constantly increasing interest for ITI by practitioners, there is a multitude of research studies focusing on this particular field. BROADBENT & WEIL (1997) have already clearly exhibited in the past the growing percentage rate of organization's IT budget for ITI and have emphasized the high-level potential of ITI for achieving competitive advantage and higher return on investment (Broadbent and Weil, 1997). Despite the fact, that research on ITI exists for decades, no systematically derived definition based on various sources and insights is available. In the following chapter 2.4.1 a methodologically sound definition of ITI is presented to provide an understanding on the main characteristics of it. In addition, the most prominent and influential ITI models are presented (see Ch.2.4.2) which reveal the different layers and parts of an ITI before the main theories associated with ITI are presented (see Ch.2.4.3).

2.4.1 Derivation of an IT-Infrastructure Definition

The domain of ITI has been most extensively studied in the early 1990s (McKay and Brockway, 1989; Weill, 1993; Davenport and Linder, 1994). Although there were substantial technical and organizational developments that have influenced the operation of and view on ITI, the underlying foundation of ITI has not changed since then (Abareshi and Molla, 2011).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Authors</th>
</tr>
</thead>
</table>
Characteristics | Authors
--- | ---
Enables the planning and adjusting of business processes and supports the materialization of new organizational forms | (Neo, 1991; Grover, 1993; Caron, 1994; Furey, 1994; Saaksjarvi, 2000; Evaristo, 2002; Shang, 2002; Shaw, 2002; Mooney, 2003; Venkitachalam, 2004; Zhu, 2004; Mitra, 2005; Whitney, 2005; Aubert, 2007; Barczak, 2007; Park, 2007; Morrill, 2008; Zhang, 2008; Pollard, 2009; Rodero-Merino, 2010; Sandberg, 2010; Kim, 2011; Lu, 2011; Wetzstein, 2011)

A flexible ITI enables competitive edge of an organization by facilitating fast and efficient adjustments of technologies and applications. | (Keen, 1995; Barney, 1991; Boynton, 1993; Davenport, 1994; Duncan, 1995; Broadbent, 1996; Hanseth, 1996; Byrd, 2000; Kayworth, 2000; Kayworth, 2006; Bhatt, 2003; Chung, 2003; Tallon, 2003; Chanopas, 2006; Fink, 2009; Masrek, 2009; Zhang, 2009; Bhatt, 2010; Bush, 2010)

After reviewing the literature, many of the leading researchers and practitioners agree with a set of common characteristics about ITI. Based on a systematic review of the ITI literature (see App.C) that were published between January 1980 and July 2013, four key characteristics which emphasize the importance of ITI for any organization, could be detected (see table 2-2). Despite the fact that publication in this field can be assigned to at least one of these four key characteristics of ITI, there is no widely accepted definition for ITI. At the beginning of the IT era, the ITI of organizations were not complex, which lead to a rather narrow, technical understanding of it referring to the centralized computing equipment (Renkema, 1995, p. 5). From this technical perspective an ITI is often described as to include all facilitative resources in the technology area, usually organized in a single centralized department of an organization (Renkema, 1994). Within the second version of the Information Technology Infrastructure Library (ITIL) the ITI is claimed as the entire hardware, software, networks, facilities, etc. that are necessary to develop, deliver, monitor, control, or support IT-Services in an organization which doesn’t involve any personnel, processes, and documentation (ITIL, 2011). KETTINGER ET AL. (1994) simply referred to it as the technological infrastructure (Kettinger et al., 1994). And while ROCKART ET AL. (1996) delineate the technical infrastructure as the interconnection of telecommunications, computers, software, and data which enables the rapid and effortless flow of information in order to guarantee continuing business processes, other researchers depict it as an organization’s “institutionalized IT practice”, the constant IT basis on which the particular “business activities and computer applications are built on” (Grover et al., 1993a; Byrd and Turner, 2000, p. 169). The latter explicitly takes internal and external technical rules as well as policies into account which can provide a basis for innovations in business strategies and value chain activities on one

---

33 This time period was chosen to ensure that all relevant publications in the past are detected.
CHAPTER 2

hand (Davenport and Linder, 1994) and present a safety measure from the arbitrary implementation of non-compatible technologies in an organization on the other hand (Duncan, 1995). A comprehensive definition for the technical perspective on ITI was presented by Lewis & Byrd (2003) who define ITI as: “The organized, shared IT resources of hardware, software, communication technologies, data, core applications, and practices that provide a unique technological foundation (1) for widespread communications interchanges across an organization, (2) for the design, development, implementation, maintenance, and management of present and future business application, and (3) to support innovation within the organization” (Lewis and Byrd, 2003, p. 94).

However, many other researchers did not agree with a sole focus on the technical components and extended the definition of ITI over time. A second component was included, namely organizational infrastructure, which takes effective IT resource planning and management factors into account that could possibly influence the design and capabilities of the ITI (Duncan, 1995, p. 39). Duncan (1995) claims that this second component involves three critical factors: “(1) the alignment of IS plan to business goals, (2) IT plans or architecture, and (3) the skills of all personnel involved in IT resource management” (Duncan, 1995, p. 40). The alignment is understood as a key factor for ITI efficacy. In this sense, aligning business and technology planning could assist IT responsible in supporting with the implementation of an organization’s strategy. Architecture as the second factor has been delineated as the core of an organization’s IT-Strategy (Hsing and Souza, 2012). The architecture is considered to be the structural design of an organization, which involves "a generic logical description for the information requirements of an organization" and an "in-depth plan that merges business stream, technology, process and personnel into one consistent entity" (Duncan, 1995, p. 41). While it is often referred to as “enterprise model” (Niederman et al., 1991, p. 479), it represents an outline for analysis, planning, design and implementation of an ITI to best possibly meet the strategic technological objectives of an organization (Earl, 1989). The development process of architecture usually leads to standards and policies for IT-Management, which eventually documents the knowledge of the responsible experts. The planning of IT resources, their alignment with organizational objectives and the development of corresponding standards and policies require a certain skill set from people involved in it. It includes expert knowledge of an organization’s IT resources and other supplementing technologies, available or expected, in developing and implementing IT applications and the ITI (Duncan, 1995: Byrd and Turner, 2000). Byrd & Turner (2000) simply refer to this third factor as human infrastructure (Byrd and Turner, 2000, p. 168). Several approaches refrain from a pure technical focus as well by defining ITI in terms of IT-Services that are allocated for the organization and merge into the technical components (Broadbent and Butler, 1997; Byrd and Turner, 2000; Weill et al., 2002a). According to Weill et al. (2002) this particular idea materialized after a comprehensive qualitative study with business managers revealed the issues with determining the value of components but rather emphasized the service behind (Weill et al., 2002b). Since services can be accurately “defined, measured and controlled in a service level agreement (SLA)” (Mayerl et al., 2005, p. 273), managers felt more comfortable with it which also made it
easier for them to make comparisons to other products in the market (Weill et al., 2002a, p. 3). The increasing expansion of ITI within an organization makes it additionally difficult to clearly define it. Following definition is based on Byrd & Turner (2002) but has also been complemented by ideas from Duncan (1995), Broadbent et al. (1999), Weill et al. (2002), and Krcmar (2005) to display not only the technical infrastructure with its corresponding IT-Services, but also takes the organizational infrastructure and the impact on business benefits into account:

*IT-Infrastructure is consisting of a technical physical base of all technologies and software that are utilized for processing, storage, and communication of business process information across the entire organization and a human component of skills, expertise, competencies, commitments, values, norms, and knowledge which are necessary for the development and utilization of the technical infrastructure. Together, both components create IT-Services that are, primarily allocated for members of an organization, typically unique to an organization, and are designed to support business effectiveness and efficiency.*

### 2.4.2 IT-Infrastructure Models

According to Achinstein (1965) a theoretical model delineates “a type of object or system by attributing to it what is generally referred to as inner structure, composition, or mechanism, reference to which will explain various properties exhibited by that object or system” (Achinstein, 1965, p. 104). Within the last decades researchers and practitioners in the field of IT have developed several, albeit not numerous, models of ITI to describe the main layers and corresponding parts as well as the relations between these parts while skipping irrelevant parts and connections (Shoemaker et al., 2004, p. 111). By that, scholars were aiming at simplifying the underlying research field and supporting the theory building and advancement. After comprehensively reviewing the field, ITI models can be generally divided into traditional ITI models, based on findings of the most influencing researchers in this field in the early years, and service-oriented ITI models which are developed based on the adoption of service-oriented architecture (SOA) in organizations.

**Traditional ITI Models**

The first traditional ITI model was developed by McKay & Brockaway (1989). The authors simply delineated ITI as the shared information technologies required to conduct business and accordingly developed a three layer model that consists of a bottom layer (layer 1), the *Information Technology Components*, a middle layer (layer 2), the *Human Information Technology Infrastructure*, and a top layer (layer 3), known as the *Shared Information Technology Services* (McKay and Brockway, 1989). Since then this model has been adopted by most research protagonists who have also recurrently, albeit not extensively, extended the model by adding new elements and concepts to this ITI foundation. Weill & Broadbent (1998) were among these scholars, who introduced today’s most widely established and utilized ITI model in the field of IT and IS. By including a fourth layer, the *Shared and Standard Applications*, the authors developed a general ITI model which matches any business aim to connect different units of an organization and to “link to suppliers, customers, and allies”
Figure 2-8: Structure of ITI (Weill and Broadbent, 1998)

It is often stated that the effectiveness of these human “tools” impacts the way IT is converted into productive outcome (Byrd and Turner, 2000, p. 170). Indeed, they are used to attach IT components into reliable services, which are services business people are able to understand (Weill and Vitale, 2002, p. 19). The Shared Information Technology Services layer takes into account that the entire infrastructure can be understood as services that users can share, use, and understands for their day to day activities in an organization. For instance, users can utilize channel management services to connect with customers or partners or data management services to manage any kind of data. This service understanding of ITI allows for a proper interaction between business and technology representatives of an organization (Weill and Vitale, 2002, p. 19). The top layer of the ITI, Shared and Standard Applications, describes stable applications that change less regularly such as HRM, budgeting, and accounting. Large organizations usually attempt to standardize their common business processes and the associated IT applications mostly in order to improve or reengineer their business processes or implement Enterprise Resource Planning (ERP) systems (Weill and Broadbent, 1998, p. 86). Therefore, shared and standard applications have been added to a traditional ITI. WEILL & VITALE (2002) mention Citibank Group as an example, which introduced a standardization of their en-
tire credit card process applications in Asia to provide these applications to more than 20 countries. This lead to a stable and overall credit card application processing within the infrastructure of the company which significantly reduced costs and enabled future applications to use these applications as a base for rapid access to the market (Weill and Vitale, 2002, p. 20). Figure 2-8 also displays the Local Applications on top of the ITI, which refers to only particular local business process and delineates fast changing business applications that draw on the ITI such as any support systems for customers, financial reporting, or order processing (Weill and Vitale, 2002, p. 21).

In fact, this illustration of an ITI on a local level can be obviously extended to a broader level. Since many organizations conduct business across multiple businesses or business units including various investments at different stages, ITI services are usually utilized at these stages (Weill et al., 2002b, p. 5). An organization-wide ITI is implemented by creating an internal shared services IT organization. Therefore, responsible IT professionals of an organization usually determine a set of infrastructure services needed by several business units or departments to make them accessible to the entire organization (Bharadwaj et al., 1999). Most of the time many of these services have already been utilized across these units (such as data centers, negotiations with suppliers, help desks, and networks), thus, sharing services can obviously reduce costs through reduced duplications and increased scale (Weill and Vitale, 2002, p. 21). Furthermore, organizations implement shared IT due to its strategic benefits such as having a single point of customer contact which correspondingly lead to a general customer information database. Another approach to develop an organization-wide infrastructure is by taking advantage of an outsourcer which provides external shared service operations for the entire organization (Lee et al., 2003, p. 86). To conclude, while figure 2-8 shows the importance of a wide array of technical competences in this domain, figure 2-9 indicates that intercultural competences are of particular importance due to the fact that ITI can span across different BUs at various locations around the globe.
The second traditional ITI model to be introduced here was presented by Liu (2002) and is among the very few commonly known models in the field of IT, which does not explicitly draw upon the ITI models from McKay & Brockaway (1989) and Weill & Broadbent (1998). Ward (2003) or Pepper & Laan (2013) use a similar, yet different, illustration of the ITI as Liu. However, since Liu’s model provides more detailed insights on the respective components of an ITI, which is needed for developing the competence categories later on (see Ch.3.2), it is introduced in the following and illustrated in figure 2-10.

Like most scholars in this field, Liu defines ITI as a set of IT resources and organizational capabilities that employees share across the organization and that offers the base on which organizations develop business applications and support business processes (Liu, 2002, p. 15). Overall, the author differentiates between four main environments of an ITI, which are constituted by services

As indicated, Ward & Peppard (2003) and Laan (2013) show similarities to Liu’s approach as they consider more or less the same main components of an ITI. While Laan takes up a rather fundamental technical perspective of an ITI, which considers ITI as an equal category next to other categories like applications, management, applications, and process information and integrates it into an overall IT systems model Laan, Ward and Peppard, draw upon a strategic understanding of an ITI and clearly differentiate between four categories: 1) physical infrastructure consisting of middleware, horizontal/vertical applications, network, hardware,
that are more technical at the bottom and become more business oriented toward the top. The foundation of this framework is built by the network environment layer which comprises all network components providing connectivity, communication across the organizations, and interoperability in a heterogeneous environment. On top of it, the computing environment contains all main services required for operating and administering the application environment such as operating systems and hardware. Additionally, it provides an interface between application software and the hardware platform. The development environment covers three types of servers and its associated services, namely application, database, and integration servers as well as middleware. On top of the latter are the business applications and its two different types, vertical and horizontal applications. Within this model, cycle and installation processes as well as the IT personal, who are responsible for any administrative and management tasks, are forming a cross-sectional function over all four environments (Liu, 2002, pp. 15–18). Liu’s model considers under the ITI all components including middleware as well as most part of the IT application landscape and its operation. At the same time it omits aspects like license management or development issues which are usually considered to be system-specific.

**Service Oriented Models**

In addition to the aforementioned traditional models of ITI, a more and more service oriented understanding of ITI has been established over the last decade (Erl, 2005). Without a doubt, the enterprise architecture is inevitably changing towards an open and service-oriented structure to increase flexibility and adaptability (Krafzig et al., 2005, p. 6). This development is occurring at different layers of the enterprise IT stack (Sengupta et al., 2007, p. 21). Sengupta et al. (2007) emphasize that business processes are internationally integrated and flexible to a great extent. The application layer is moving towards service creation and re-use. Today’s infrastructure hosting models are largely adopting virtualization. Physical assets are getting commoditized and modularized. Thus, the principle of sharing resources (network, storage, compute) is the common denominator enabling faster reaction to market trends, enhanced customer services and lower application development costs (Cisco Systems, 2006, p. 6; IBM, 2008, p. 2). Both, research and business are highly aware of the benefits of using service-oriented architecture (SOA) in enterprises (Ladley, 2010). SOA is often understood as not only a technical architecture but also a “design approach for enterprise environments that offers cross-platform compatibility, agility, and cost-efficiency” (Ordanini and Pasini, 2008, p. 290; Lewis, 2013). In contrast to traditional ITI models, where infrastructure resources support a base software product(s), 2) IT architecture describing the physical ITI based on its configuration, 3) guidelines and standards of technologies with respect to procurement, distribution, support, sourcing, backup, recovery, and 4) management processes dealing with the sourcing management and protection of investments (Ward and Peppard, 2003, p. 548).
specific application or organization within the enterprise, with SOA implementation an ITI will possibly support a community of users and applications through services allocated all over the enterprise (IBM, 2008, p. 3). Hence, there is a shift of focus towards the management of services which support business processes and results. Following figure 2-11 exemplary exhibits the layers of this service-oriented infrastructure (SOI). Within a SOI the most obvious change will be occurring in the bottom layer of physical infrastructure. This usually involves the utilization of modular platforms, commodity hardware and scale-out deployment.

![Figure 2-11: Layers of a SOI (Sengupta et al., 2007, p. 22)](image)

X86 based architecture and Blade Servers, for instance, support generating scalable architecture, dynamic provisioning, minimizing power requirements, and achieving incremental performance (Cisco Systems, 2006, p. 6; Sengupta et al., 2007, p. 22). Important data paths between database storage and engines as well as servers and storage area networks (SAN) utilize high-end fibre channel technologies, Ethernet technology, or Infiniband connectivity. The resource layer of a SOI is highly characterized by the deployment of virtualization technologies for systems, network, and storage (Huang et al., 2013, p. 385). One of the main benefits comprises the pooling of storage resources which leads to aggregated cross-application SAN and network-based virtualization. Similarly, compute resources are standardized, pooled, and virtualized as well to enable an independent deployment of applications.

Grid has been widely referred to as a system that coordinates resources using standard, open, general-purpose protocols and interfaces to deliver quality of services (QoS) and has the ability to combine these resources from different organizations for a joint goal (Foster, 2002; Bote-lorenzo et al., 2003). Therefore, the Grid middleware layer can be considered as the connecting link between applications and the "physical potential" provided by the aforementioned two layers on the bottom. By that the best possible utilization of resources will be achieved. Grid services like the enterprise service bus (ESB) allow scheduling and load balancing across heterogeneous machines, workload management, effective management SLA, and capacity on demand (CoD) (Asadzadeh et al., 2005; Sengupta et al., 2007, p. 23).

In fact, the combination of the three layers requires “application virtualization to generate a virtual model of application assemblies which can be provisioned and deployed to adaptive groups of virtual servers” (Sengupta et al., 2007, p.
The fourth layer therefore, takes advantage of accurately configured application management and provisioning tools that can facilitate the replacement of a non-working server by any of the virtual servers. Additionally, by implementing policy management the technology can propose enlarged availability of the central business services. Hence, a higher number of virtual servers can flexibly use more important applications at peak user loads (Sengupta et al., 2007, p. 25).

2.4.3 Theories associated with IT-Infrastructure

The domain of ITI has been examined by means of a variety concepts or themes that are interconnected to build a theoretical framework. By that these theories help to understand the domain of ITI and also allow predicting potential causalities. Following paragraphs aim at providing a first overview on the theories associated with ITI.

The past of ITI deployment has been strongly characterized by the acknowledgement of ITI flexibility as a competitive advantage for any organization (Kumar, 2004; Dai et al., 2007). Under the umbrella of the strategic management research, the RBV by SALANCIK & PFEFFER (1978) has been one of the most prominent theories in the ITI domain by explaining organizational success through resources. According to BARNEY (1991) “resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness” (Barney, 1991, p. 101). Due to the human infrastructure component of an ITI, it can be considered an organization-specific capability which is developed over time and can therefore, contribute to competitive advantage (Zhang et al., 2009, p. 47). Since the knowledge-based view (KBV) is considered an extension of the RBV by emphasizing that knowledge is the most important resource (Carolis, 2002), many research of ITI has been linked to the KBV as well. As a consequence, ITI specific knowledge is of great importance to ensure that competitive advantages cannot be easily imitated and are sustainable (Wiklund and Shepherd, 2003).

Besides the strategic management related research, the field of ITI is continuously influenced by network theories which basically deal with the examination of exchanges between social entities in networks (Powell, 1990). Especially the structuration theory by GIDDENS (1984) and the actor network theory (ANT) by AKRICH (1992) have been of greater interest. Main aim of the structuration theory is to explicate the interchange between individual action and social structures. According to WALSHAM (1993) the identification of modalities (interpretative scheme, facility and norm) is of major interest since they depict the underlying drivers which connect action and structure (Walsham, 1993). By applying this theory, an analysis of the mechanisms that are employed in social action can be delivered (Hanseth and Monteiro, 1998, p. 101). ANT has not been developed to serve IT related research but yet has been used in this context due to its underlying approach. It argues that every action of an individual is linked to all its influencing factors to build a heterogeneous network (Latour, 2005). This network links non-technical as well as technical elements and does not make any difference between both. HANSETH & MONTEIRO (1998)
state, that not distinguishing a “priori between social and technical elements encourages a detailed description of the concrete mechanisms at work which glue the network” (Hanseth and Monteiro, 1998, p. 97).

The third major theory stream that has been often used in the field of ITI focuses on ITI from an IS design theory perspective. As the challenges in ITI design significantly impacts its management, IS design theory is of particular interest for both, research and practice. In accordance with WALLS ET AL. (1992) IS design theory provides guidance at effectively and efficiently developing IS or ITIs and supports the problem solving process by effectively mapping these problems to solutions (Walls et al., 1992). In general, one can distinguish between horizontal and vertical IS design theories. While the former focuses on a specific class of information systems, the latter is concerned with “general process features across a set of design situations” (Hanseth and Lyytinen K., 2004, pp. 210–211). IS design theory is a practical theory that applies theories from natural and social sciences to govern the design requirements of the particular systems (Becker et al., 2009). Following table 2-3 exhibits the theories associated with ITI and provides a selection of examples.

Table 2-3: Theories in ITI research

<table>
<thead>
<tr>
<th>Research Field</th>
<th>Theories</th>
<th>Publications*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Management</td>
<td>• resource-based view</td>
<td>(Keen, 1991; Gibson, 1993; Duncan, 1995; Bhatt, 2000; Schwager, 2000; Byrd, 2001; Chung, 2003; Bhatt, 2005; Egyedi, 2005; Byrd, 2008)</td>
</tr>
<tr>
<td>Research</td>
<td>• knowledge-based view</td>
<td></td>
</tr>
<tr>
<td>Network Theories</td>
<td>• structuration theory</td>
<td>(Ciborra, 1998; Bhatt, 2001; Kayworth, 2001; Sharma, 2002; Weill, 2002; Vikkelso, 2010; Jorfi, 2011; Shin, 2011)</td>
</tr>
</tbody>
</table>

*) selection

In accordance with the strategic management view on ITI, the underlying thesis also takes a RBV and KBV focus with respect to ITI. In order to contribute to improving a firm’s efficiency and effectiveness, a detailed understanding of the ITI domain and workforce is targeted which eventually allows for developing corresponding competences for further analysis and training purposes.

The underlying chapter derived a definition of ITI for the underlying thesis and introduced the most important ITI models. By providing an overview on the theories associated with ITI, a solid theoretical foundation of the field of ITI could be presented which presents the theoretical base for the development of a second order ITI construct (see Ch.3.2).
2.5 Competence

The competence concept is essential to empirical research focusing on the training of human workforce and the efficiency of education. Even though it has been discussed for many decades, it has been lately increasingly examined by many disciplines (Garside and Nhemachena, 2013). Indeed, research employs the concept of competence to illustrate the continuously varying requirements of today’s fast-paced society and organizations as well as the didactic objectives involved (Klieme and Leutner, 2006). However, the abundance of definitions and competence model indicates that it exists a different understanding of competence depending on the context (Koeppen et al., 2008, p. 62). In the following the concept of competence and its different classifications are introduced. After providing the necessary theoretical insights, chapter 2.5.2 delineates the difference between epistemic and heuristic competence as the two main components of competence. By that, not only an understanding of the most influential approach on competence is presented but also an understanding about the requirements for the operationalization of the first technically sound ITI competence construct is revealed (see Ch. 5.2.2).

2.5.1 The underlying Concept

Even though the term competence has been regularly discussed in modern management literature and in education, its meaning has been divergently utilized (Kogut and Kulatilaka, 2001). The inflationary usage of the term competence in different fields of management and education literature has even affected the attempts in conceptualizing competence. This leads to a lack in conceptual and theoretical precision on one side and many different definitions and operationalization of it on the other side (IEEE Learning Technology Standards Committee, 2000; Bodensohn, 2003). In contrast to an objectivist view, Stoof et al. (2002) stated that constructed competence definition may need to be changed when the situation changes, that is, when the variables of people, goal, or context change (Stoof et al., 2002, p. 361). However, one of the goals of this chapter is to provide a common denominator for the term competence and building a base for the development of an ITI competence construct for the underlying empirical research. Despite the fact that the roots of the term competence go back to 1596, White (1959) was the first to introduce it into motivational psychology and behavioral science. He refers to it as an individual's ability to interact effectively with its environment, which neither is innate nor happens by maturation (White, 1959, p. 297). To obtain and increase the personal efficiency in this sense individuals develop competence as an outcome of a learning process that is triggered by the requirements an individual has to deal with (White, 1959, p. 318; Mirabile, 1997). Competence eventually leads to behavior that is characterized by an ex-

36 Objectivists consider the world as given, meaning that there is one objective, absolute truth (Valcke, 1999; Yeaman et al. 1996)
exploratory character on one hand but is still directed, selective, and tenacious in interacting with the environment (Heckhausen and Heckhausen, 2010, p. 364). RYCHEN & SALGANIK (2003) define competence as an ability that is employed to successfully meet complex demands in a particular context through the mobilization of psychosocial prerequisites (Rychen and Salganik, 2003, p. 43). In accordance to WHITE, the authors emphasize that the demands of an individuals' environment stimulate and adjust a person's actions and are usually related to work tasks, a social role, or individual objectives (Rychen and Salganik, 2003, pp. 51–54). The authors explicitly suggest that the internal structure of competences is composed of individual's dispositions, such as knowledge, cognitive and practical skills, attitudes, emotions, values, and motivation (Rychen and Salganik, 2003, pp. 44–47). In this sense, competent behavior combines the accurate activation and coordination of these dispositions to achieve an aspired goal (Roos and Krogh, 1992, p. 423).

Similar views are described by many other scholars and suggest that competence is clearly driven by performance (Hornby and Thomas, 1989; Spencer and Spencer, 1993; Lee and Beard, 1994; Ridder et al., 2004). However, the difference between performance and competence is often not obvious; while performance is delineated as observable behavior, competence rather describes the potential for such a behavior that has not been necessarily effective yet (Gruber, 1999). This understanding of competence became highly influential in business organizations in the first place, more specifically in the field of recruiting and selecting new employees (Stoof et al., 2002, p. 349). Especially the article of McCLELLAND (1973), “Testing for Competence Rather than for Intelligence,” may be considered to be the starting point of the competence movement in this field (Barrett and Depinet, 1991). Professionalizing employees after vocational trainings in work situations has become of increasing importance since then and has led to more attention to HR and professional trainings (Frieling and Sonntag, 1998, p. 85). Building on McClelland's work, PARRY (1996) understands competence as a “cluster of related knowledge, skills and attitudes that affects a major part of one's job (a role or responsibility), that correlates with performance on the job, that can be measured against well-accepted standards, and that can be improved via training and development” (Parry, 1996, p. 50).

Most approaches to conceptualize competence models, which define competences and introduce the main components in a common framework, have been primarily developed in psychology, pedagogic, education science, or sociology (Rothwell, 2005). They primarily emphasize the meaning of the term action competence which refers to the competence to meet the requirements of a specialized domain (Stark et al., 1995), which is “efficient in execution and effective in result” (Herling, 2000, p. 11). This type of competence requires the following two components: on one side the existence of declarative knowledge about the particular facts and circumstances and on the other side the ability to effectively and appropriately apply the respective knowledge which takes corresponding social behavior into account (Boyatzis, 1982; Silbereisen and Reitzle, 2001). Competence is therefore, operationalized through competent action (Sembill, 1992).

Many scholars such as ERPENBECK (1997) define competences as dispositions of self-organization in which dispositions are carried out to reach certain goals and manage a high degree of uncertainty on an individual or organizational level (Erpenbeck, 1997, p. 317). Therefore, competences are both goal-oriented and
subject-oriented (focusing on the individual) (Stäudel, 1987). While dispositions refer to cognitive, meta-cognitive, and motor abilities which are learned and can be trained, they are also genetically founded on a basic level. The benefit of ERPENBECK’S conceptualization is rooted in the systematic composition of a taxonomy in which competences can be integrated. It comprises four categories of competences: professional-methodological competences, social-communicative competences, personal competences, and action competences (Erpenbeck and Rosenstiel, 2003, p. 15) (see table 2-4).

Table 2-4: Competence classes (Erpenbeck and Rosenstiel, 2003)

<table>
<thead>
<tr>
<th>Competence Classes</th>
<th>Object of Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Competences</td>
<td>Personal competences refer to dispositions of an individual that facilitate behaving and acting in a self-reflecting manner. These competences support examining one’s own behavior in order to align it with particular goals. (Erpenbeck &amp; Sauer, 2001, p. 26).</td>
</tr>
<tr>
<td>Professional-Methodological Competences</td>
<td>This competence class refers to dispositions of an individual that enable to act mentally and physically self-organized when solving factual and tangible problems. This involves creative problem solving with work specific abilities, skills, and knowledge.</td>
</tr>
<tr>
<td>Social-Communicative Competences</td>
<td>This competence class refers to an individual’s dispositions to act communicatively and cooperatively self-organized which leads to building social relationships between individuals, within a group or organization.</td>
</tr>
<tr>
<td>Action Competences</td>
<td>This class of competences delineates dispositions of an individual to act actively and holistically. Also, they support acting according to intentions and plans. It comprises the abilities to integrate emotions, motivations, abilities and experiences.</td>
</tr>
</tbody>
</table>

Unlike many other competence models (Baitsch and Frei, 1980; Sonntag and Schäfer-Hauser, 1993; Goetze, 2001; North and Reinhardt, 2005) ERPENBECK’S conceptualization integrates professional and methodological competences. In his model the action competences are described as an equal category and do not result from the interaction of other competence classes (Erpenbeck and Heyse, 2007, p. 159). Each of the four competence categories is based on learnable cognitive knowledge components that require the support of emotions and motivations to eventually transform into a competence.

To conclude, competence consists of various components that eventually determine the total extent of competence (Sarges, 2002, p. 288). Beyond the psy-
2.5.2 Competence Dimensions

Research on behavioral science usually uses the term *epistemic competence* to cover the formal or knowledge-related aspect of competence and *heuristic competence* to describe the experience and capacity to act (Anderson, 1980; Kaiser, 1982). For example, a Higher Education graduate who just learned from books and attending class only acquired epistemic competences. As a consequence, his insights merely cover principle cognitions relevant to his subject of interest. Through practical experience and constant application of the knowledge he will later be able to build heuristic competence as well. Such heuristics are strategies that have been proven successful rather than logical explanations. This distinction of competence dimensions has its theoretical foundation in different competence models in psychology, known as the personality-oriented models and action-oriented models (Kaiser, 1982, p. 3). Thus, competence can be defined as the ability to act adequately in a number of different situations by transferring abilities, skills, and knowledge into action over a period of time. As knowledge and experience are both referred to as the main components of competence especially in complex professional domains, both are taken into account for the development of an ITI competence construct. In the following these two components are examined.

**Epistemic Competence**

The concept of knowledge is referred to as the key cornerstone of *epistemic competence* and includes different types of knowledge being adequately integrated and utilized to exhibit competent behavior (Shanton, 2011). As the underlying thesis focuses on competences at an individual level, only knowledge at an individual level is of concern. Among the most common types of knowledge employed in the knowledge domain are declarative and procedural knowledge (Jong and Ferguson-Hessler, 1996, p. 107). Declarative knowledge overall comprises the verbal, conceptual, and factual knowledge of a person (Berkum and Jong, 1991). According to Anderson’s Adaptive Control of Thought (ACT) model, declarative knowledge, whether episodic or semantic in nature, is considered to be the prerequisite for procedural knowledge and is often simply defined as “knowledge about facts and things” that can be thought and explicitly spoken about (Berge and Hezewijk, 1999, p. 608). Procedural knowledge in contrast, is claimed as “knowledge of how to do things” either in a particular domain or in general (Arbinger, 1997, p. 54). According to Anderson (1980) it represents knowledge of the skills, rules, and strategies that are used to manipulate and transform declarative knowledge to solve a problem or task (Anderson, 1980; Squire and Knowlton, 2009). Implicit and explicit knowledge are regarded as another important sub-classification of knowledge (Jong and Ferguson-Hessler, 1996, p. 109). Explicit knowledge is delineated as conscious which can be documented and learned by...
individuals (Staudt and Kley, 2001, pp. 234–236). Furthermore, explicit knowledge is often referred to as necessary condition for performance in any profession and is therefore assessed within academic or professional selection processes (Smith, 2001, p. 315). In contrast, Polanyi (1966) describes implicit or “tacit” knowledge as knowing how to do something without thinking about it (Polanyi, 1966). It is a highly personal and subjective type of knowledge that is usually acquired through informal learning thus, can only hardly be formalized and transferred (Berry and Broadbent, 1984; Wagner, 1991). Additionally, it is acquired when individuals master a certain specific situation and is deeply seated in an individual’s experience, visions, values, and emotions (Smith, 2001, p. 313). A high degree of “knowledge automation” therefore, often correlates with implicit knowledge, while a low degree is associated with explicit knowledge (Nothelfer, 1999, p. 209). For instance, the task performance of a novice is a rather conscious and gradual process of selections and implementation based on general methods. On the other side, an expert accomplishes the same task in a rather unconscious process that is based on domain specific methods, and sophisticated knowledge of the principles and tools, which is accumulated over time (Jong and Ferguson-Hessler, 1996, p. 108).

Heuristic Competence

Research on competences emphasizes the importance of knowledge as a necessary but not sufficient requirement for competent action. In many professional domains, competent action requires approaching a particular task or issue based on technical or declarative knowledge (Bromme and Rambow, 2001). According to Gruber (1999), competence expresses itself in a variety of applied knowledge types, which demands a sophisticated examination of knowledge to understand the development of competence (Gruber, 1999). The interaction of the various knowledge types appears to be obligatory for competent action. In this context, one needs to keep in mind that especially procedural knowledge is of greater importance than declarative, as it mainly reflects the most useful type of knowledge in practice (Boshuizen and Schmidt, 1992, p. 172). In order to be capable of utilizing knowledge in various circumstances, however, experience is of crucial meaning (Kaiser, 1982). Hence, heuristic competence relates to the fact that comprehensive knowledge of a domain needs to be complemented by proper experience that goes beyond cognitive learning processes, so that competence can be eventually developed. In this regard, experience delineates the episodic awareness of utilizing knowledge, i.e. awareness of what knowledge type needs to be applied when, in whatever way, and which situation (Mandl et al., 2003, p. 299). Experience is the result of processing complex and important situations and cannot be solely defined by the reception of information or the repetition of knowledge (Paloniemi, 2006). It also encompasses assessments of particular circumstances or the outcome of actions whether they systematically occurred or by chance (Morgan and Cleave-Hogg,

---

37 The degree of “knowledge automation” shows the extent of information processing of an individual.
According to Gruber, experience can be characterized by six core assumptions (Gruber, 1999, pp. 12–15):

1. Experience depicts the foundation for professional competence and is often associated with higher performance
2. Experience is an attribute of individuals and is related to memory for domain specific information
3. Experience is associated with domain specific knowledge
4. Experience is developed by and corresponds with knowledge that emerges from episodic, self-experienced situations
5. Experience depends on cognitive as well as motivational, emotional, and social attributes.
6. Experience can be learned depending on the learning environment.

Similar views are described by many other competence researches who emphasize that “competence is enhanced by the continuous and reflective application of domain specific knowledge which is episodically stored by individuals” (Larkin, 1989, p. 290). Only experience leads to the effective application of knowledge. To conclude, knowledge eventually develops into a particular competence after dealing with domain specific situations that result in experience. However, experience is not an immediate outcome of an accumulation of actions, as the latter need to be assessed as self-relevant and self-referred from an individual’s point of view (Nelsen and Seaman, 2011). Experience can also be regarded as knowledge of action and further includes the relationship between experience and consequence that is important for one’s own actions (Fischer, 2000).
Chapter 3

Conceptual Development of the Main Constructs

After chapter 2 has discussed the theoretical foundation of culture, intercultural competence, the consulting sector and the competence domain, the following chapter focuses on the conceptual development of the main constructs of this thesis. As the underlying thesis aims at developing a factorial measurement structure that allows a quantitative analysis later on, an intercultural competence construct is developed based on existing research. Furthermore, the necessary conceptual foundation for the development of a new IT-Infrastructure competence construct is exhibited as well. To enable the quantitative examination of these two factorial constructs, a relevant success variable needs to be presented. In a final conceptual step a suitable success criterion that fits the intercultural as well as IT-Infrastructure competence construct is established. As stated in the introduction of chapter 2, a research study can be characterized by its underlying theory next to the research object and research subject. Therefore, the classic theory of learning by THORNDIKE (1930) is introduced as the theoretical base that links both competence constructs with the selected success criterion. Throughout the course of this chapter following research questions are addressed:

**Research Question 1:** What are the underlying structural dimensions to comprehensively represent intercultural competence?

**Research Question 2:** Which competence dimensions exist in the field of IT-Infrastructure?

For answering question 1 chapter 3.1.1 reveals the issues associated with today’s intercultural competence models in the first place. In a next step chapter 3.1.2 delineates a stringent methodology based on MERTESACKER’S (2010) selection methodology to present the right variables for a complex and especially rigor intercultural competence construct that finally overcomes these obstacles. The final selection of variables is discussed in-depth at the end of the chapter. In order to answer question 2 a systematic Literature Review has been conducted.
orientating on the very influential effort by Webster & Watson (2002) and is depicted under chapter 3.2.1. The results of the Literature Review are clearly delineated under chapter 3.2.2. Chapter 3.3 introduces job performance as the success criterion for both constructs. While chapter 3.3.1 examines its relevance from an IT-Infrastructure perspective, chapter 3.3.2 analyzes it from an intercultural competence point of view. Finally, chapter 3.4 derives the reminding research questions of this thesis based on the Literature Review.

3.1 The Development of an Intercultural Competence Construct

In the following the main issues and challenges of today's intercultural competence models are thoroughly derived. Following Mertesacker's (2010) selection methodology a suitable choice of intercultural competence components are presented in detail to ensure the development of a conceptually sound and empirically proven intercultural competence construct which addresses these issues.

3.1.1 Issues of Intercultural Competence

Since the emergence of the field of intercultural communication research (see Ch.2.2.1) in early 1950s, scholars have continued to search for a more appropriate model to explain the concept of intercultural competence. The focus and purpose of intercultural competence research has expanded to more complex behavioral self-assessments, performance assessments, portfolio assessments, and others. At the same time, nearly three decades after Ruben (1989) declared the "need for conceptual clarity", there is obviously no shortage of feasible approaches or models for guiding conceptualizations, theories, measurements, and investigations of intercultural competence. However, there are many issues that originate from several different reasons which are depicted in the following and addressed within this thesis (Mendenhall, 2008).

1) Conceptualization of Intercultural Competence

Even though the broad literature about intercultural competence covers many disciplines and thereby, provides a variety of approaches and models for this field, it also makes it more difficult to communicate about related ideas in a systematic and consistently interpretable way. With respect to the conceptual level one can stress following particular challenges:

- The first challenge depicts whether competence refers to the knowledge or performance of the interacting individuals. Even though competence is clearly more than knowledge (see Ch.2.5), many researchers consider competence to be simply the knowledge of the speaker-hearer's language (Chomsky, 1965) or expand this understanding by conceiving competence as the understanding of a novel situation and its necessities (Philips, 1984). McCroskey (1982) has already elaborated on the difference between motivation, knowledge, and skills for the conceptualization of
intercultural competence. Nevertheless, many definitions of intercultural competence still display incompleteness, especially when incorporating the concept to intercultural settings in which behavioral skills are required as well. Therefore, research should consistently attempt to include and examine the knowledge and performance aspect of intercultural competence.

- In association with the first challenge, there is still no consensus on the mainly utilized success dimensions effectiveness, appropriateness and adjustment. These dimensions are important constructs for practice and theory and offer a criterion/performance for quantitative research settings with intercultural competence dimensions. As indicated above (see Ch.2.2.1), effectiveness is widely accepted and can be operationalized as an individual’s skill to generate the intended outcome or effect from any interaction with the environment (Wiemann, 1977; Spitzberg and Cupach, 1989; Canary and Spitzberg, 1987). It is either as a fundamental human need acquired through learning and socialization processes (White, 1959), or an ability that has no relation to an individual’s intelligence or his education (Holland and Baird, 1968). The second success variable, appropriateness has been often used as a success criterion, especially in an intercultural communication setting (Wiseman, 2002; Deardorff, 2004; Kim and Yang, 2011). In this context appropriateness is achieved by the degree to which a person’s behavior is perceived as appropriate for a certain situation and related expectations (Wiemann and Backlund, 1980; Lustig and Koester, 2003). In fact, the quality and type of relationship between the respective interactants and their cultural heritage have a strong influence (Jambunathan and Caulfield, 2008). The last success variable is known as adjustment (Gudykunst, 1998; Bhaskar-Shrinivas et al., 2005). It is the most influential theoretical treatment of expatriate experiences and is regarded as a context-specific reflection of the stressor-stress-strain sequence38. In a mainly job related context, adjustment is defined as the degree of comfort associated with being an expatriate or in general, as “…the process of achieving harmony between a person’s environment (…) through changes in the person’s knowledge, attitudes, and emotions about the environment” (Hannigan, 1990, p-91; Bhaskar-Shrinivas et al., 2005, p. 257). Throughout the decades, many scholars have used effectiveness, appropriateness, and adjustment instead of competence (Deller, 2000). Other researchers even utilized all three success dimensions interchangeably (Spitzberg, 2006, p. 367). Moreover, researchers often use various success factors such as satisfaction (Kealey, 1989; Li and Tse, 1998; Herleman et al., 2008; Froese and Peltokorpi, 2013), turnover intention (Birdseye and Hill, 1995; Gelbrich, 2004; Stahl et al., 2009), or task/job performance (Cui and Awa, 1992; Pan et al., 2010, 2010; Shih et al., 2010) as a substitute for one of

38 Hooke’s Law postulates a linear relationship between stress and strain. Hence, the more stress, the more strain one experience (Cherry, 1978).
these three, but rather generic success dimensions. The utilization of success dimensions and factors of intercultural competence remains rather fuzzy following no clear line of argumentation and eventually leads to confusions. To strive towards more conceptual clarification, research studies need to heavily stress and reveal the reasons for using certain success factors since there is obviously no right or wrong for evaluating intercultural competence based on any of these three success criteria.

- Finally, the culture-general (etic) vs. culture-specific (emic) approach is still a relevant issue in this field (see also Ch.2.1.1). Most of the existing research on ICC attempts to offer an etic approach towards intercultural competence (Holmes and O’Neill, 2012). However, this has been highly criticized by many researchers for decades since most of these etic approaches have been generated by a Euro-American and therefore, ethnocentric view. Zaharna (2009) argued that among Arabs “the significance, meaning, and purpose of communication are derived from relationships among the parties” (Zaharna, 2009, p. 184) which has not been taken into account by most Western intercultural competence models. Therefore, many studies, for instance, have started to examine intercultural competence from different countries or in a broader sense from particular cultural perspectives such as Latin-America, Southeast Asia or Africa (Martín et al., 1994a; Nwosu, 2009; Fitch, 2012). The decision between an etic or emic approach towards studying intercultural competence should depend on the purpose of the underlying research and accordingly, needs to be communicated (Gelbrich, 2004, p. 260). Studies explicitly investigating, for example, the influence of German expatriates in a particular country, may focus on an emic approach. On the other side, if the main purpose of the research is to investigate the stability of the construct in an intercultural setting, an etic approach seems to be the most suitable.

2) The Three Component Model
The psychological three component model of attitude (see Ch.2.2.2) has been oftentimes criticized, because factor analytical examinations could not consistently confirm the assumed trichotomy (Breckler, 1984; Stahlberg, 1996). Moreover, recent studies on emotional intelligence question the distinction between emotion and cognition contributing to the ongoing issue of a possible three component model of intercultural competence (Matthews et al., 2002; Salguero et al., 2012; Vonk et al., 2013). Scholars of the integrative approach (see Ch.2.2.1) refer automatically back to the three component model of attitude when they conduct research conceptually or operationally wise. Since many protagonists even put attitude and the affective dimension on the same level, issues arise. By implicitly treating intercultural competence as an attitude and at the same time explicitly considering it as a synonym for the affective structure dimension, theoretical inconsistencies occur (Müller and Gelbrich, 2001, p. 258). Therefore, the underlying thesis aims at accurately examining relevant dimensions for each of the three components.

3) Overlapping of Concepts and Traits
Many studies basically assumed that intercultural interaction are not much different from interactions between members of the same culture. Both contexts
therefore demand, at least partially, the same kind of competence (Müller and Gelbrich, 2001, p. 257). The logic behind is that any intercultural interaction and the goal to succeed in a foreign culture requires to build trust and important relationships, and to improve cultural understandings which are also part of an non-culture related interpersonal skill set (Rentsch et al., 2007). Corresponding research on interpersonal skills in the professional context further confirms the significance in the forecast of contextual, task, and overall performance in a foreign culture context (Ferris et al., 2001; Ferris et al., 2002). WiseCarver et al. (2007), for instance, showed that interpersonal skills were mandatory for working with indigenous populations in a sample of soldiers (Wisecarver et al., 2007). Kealey (1989) even revealed that consultants with better interpersonal skills, according to self- and peer-ratings, were more effective in transferring knowledge to foreign culture’s employees (Kealey, 1989). By that, individuals with a superior interpersonal skill set are comparatively more advanced in influencing their counterparts appropriately and managing impressions, both of which are vital facets of intercultural competence (Witt and Ferris, 2003).

Besides the insufficient differentiation between inter- and intracultural competence, research in the field of intercultural competences consistently displayed overlappings and conflicts. There is still a clear lack of assignment of the competencies to one of the dimensions of the three component model (Müller and Gelbrich, 2001; Gelbrich, 2004). Even between and within the particular streams of work there are clear inconsistencies. For example, when empathy was introduced as an important variable of intercultural competence, Spitzberg (1989) associates it with the affective dimension, whereas Cleveland, Mangone, & Adams (1960) classify it as cognitive facet since it requires the ability to understand other culture’s way of thinking. In turn, Hammer, Gudykunst, & Wiseman (1978) consider it as a behavioral dimension.

4) Operationalization and Measurement

The main trigger for the development of measurement instruments is generally based on the understanding that long-established approaches to determining professionals for performing in intercultural contexts are insufficient and that suitable education and training are capable of developing intercultural competence (Martin, 2010). This view rejects the idea that past experience could be a main indicator for intercultural success, and, instead, argues that the employment of intercultural competence instruments can avoid expensive underperformance, mistakes and dissatisfaction (Arasaratnam and Doerfel, 2009; Tamatea, 2008). Instruments of intercultural competence aim at assessing high-efficacy in an intercultural context and thus, support researchers with building and refining theory about the field of research and possibilities to continue its development (Deardorff, 2006b; Christoffersen, 2009). However, it appears that no single instrument can be used for all purposes (Deardorff, 2006b; Behrd and Porzelt, 2012). While some available instruments, for instance, are aiming at predicting high-efficacy of professionals in an intercultural environment, others are more suitable for an education and training context (Perry and Southwell, 2011, p. 460). This raises questions about which factors might contribute to intercultural competence. What underlying theory do they refer to and do they test what they purport to? Moreover, the scientific rigor of the instruments and the validity and reliability of these instruments is still a major concern (Almeida et
al., 2012). It is not clear which instrument is most effective for testing intercultural competence as the vast amount and inconsistencies of conceptualizations of intercultural competence makes comparing instruments difficult (Perry and Southwell, 2011). Therefore, in the operational level, one needs to be aware of the locus of judgment and how intercultural competence needs to be measured. With respect to the locus of judgment, three possibilities are available (Müller and Gelbrich, 2001, p. 262) (see table 3-1):

Table 3-1: Advantages and disadvantages of the loci of judgements
(Müller and Gelbrich, 2001, p. 263)

<table>
<thead>
<tr>
<th>Locus of Judgment</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Comprehensive and genuine knowledge about one’s own person</td>
<td>• Self-serving bias (classical attribution error)</td>
</tr>
<tr>
<td></td>
<td>• Convenient and least expensive method</td>
<td></td>
</tr>
<tr>
<td>Interlocutor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No self-serving bias</td>
<td>• Difficult to apply ex-post</td>
</tr>
<tr>
<td></td>
<td>• View of the message receiver of an interaction</td>
<td>• Actor/observer bias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bias through physical/social attraction of the person to be judged</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Compared to other methods, objective approach</td>
<td>• Very high effort</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bias as persons to be judged might feel observed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Actor/observer bias</td>
</tr>
</tbody>
</table>

First, self-assessment are favorable as they represent an affordable method to collect data even from a large sample and provide you with access to phenomenological data, i.e., respondents’ perceptions of themselves and their world, which are unobtainable in any other way. However, from the social psychological perspective of attribution theory, there are pervasive biases in the way that an individual accounts for his own and others’ behavior. Another related type of bias, known as self-serving bias, is the tendency to take credit for success and deny responsibility for failure (Barker et al., 2002, pp. 97–100).

Secondly, assessment by the interlocutor appears to be beneficial as intercultural competence can only become relevant to the extent of how it is perceived by the counterpart. This type of assessment is not subject to a self-serving bias, but

---

39 Bias is referred to as a type of systematic error that can have a significant effect on research studies and distort the measurement process (Sica, 2006)
instead other people show a tendency of an observer/actor bias, where people tend to make different attributions depending upon whether they are the actor or the observer in a situation. For instance, in a place where a person experiences something negative, the same person will oftentimes blame the situation or circumstances for it. However, when something negative happens to another person, one will rather blame the individual for their inabilities, attitudes and actions. (Jones and Nisbett, 1971).

Thirdly, assessment by independent others involves feedback by independent observers. Despite its advantages, it is mainly not feasible due to the great efforts. Over the course of time, many researchers claim that a combination of both, self-assessment and assessment by the interlocutor or others is the best solution. A person is not competent by reaching his own goals but also by meeting the expectations of the counterpart which has been proven by several research studies (Heredia, 1986; Imahori and Lanigan, 1989). Nevertheless, every researcher should always ponder between costs and benefits. For the corresponding choice of the locus of judgment, one need to consider that the success criteria, effectiveness and appropriateness, have other values in different cultures (Müller and Gelbrich, 2001, p. 264). For example, striving to reach one’s own goals might be considered as a desirable and effective attitude in individualistic cultures, however, collectivistic cultures tend to be more concerned with what is best for a group or society as a whole (MacDonald et al., 2009). The same applies to the view on what is considered to be appropriate by others and what is not. While collectivistic cultures generally perceive it as inappropriate to discuss private experiences such as love, sexuality, or religious beliefs in public, individualistic cultures as Anglo-Americans have rather less issues (Sagie et al., 1998). To conclude, the assessment of the success dimension or external criterion depends to a great extent on the person that decides whether an interaction has been effective and appropriately conducted.

The aforementioned issues and challenges indicate that even nowadays, researchers are not yet able to consistently and accurately define and assess intercultural competence and associate it with suitable success dimensions. Conceptualizing, developing and assessing intercultural competence continue to be a critical challenge and there is still a need to bring sound theory and rigor research together to facilitate further development of intercultural competence. The underlying thesis aims at overcoming these challenges by examining a model of intercultural competence that most importantly fits its own overall research purpose and is based on a profound theoretical conceptualization. By eventually showcasing reliable and valid statistical results of a clear empirical examination, this model can be continuously reused, modified or adjusted for particular research purposes in various contexts in the future again.

3.1.2 Dimensions of Intercultural Competence

A first major step towards designing an empirical study to investigate theoretically assumed relationships involves a careful selection of the influencing varia-
variables. So called variable selection approaches are widely used in regression analysis\(^\text{40}\) for the following two, yet distinct goals (Oates, 2012, p. 1) enhance prediction performance (e.g. in regression or classification); and 2) to choose variables that are powerful in terms of the mechanisms underlying the response. The underlying thesis cannot simultaneously take all factors into account which have been discussed in literature. Especially causal analytical research studies, which have been analyzed to tackle the main research questions of this thesis, are subject to empirical limitations of the model complexity and implicitly limit the number of revisable constructs (Bentler and Chou, 1987). As comprehensively stated above, there has been no consensus and even concerns on the trichotomy or multidimensional structure of intercultural competence. Over the course of time, research has developed a multitude of factors and corresponding scales that are either solely supposed to represent intercultural competence or only a facet of it.

MERTESACKER (2010) utilized a four step selection methodology to develop a conceptually sound and rigor intercultural competence model that takes the aforementioned concerns into account (Mertesacker, 2010, pp. 46–50). In a first step she selected only dimensions which have been multiple times delineated as a substantial component of intercultural competence in the past and have also been empirically investigated to a certain degree. Subsequently, she excluded several dimensions which have been frequently considered as subordinate dimensions of other dimensions of intercultural competence. Dimension such as Empathy (Hwang et al., 1985), Non-Ethnocentrism (Imahori and Lanigan, 1989), Extraversion (Ward and Chang, 1997), Being Non-Prejudiced (Gertsen, 1990), or Self-Monitoring (Snyder, 1974) have often been assigned to Openness and Intercultural Sensitivity and were therefore not considered (Bennett, 1986a; Chen and Starosta W.J, 1996; Tucker et al., 2004; Spitzberg and Changnon, 2009). In a third step MERTESACKER did not consider any dimensions which cannot be reliably measured. Instruments like Scale of Tolerance-Intolerance of Ambiguity, Walk's a Scale, or the Multiple Stimulus Types Ambiguity Tolerance revealed psychometric deficiencies as well as negative correlations with success dimensions of efficiency and adjustment (Budner, 1962; Ehrlich, 1965; Norton, 1975; Mclain, 1993). Additionally, Stress Management (HAMMER ET AL. 1978), Social Insight Test (GOUGH 1986) or the Interpersonal Competence Questionnaire (BUHRMEISTER ET AL. 1988) have displayed issues concerning the reliability and validity of its measurement approach as well (Graf, 2004b, pp. 264–266). The final step involves the selection of particular variables to develop an intercultural competence model that covers all of the three structural dimensions. Given the comprehensiveness of some of the selected variables, intercultural motivation (KUPKA 2009) and the ability to establish relationships (ABE & WISEMAN 1983) have been discarded by MERTESACKER as well. In accordance to MERTESACKER’S selection methodology

\(^{40}\) Regression analysis is a statistical tool for the investigation of relationships between variables (Draper and Smith, 1998, p. 19). In general, regression analysis is used to examine the relationship the causal effect of one variable upon another (Sykes, 1993, p. 1)
and her results, this thesis utilizes the following dimensions for its intercultural competence model.

Table 3-2: Intercultural competence dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definition</th>
<th>Item Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercultural Sensitivity</td>
<td>“People’s knowledge about and willingness to change behaviors related to the individualistic or collectivistic background of others.” (Bhawuk, 1992)</td>
<td>I prefer to be direct and forthright when dealing with people (Item-B2)</td>
</tr>
<tr>
<td>Openness</td>
<td>Ability to be unprejudiced and perceptive to other ideas and behaviors when encountering people from foreign cultures who might have different values and norms (van Oudenhoven, 2002; Tucker, 2004)</td>
<td>I like to meet foreigners. (Item-B35)</td>
</tr>
<tr>
<td>Flexibility</td>
<td>The willingness to change one’s own behavior according to the challenges ahead (Ruben et al., 1979; Cui, 1992; Smith, 2011)</td>
<td>When I am living abroad, I don’t spend most of my personal time with people from my own country. (Item-B44)</td>
</tr>
<tr>
<td>Foreign Language Competence</td>
<td>The outcome of an effective and contextually appropriate interaction of knowledge about and skills of a foreign language, which are driven by the motivation to use both (Cui et al., 1992; Graf, 2004).</td>
<td>I have sufficient knowledge of the language of the local culture (vocabulary &amp; grammar). (Item-C23)</td>
</tr>
<tr>
<td>Nonverbal Communication Competence</td>
<td>The primary means to communicate emotions, attitudes, and perceptions of the nature of relationships (Ting-Toomey, 1999)</td>
<td>I am motivated to interpret and perform nonverbal signals/behavior when I interact with local culture natives. (Item-C30)</td>
</tr>
<tr>
<td>Situational Self-Awareness</td>
<td>Indicates the level of awareness on how own actions lead to reactions by the social and professional environment as well as the awareness of one’s own behavior that can be changed through proper training (Govern, 2001).</td>
<td>In my current cultural context, I am conscious about my inner feelings. (Item-C9)</td>
</tr>
<tr>
<td>Home Culture Awareness</td>
<td>The underlying foundation to engage in self-disclosing behaviors as a function of the reciprocal exchange expectations that form any communication process (Wiseman, 2002).</td>
<td>In the culture that I identify as my home culture, I am aware of traditions (e.g. ceremonies, holidays, etc.). (Item-C15)</td>
</tr>
</tbody>
</table>
As the selected dimensions are part of a comprehensive intercultural competence construct not only their meaning for intercultural competence per se are described but also their composing elements as well as their primary assignment to one of the structural dimension are addressed (see table 3-2).

**Intercultural Sensitivity**

Intercultural sensitivity is one of the most discussed and examined variable in the field of intercultural competence research. In a former survey of international business people by FRANKENSTEIN & HOSSEINI (1988), professionals have emphasized its importance due to its effect on social integration of individuals and job related adjustment (Frankenstein and Hosseini, 1988). WITHOUT sufficient sensitiveness at cross-cultural encounters issues arise and hence, individuals need to be disposed to change their behavior as a mean for respecting the interactant’s culture (Bhawuk and Brislin, 1992, p. 422). Indeed, intercultural sensitivity has often been put on the same level as intercultural competence. However, the underlying thesis rather sticks with HAMMER ET AL. (2003) differentiation in which intercultural sensitivity refers to the ability to distinguish between and experience main cultural differences, and where the term intercultural competence rather delineates the ability to think and correspondingly “act in intercultural appropriate ways” (Hammer et al., 2003, p. 422). This can only happen due to the individual’s comparison between the own and the foreign culture’s orientation system (Thomas, 2003). With respect to the composing elements of intercultural sensitivity it become clear why it is commonly interpreted as empathy or that empathy is oftentimes regarded as a main component of intercultural sensitivity (Bennet, 1986; Chen and Starosta, 1996; Spitzberg and Changnon, 2009).

One of the most popular models of intercultural sensitivity was developed by BENNETT (1986). His Intercultural Development Inventory focuses on the development of intercultural competence in six steps starting from disputing the existence of cultural differences to the integration. This 50 items comprising self-reporting Intercultural Development Inventory has been tested many times with respect to its reliability and validity (see Hammer et al., 2003; Paige et al., 2003). A empirical analysis by HAMMER ET AL., (2003) lead to a five-factor model (Hammer et al., 2003). PAIGE ET AL., (2003) developed a weighted composite measure, the Intercultural Development Inventory developmental score, which can be assigned to any assessee (Lange and Paige, 2003). However, the results of the five-factor Intercultural Development Inventory model are contradictory to its theoretical source, the Developmental Model of Intercultural Sensitivity. Due to this rather fragile theoretical base, further refinement is required as confirmed by PAIGE ET AL. (2003).

CHEN & STAROSTA (1997) have extensively examined this topic and linked intercultural sensitivity with the affective structural dimension (Ruokonen and Kairavuori, 2012). Following five facets are associated with intercultural sensitivity: high self-esteem, open mindedness, empathy, non-judgmentalism, and social relaxation (Chen and Starosta, 1996, pp. 366–367). However, since open mindedness or openness, is integrated as a focal point of intercultural sensitivity, CHEN & STARTOSTA’S model of intercultural sensitivity is not added for conceptual purposes despite its merits as the next paragraph shows. Instead, the underlying thesis follows MERTESACKER’S (2010) adaptation of BHAWUK & BRIS-
LIN’S (1992) approach to measuring intercultural sensitivity by determining “people’s knowledge about and willingness to change behaviors related to the individualistic or collectivistic background of others” (Bhawuk and Brislin, 1992, p. 418). Intercultural sensitivity has been predominantly attached to the affective structural dimension and is also assigned to it within the model of intercultural competence of this thesis.

Openness
The second variable that meets the requirements of the variable selection approach refers to the general open-mindedness of an individual. Over the course of time, many researchers have emphasized its importance for a successful intercultural interaction or sojourn abroad (Deardorff, 2006b; Shaffer, 2006). It is generally agreed that “open” relates to being able to evaluate if something is appropriate or inappropriate, fast or slow and right or wrong (Caligiuri et al., 2000). In an expatriate setting an open and receptive attitude enables higher satisfaction in social life and facilitates the adjustment process which leads to positive economic outcomes for organizations (Gelbrich, 2004, pp. 271–274). One of the more recent studies on global competence for today’s professionals claimed that global competence refers to having an open mind that actively seeks to understand “cultural norms and expectations of others, leveraging this gained knowledge to interact, communicate and work effectively outside one’s environment” (Hunter, 2006, p. 270). Similar views are also recently described by SYED (2013) and WOO (2013) who both consider it as a foundation for any preferable intercultural encounter at a personal or professional level (Syed, 2013; Woo et al., 2013).

In contrast, researcher studying intercultural competence do not stop short to explain the concept behind open-mindedness. While many researchers clearly depict it as a standalone dimension (Arthur and Bennett, 1995; Caligiuri and Day, 2000; van Oudenhoven et al., 2007), other researchers like CHEN & STAROSTA stressed it as merging into other dimensions (Chen and Starosta et al., 1997; Fantini, 2001; Deardorff, 2006b). Furthermore, up to now there is no consensus on the particular content of this dimension as research discloses different focuses on its conceptualization. For example, ARTHUR & BENNETT (1995) not only regard open-mindedness as an independent dimension necessary for the intercultural success of expatriates but also define it by introducing the constituting variables “variety of outside interests”, “interest in foreign cultures”, “openness”, “outgoingness and extraversion” (Arthur and Bennett, 1995, pp. 106–110). Within their Multicultural Personality Questionnaire (MPQ), VAN DER ZEE & VAN OUDENHOVEN (2000) present an independent understanding of open-mindedness as well and view it as an ability to be unprejudiced and perceptive to other ideas and behaviors when encountering people from foreign cultures who might have different values and norms (van Oudenhoven and van der Zee, 2002, p. 681; Tucker et al., 2004, p. 231). In accordance with MERTESACKER

---

41 Being unprejudiced is considered an independent dimension, which is yet closely related to open-mindedness (Müller, 2004, p. 796).
(2010) and fellow researchers this thesis understands open-mindedness as an independent and affective structural dimension.

**Flexibility**

The flexibility dimension represents the third variable that has been considered a major determinant for intercultural competence by many leading researchers in this field (Hawes and Kealey, 1981; Arthur and Bennett, 1995; Tucker et al., 2004; Deardorff, 2006b; Fackrell et al., 2013). In the early years Smith (1966) conducted a study to reveal the relevant characteristic among young Peace Corps professionals who spent overseas. The results clearly showed that competent volunteers are mainly characterized by a wider range of interests and high degree of flexibility (Smith, 1966). Nicassion & Saral (1981) labeled flexibility as the distinguishing feature of well-adjusted persons as it allows for switching to alternative solutions to any problem (Nicassion and Saral, 1981) making already clear that flexibility is a very valuable competence, especially at intercultural interactions during international assignments or project work (Smith and Khawaja, 2011). In fact, issues of extensive economic scope can arise at professional work settings if professionals are not able to reflect on home cultural behavior and flexibly adjust it to a foreign host country culture or foreign culture interaction partners (Spitzberg, 2006). For example, particular leadership behavior can result in success in one's own culture, but might not be accepted by employees of a foreign culture, which therefore, requires a flexible change of strategy to another leadership style by the particular manager (Javidan et al., 2004; Caputo and Crandall, 2012). The greater the differences between the expected and the real environment of a new culture, the greater become the meaning of flexibility for successfully overcoming this particular situation (Hannigan, 1990).

With respect to the level of abstraction, the conceptualization, and the assignment of flexibility to one of the structural dimensions, there is no clear consensus provided by literature. Again, while some researchers clearly depict it as an independent dimension (Wiemann, 1977; van der Zee and Brinkmann, 2004), others rather subordinate it to general personality traits (et al. Cui and Awa, 1992; Thomas, 2003; Deardorff, 2006b) or interpersonal abilities (Hawes and Kealey, 1981; Masgoret, 2006). Main elements of the flexibility are considered to be the adjustment to behavior patterns (Paulhus and Martin, 1988; Bhawuk and Brislin, 1992; Müllner, 2004; Lonner and Hayes, 2004; Matsumoto et al., 2004; Davis and Cho, 2005), the ability to learn from mistakes (van Oudenhoven and van der Zee, 2002), as well as the orientation to a new cultural environment, for instance, to replace certain activities of the home culture by new ones from the foreign culture (Ruben and Kealey, 1979; Black et al., 1991). Among the multitude of researchers, many emphasize the close relationship to the concept of open-mindedness. In this sense, flexible individuals need to be fewer rigid and are able to adjust their behavioral patterns or direction in response to unknown situations (van der Zee and van Oudenhoven, 2000). Flexibility includes the appreciation of other ideas and involves facets such as creative thinking and considering new methods of problem solving to eventually overcome the challenge of new and unclear circumstances (Tucker et al., 2004). In contrast to an assignment to the cognitive structural dimension (Matsumoto et al., 2001), the author shares the understanding of flexibility as the willingness to change one's own
behavior according to the challenges ahead (et al. Ruben and Kealey, 1979; Cui and Awa, 1992; Smith and Khawaja, 2011). It is therefore associated with the behavioral structural dimension of intercultural competence.

**Intercultural Communication Competence**

As stated above (see Ch.2.2.2), intercultural competence has been fairly often used as a synonym for intercultural communication competence (ICC) over the past (Wiseman, 2002). With respect to communication, one can differentiate between verbal messages − a conversation transmitted over spoken words − and nonverbal messages such as mimic, gesture, or intonation which complement, stress, replace, and sometimes even oppose the verbal messages of a person (Hinde, 1972; Zuckerman et al., 1981; Ting-Toomey, 1999). Consequently, communication competence includes both, language competence − in the case of intercultural competence referred to as foreign language competence − and nonverbal communication competence, which is considered as a separate dimension of intercultural competence within this thesis (Thomas and Hagemann, 2003; Mol et al., 2005). In fact, language has been frequently claimed as the main barrier to effective communication across cultures (Victor, 1992; Han, 2013). Many researchers proclaim foreign language competence as a key component of intercultural competence (et al. Ruben et al., 1977; Chen, 1989; Gudykunst, 1992; Bailey et al., 2000; Bolten, 2001; Han, 2013), since the structure of a person's language influences the manner in which they are aware of reality and act according to it (Lewis, 2000). GASS & VARONIS (1991) state that there is a high chance for miscommunication when individuals are not sharing the same sociocultural rules and obtain a certain level of foreign language competence in order to fulfill their assignments (Gass and Varonis, 1991). This is especially highly important in international project teams whose success often depends on high levels of it (Matveev and Nelson, 2004; Mol et al., 2005). BLACK (1990) stated that the proficiency in the language of the host country would enable adjustment and avoid disappointment which could be empirically confirmed by TAKEUCHI ET AL. (Gullahorn and Gullahorn, 1966; Ward and Kennedy, 1993; Takeuchi et al., 2002). On an organization level, language issues prevent professionals from establishing a communication network, which eventually lead to lost opportunities to accelerate decision-making processes, seek advice and assistance, and gain additional information (Marschan-Piekkari et al., 1999, p. 427; Selmer, 1999).

However, many studies unfortunately ignore communicative exchanges of international assignees outside of the professional settings during leisure activities. Learning foreign culture's language facilitates an understanding of the foreign countries' culture and how one should behave in order to create and maintain mutually satisfying relationships with foreign countries' nationals (Black, 1990; Caligiuri and Lazarova, 2002; Clegg and Gray, 2002). Considering the conceptualization of foreign language competence and its constituting facets, the approach by CANALE & SWAIN (1980) is not only one of the most established descriptive models of communication competence but also matches this thesis' requirements on a competence model:

1. The first component refers to the grammar competence. This includes the vocabulary and knowledge about the morphologic, syntactic, and phonological rules of a language. Grammar competence is a requirement to un-
understand and interpret speech acts contextually appropriately (Le Pair, 1996). It facilitates more in-depth conversations with colleagues and subordinates at work, contributes to the development of a global mindset and better decision-making (Caligiuri and Lazarova, 2002; Knowles et al., 2006).

2. As emphasized, knowledge remains insufficient as a condition of competence and needs to be applied as a skill. Pronunciation and fluency of the language are regarded as language skills and are relevant to the performance and are crucial for establishing interpersonal relationships in a foreign country since they impact the quality and quantity of interactions (Masgoret, 2006, p. 312). Therefore, foreign language skills have been regarded to increase self-efficacy (Ward and Kennedy, 1993).

3. Motivation, being the third component, is needed to use the knowledge and skills of a language. It is primarily influenced by self-efficacy\(^\text{42}\) and anxiety. The two of them have been linked to develop a high level of foreign language competence (Bailey et al., 2000).

4. The socio-linguistic competence refers to the consideration of the context and social factors and requires the attention to cultural norms and conventions for language use (Bialystok, 1993).

5. The last facet, the strategic competence, refers to the goals or rewards achievement. It requires the use of precise and specific utterances so that individuals can achieve their goals of an interaction even under unfavorable circumstances (Kupka, 2007).

To conclude, foreign language competence can be understood as the outcome of an effective and contextually appropriate interaction of knowledge about and skills of a foreign language, which are driven by the motivation to use both. Due to its knowledge focus it is associated with the cognitive structural dimension (et al. Cui and Awa, 1992, p. 311; Graf, 2004b, p. 27).

**Nonverbal Communication Competence**

Nonverbal communication has been regarded as the primary means to communicate emotions, attitudes, and perceptions of the nature of relationships in order to form mutually satisfying relationships in intercultural contact situations (Ting-Toomey, 1999, p. 21). Studies could repeatedly confirm that the majority of the meaning of most communication is transmitted via non-verbal cues, such as the tone of voice (Mehrabian, 1981). GUDYKUNST ET AL. (1988) define non-verbal communication “as the simultaneous multimodal, multilevel message transmission and message interpretation process” (Gudykunst et al., 1988, p. 117). This involves modes such as spatial relationships between communicators, or the use of time, gestures, posture, touch, physical appearance,

\(^{42}\) Self-efficacy, originating in BANDURA's (1986) social cognitive theory, is defined as the personal beliefs of individuals in their capabilities. It predicts greater success and persistence.
facial expressions, eye behavior, smell, and vocal cues (Matsumoto, 2000; Lustig and Koester, 2003).

Especially at multicultural project settings or expatriate assignments many misunderstandings can occur, as nonverbal communication can stimulate opposite meanings by the very same behavior in two different cultures (Richmond and McCroskey, 2012, p. 155). While some facets of non-verbal communication have been confirmed to have universal meaning across cultures (Ekman et al., 1972), it has also been well documented that nonverbal behavior pattern differ very much from culture to culture (Andersen et al., 2002). For example, to start a business meeting with a handshake can cause embarrassment in Muslim countries such as Iran, if offered by a woman to a man and vice versa (Gibson and Zellmer-Bruhn, 2001). Therefore, to achieve satisfying results in intercultural encounters and avoid misleading situations a high level of nonverbal communication competence is required (Lustig and Koester, 2003, p. 199).

With respect to the conceptualization of the nonverbal communication competence only a few attempts exist to offer a well-structured and elaborated description on its components (Burgoon, 1994). Communicators need to identify, understand, and interpret culture specific nonverbal signals which include knowledge about the cultural norms, values, and rules. It involves the skills to encode and decode non-verbal signs and symbols in an appropriate and effective way. In accordance with foreign language competence, individuals need the motivation to apply the acquired knowledge and practiced skills to build and maintain fruitful relationships (Martin, 1993; Ting-Toomey, 1993; Burgoon, 1994; Molinsky, 2005). Again, a sole reflection on the knowledge component of this dimension would lead to a clear assignment to the cognitive structural dimension. However, due to the underlying broad conceptualization relationships to the behavioral and effective structural dimension can be drawn as well.

Intercultural Self Awareness

Intercultural self-awareness as a subject of psychology has been discussed many times by leading researchers (Spitzberg and Cupach, 1989; Chen and Starosta, 1996; Deardorff, 2006b). As studies have shown, especially for professionals in multicultural work settings it is difficult to shape and maintain mutually satisfying relationships to transmit knowledge and practices (Iles and Yolles, 2002; Caligiuri, 2006). Therefore, to communicate their worldviews in an intercultural competent manner, individuals need to be aware of their own cultural heritage and its impact on their environment (Psalti, 2007). Only by displaying a high degree of intercultural self-awareness individuals can overcome the challenges of the intercultural communication process. Thus, it is necessary to intentionally refrain from judging the behavior, attitudes, and actions of their counterparts based on their own cultural values, norms, and rules (Gudykunst, 1991; Gudykunst and Kim, 2003). Intercultural interaction situations require both the capacity of appropriate and effective self-disclosure about the home culture and high awareness of the consequences and circumstances of one’s own behavior and actions (Wiseman, 2002). Individuals not only need to understand their own cultural orientation system but also how it influences their way of thinking and acting and which consequences occur for the mutual understanding through the conflict between home and foreign cul-
Intercultural self-awareness can be mainly related to the following two ontological roots.

**Situational Self-Awareness**

Intercultural interaction in a new social or professional environment requires individuals to be aware of the consequences of their actions. Situational self-awareness comprises the perception of the consequences of one's own actions which describes a temporary status that can even be trained. Situational self-awareness is associated with two types: private or public. Govern & Marsch (2001) define public self-awareness as the “attentiveness to those features of one’s self that are presented to others” while private self-awareness, in contrast, is delineated as the “attentiveness to the internal, personal aspects of one’s self” (Govern and Marsch, 2001, p. 366). The concept of public self-awareness involves the continuous comparison of people against perceived standards (Silvia and Duval, 2001), in which objective self-awareness theory depicts standards “as a mental representation of correct behavior, attitudes, and traits” (Duvall and Wicklund, 1972, pp. 3–4; Tajfel and Turner, 1986). A distinct awareness of the consequences of the (re)actions allows individuals to abstain from offensive or improper responses of the foreign culture. In comparison, private self-awareness has a major impact on motivation because of its clarifying and intensifying stimulus (Buss, 1980). Therefore, the concept of private self-awareness also influences individual’s behavior, which has been empirically confirmed on a large scale (Froming et al., 1982). In a nutshell, situational self-awareness indicates the level of awareness on how own actions lead to reactions by the social and professional environment as well as the awareness of one’s own behavior that can be changed through proper training.

**Home Culture Awareness**

Within any form of communication, individuals are eager to maintain a certain degree of self-identity as a motivating feature (Turner, 1987). Concentrating on the own identity and heritage leads to calmness, lowers the chances of fear and increases predictability and reliability. As a consequence, it influences behaviors, actions, and an individual’s acceptance of interaction rules. Gudykunst & Kim (2003) strongly emphasize the concept behind and argue that an intercultural encounter is also based on the support of the self-concept by the communication counterpart (Gudykunst and Kim, 2003). Subconsciously, one prefers to interact with people who confirm one’s own self-concept (Cushman et al., 1982). In fact, protagonists in this field follow the interactionist principle which assumes, for instance, that individuals create their own identity and reality through interactions with their environment. Wiseman (2002), as the probably most referenced researcher, emphasizes the significance of one’s own home cultural background since the unaware individuals “may not be able to correctly ascribe the reasons for the errors or be able to remedy them” (Wiseman, 2002, p. 211). To summarize, home culture awareness is the underlying foundation to engage in self-disclosing behaviors in a foreign culture. It is based on a diversity of acquired information about the home culture which shapes the self-concept of an individual (Wiseman, 2002).
The aforementioned dimensions are utilized for the quantitative study to examine a multidimensional factorial measurement structure of intercultural competence that covers all components of the psychological three component model of attitude. While this chapter has therefore presented the first major competence in an international project setting, intercultural competence, the following chapter presents the technical competence for the target group of IT-Infrastructure consultants.

3.2 Development of an IT-Infrastructure Competence Construct

The value of IT-Infrastructure (ITI) in today's organizations is, by most indications, of great importance. Over the past decades, research revealed and emphasized it as a major business resource that can be regarded as an enabler or barrier for shared IT capabilities as well as planning and changing business processes in organizations (McKay and Brockway, 1989; Wastell et al., 1994; McKenney et al., 1995). Most large companies have emphasized the development of an effective ITI among the top concerns of their overall IT-Management (Piccoli and Ives, 2005). In the most recent digital IQ study by PricewaterhouseCoopers (PwC) (PwC, 2013), more than 1,100 senior executives answered that the building and development of a flexible, modular, and responsive ITI is still the most important issue of IT-Management. In another well-known research survey, the world's leading IT research and advisory company Gartner reported that creating a scalable and agile ITI emerged as the number one priority among the 500 Chief Information Officer (CIO) it surveyed (Gartner, 2013b). The market requires a flexible ITI for rapid adaptations that are constructed with standardized and modular components. The following chapter focuses on the development of a theoretical understanding of the ITI as the most influential technical domain of IT. Based on a structured Literature Review (see Ch.3.2.1), the main components of this domain are introduced to develop the competence categories, which are used for an ITI competence construct later on (see. Ch.3.2.2).

3.2.1 Literature Review

In order get a comprehensive understanding of the IT-Infrastructure domain and to identify its main composing dimensions, a second literature analysis is performed according to Webster & Watson (2002) by applying the process of Buhl et al. (2011). As this thesis aims to get a comprehensive understanding of this field, all relevant articles of this research have been analyzed in detail. This Literature Review is based on research contributions published in highly accredited and well known journals. The following databases were used to cover a wide field of different publications: AIS Electronic Library (Aisel), EBSCOhost, EmeraldInsight, IEEEXplore, INFORMS, InfoSci-Journals, Science Direct, SpringerLink and WileyInterscience. Additionally, VHB-JOURQUAL and the Social Sciences Citation Index are considered as well to check on the quality of publica-
tions. The literature search was performed using the search fields "Title", "Abstract" and "Keywords" (see table 3-3). With regard to the search, each search term was put into quotation marks, in order to search for the term as a whole and not for each word individually, hence limiting the search results to the essentials. Since the search field ‘keywords’ is not provided by all considered databases, the search included searching within the ‘subject’ section of each database, whenever applicable. As this Literature Review aims at identifying all relevant information on the entire topic of IT-Infrastructure, a very broad combination of search terms were used, consisting of “IT Infrastructure”, “Information Technology Infrastructure”, “Information Architecture”, “Information System Infrastructure”. Due to the fact that the term IT-Infrastructure is internationally applied by scholars no translation into German was chosen.

Table 3-3: Criteria of the literature analysis

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Shaping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Databases</td>
<td>AIS Electronic Library (AISel), EBSCOhost, EmeraldInsight, IEEExplore, INFORMS*, ScienceDirect, SpringerLink*, and WileyInterScience.</td>
</tr>
<tr>
<td>Search fields</td>
<td>Title OR Abstract OR Keywords **</td>
</tr>
<tr>
<td>Key phrases</td>
<td>“IT Infrastructure”, “Information Technology Infrastructure”, “Information Architecture”, “Information System Infrastructure”</td>
</tr>
</tbody>
</table>

* If not included in other databases.  
** If specifiable

In order to sort out irrelevant articles the author has followed a step by step approach. Following PICCOLI & IVES (2005), the selection of articles identified by the keywords was conducted in three steps (Piccoli and Ives, 2005). The first generic search identified 7,370 papers solely based on the keywords. After reading title and abstract, the author decided whether an article provides an added value in terms of the analysis of the ITI domain and its main constituting dimensions. Again, to ensure a higher level of accuracy, the selections were cross-checked by another researcher familiar with the research topic. If the second researcher did not agree, publications were not further examined. Afterwards, the selected publication were read and analyzed in detail in order to decide again if they provide an added value for the underlying thesis. Table 3-4 shows the results of the literature research with respect to the various databases (Buhl et al., 2011).

Table 3-4: Outcomes of the databases

<table>
<thead>
<tr>
<th>Database</th>
<th>URL</th>
<th>Results (analyzed abstracts)</th>
<th>Analyzed articles (full text)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIS Electronic Library (AISel)</td>
<td><a href="http://aisel.aisnet.org">http://aisel.aisnet.org</a></td>
<td>127</td>
<td>126</td>
</tr>
<tr>
<td>EBSCOhost</td>
<td><a href="http://search.ebscohost.com">http://search.ebscohost.com</a></td>
<td>605</td>
<td>324</td>
</tr>
</tbody>
</table>
After analyzing the abstract, 853 papers were retained and analyzed by both researchers. At the end, 197 papers were found to be relevant for the final analysis (see App.C). Similar to the literature analysis of Buhl et al. (2011) and Piccoli & Ives (2005), it can be stated that there is a high chance of not finding all sources and depend “on the subjective judgment of the authors” (Buhl et al., 2011, p. 162). With respect to the time period, the beginning of ITI in academic literature is found in the beginning of the 90's. Therefore, the selected time period, 1990-2012, should provide the best suitable frame to conduct the analysis within this thesis. This approach provides a high degree of reproducibility and replication; allows for inter-subjective comprehensibility43 and due to the specified criteria lowers the chance of considering less acclaimed publications. Despite the fact that this procedure leads to a sample, instead of a complete set of publications in this field, the author is convinced that the aforementioned benefits justify the choice for this approach.

### 3.2.2 ITI-Competence Categorization System

Based on existing models of ITI (see Ch.2.4.2), the previous chapter could provide insights to the service and functionality categories upon which an enterprise depends. By that, a solid impression on the relevant ITI competence domains could be revealed. However, up to this point these categories have neither been consistently labeled and used nor clearly linked to competences for developing and maintaining an ITI. In the following the most relevant ITI competence dimensions and their definition are provided by means of a structured Literature Review. While there are a large number of articles, conference proceedings and book chapters on ITI, especially on its performance capability and importance for organizations, there is no current publication that synthesizes the various concepts, terminologies, frameworks and models to eventually provide a categorization system which shows what are the necessary requirement areas for the development and maintenance of an effective ITI. By that, one can clearly derive a rational competence categorization system on an individual level. The results of the underlying Literature Review revealed that any

<table>
<thead>
<tr>
<th>Database</th>
<th>URL</th>
<th>Results (analyzed abstracts)</th>
<th>Analyzed articles (full text)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EmeraldInsight</td>
<td><a href="http://www.emeraldinsight.com">http://www.emeraldinsight.com</a></td>
<td>1834</td>
<td>56</td>
</tr>
<tr>
<td>IEEEXplore</td>
<td><a href="http://ieeexplore.ieee.org">http://ieeexplore.ieee.org</a></td>
<td>782</td>
<td>101</td>
</tr>
<tr>
<td>INFORMS</td>
<td><a href="http://pubsonline.informs.org">http://pubsonline.informs.org</a></td>
<td>157</td>
<td>56</td>
</tr>
<tr>
<td>ScienceDirect</td>
<td><a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a></td>
<td>168</td>
<td>62</td>
</tr>
<tr>
<td>SpringerLink</td>
<td><a href="http://www.springerlink.de">http://www.springerlink.de</a></td>
<td>101</td>
<td>18</td>
</tr>
<tr>
<td>WileyInterScience</td>
<td><a href="http://www3.interscience.wiley.com">http://www3.interscience.wiley.com</a></td>
<td>3596</td>
<td>110</td>
</tr>
</tbody>
</table>

43 See also Kleining (1982)
type of competence discussion with respect to ITI has been consistently linked to research on the concepts of ITI capability and ITI flexibility. Both concepts share a common research base and same goals.

Following the RBV on ITI, capabilities are organization-specific and represent an internal capacity to deploy resources to achieve any particular objective (Amit and Schoemaker, 1993; Zhang et al., 2009). As already incorporated within the definition of ITI (see Ch.2.4.1), an ITI not only comprises the technical components which can be rather easily copied but also the human component that involves managerial capabilities of the IT personnel developed over time (McKay and Brockway, 1989). The concept of ITI capability therefore refers to the expertise of an organization required to provide a reliable ITI that can eventually contribute to a competitive advantage (Byrd and Turner, 2001).

Related to this stream of research, the concept of ITI flexibility has been emphasized as the second major source of competitive advantage (Zhang et al., 2009, p. 47). Due to the rapidly changing technology development of IT, ITI flexibility has been regarded a key characteristic for organizations and is understood as the "ability to easily and readily diffuse or support the existing ITI" (Byrd and Turner, 2000, p. 172; OECD, 2012). Moreover, it could be empirically confirmed that ITI flexibility, which implies adaptive IT personnel skills, makes it possible for any organization to respond to market changes and fundamental business needs; therefore, agility is improved (Xu et al., 2010). Both particular concepts of ITI have captured most of the attention of researchers and practitioners and implicitly deal with the relevant competence categories to implement an effective ITI within an organization (Downes, 2003).

There are numerous publications related to the two main ITI concepts which are based on qualitative and quantitative research methodologies. The former mostly deal with case studies on certain frameworks and services as well as issues around identification and patterns of ITI services in different organizations of various sizes, organizational forms and industries. The latter especially provides empirical models that examine the influence of the particular ITI flexibility construct, developed by BYRD & TURNER (2000), on various dependent variables in different contexts. Despite the fact that the fast-paced technology development has significantly changed operation methods and performances of ITIs, especially over the past decade, and solidified the service-oriented understanding of ITI (see Ch.2.4), one can identify certain categories, also known as qualities, of a capable and flexible ITI which have been repeatedly used. Based on the highly influential research effort of DUNCAN (1995) these categories are labeled as connectivity, compatibility, modularity and skilled IT personnel (Duncan, 1995). In a nutshell, connectivity is known as the ability of the technology components to establish any internal or external connection with the other components in the best possible quality if needed. Compatibility is understood as the ability to share any type of information (text, voice, image and video) across any technology component (Duncan, 1995). The ability to easily add, modify, and remove the technology components of an ITI are known as modularity. Finally, the IT personnel competency comprises the necessary skill set and experience of the IT personnel to manage IT resources and perform IT activities. These four categories are transferable to the necessary competences of ITI personnel as well. However, as they represent a very high level of abstraction at an organizational level it becomes difficult to clearly derive
suitable ITI competence dimensions of the same content depth (Gerbing and Anderson, 1988). Furthermore, up to now there is no mutual agreement on the underlying requirements domains or dimensions and associated indicators that could eventually account for these categories. A closer examination of the literature exhibits that even though authors discuss congruent or at least similar content with respect to the domains of a capable and flexible ITI they often times focus on different core topics or simply use a different terminology leading to overlappings or gaps when comparing these domains with each other. Hence, there is a lack of research that clearly integrates these aspects of an ITI and synthesizes existing results. Appendix D attempts to consolidate the various ITI service and functionality categories identified from the Literature Review to derive a first coherent competence categorization system that indicates the same level of importance and content-depth. After analyzing 197 highly relevant papers of the Literature Review, only those publications are taken into considerations that show different domains which are relevant for an ITI.

As described in the ITI model by Liu (2002) and the ITI frameworks by Gibson (1993) or Duncan (1995), the previous chapter (see Ch.2.4) has already mentioned the importance of the network environment, communication or connectivity as the underlying base for any ITI to allow for connectivity within an organization. In accordance to literature, this category is named as *Networks* and focuses on the technology and protocols that facilitates digital communication within an organization or with external stakeholders (Weill and Vitale, 2002, p. 31). It comprises a comprehensive understanding required to create an effective communications network, in addition to the necessary hardware and applications to meet the needs of an organization.

According to the IT Infrastructure Library (ITIL), an application describes “software that provides functions which are required by an IT service” (ITIL, 2011, p. 4). While there are many terms used in this sense such as application management by Broadbent ET AL. (1996), business application by Davenport & Lindner (1994), or software application by Qi (2008), the underlying thesis uses the terminology *Application Functionality* which was implemented within the ITI framework by Byrd & Turner (2000) to refer to the ability to add, adapt, and eliminate the components of software applications without having any extensive effect on the applications collectively. In accordance with many authors such as Weil & Vitale (2002) or Gheysari ET AL. (2012) this category also includes management aspects such as purchasing software, developing proprietary applications, providing the appropriate support, and other tasks related to certifying that applications will benefit an organization (Weill and Vitale, 2002).

The third essential requirement category, *Platform*, relates to computer systems and associated components needed in an application environment (Liu, 2002, p. 17). It also includes redundant or backup power supplies, redundant data communications connections, and environmental controls (e.g., air conditioning, fire suppression). Platform has been clearly described as an own category by McKay (1989) at an early stage and, for instance, has been variously labeled as hardware, technological base, physical elements or processing resources by many authors like Kumar (2004), Bhatt (2005), Schwager (2000) or Booth (2005).
The configuration and handling of data is another service that has been widely considered as a distinct requirement domain for any ITI. The Literature Review reveals that this particular issue has been sometimes referred to transparency, data, or compatibility (Broadbent et al., 1999b; Mithas et al., 2011; Kumar and Stylianou, 2013). For the underlying thesis, *Data Management* is understood as the way an organization structures and manages its information resources. One needs to differentiate between data form external or internal databases. Hence, data management involves “the collection of information, database design, sorting and reporting of data, developing links to external databases, guaranteeing data compatibility, and other activities related to the effective management of electronic information” (Weill and Vitale, 2002, p. 31).

KEEN (1995) was among the first ITI authors to explicitly mention and emphasize the need for developing an effective IT *Architecture* in an organization to establish a commonly agreed set of decisions on processes, procedures, services and disciplines on the use of IT (Keen, 1995). The architecture can be regarded as the underlying foundation for the IT strategy which includes the model of an organization’s technological requirements and its overall approach for the organization of resources (Niederman et al., 1991; Duncan, 1995). Once again, ITI literature has not consistently used the same terminology of this particular category by labeling it oftentimes as standards, principles or guidelines which don’t always reflect the scope of this category (Bharadwaj, 2000; El-Refaey, 2009; Masrek and Kamaruzaman, 2009). Therefore, architecture is understood as a holistic category that incorporates all rules and policies that manage the use of IT and design a migration approach to the way business will be done in an organization (Weill and Vitale, 2002, p. 31).

There is no doubt that establishing an effective ITI in an organization strongly depends on profound knowledge and competence in the field of business in order to interpret business situations and correspondingly react to them by effectively deploying the IT (Byrd and Turner, 2000). LEE ET AL. (1995) have developed an ITI framework that considers business competence as a requirement category for the ITI workforce. While in this case most researchers stick with the underlying terminology, business process support, business functional skills, functional skills, or business functional knowledge are among the common terms used by other researchers like GIBSON (1993), BYRD (2001), FINK (2007) or KLEIN-SCHMIDT (2010) in the same context to emphasize the need to understand the business processes an ITI is supposed to support by offering the appropriate technical solution to any business problem. In relation to business, many authors like DUNCAN (1995), HILHORST (2005), PROKOSCH (2010) or WANG (2013) additionally point out the meaning of management competence category as a requirement for the ITI workforce and incorporate it as a mandatory component of their research efforts. By that, researchers refer to the competence of coordinating and controlling all of the activities required completing an IS project on one hand and to understand the business processes they are to support and to apply the appropriate technical solution to a given business problem on the other hand. Following the majority of researchers, the underlying thesis uses the term Business as one of the key dimensions of the ITI competence dimensions.

While it has been mostly related to the concept of human infrastructure (see Ch.2.4.1), *IT-Servicemanagement* is concerned with the importance of having competences to plan, coordinate, and control the quality and quantity of IT serv-
services to support business processes for reaching organizational objectives by reducing cost, increasing quality and satisfying customers (Davenport and Linder, 1994; Joachim et al., 2013).

The last category of the service and functionality categorization addresses the security aspects around an ITI which is also known as data protection or information security (Cordella, 2004; Durmusoglu, 2010). This particular issue has not only been triggered by the already emphasized rapid technology development and its associated risks but has always been mentioned as an essential requirement category by many researchers under various organizational circumstances. Security and Risks is therefore understood as the need to protect data, equipment, and processing time from any potential risk based on various sources such as system failures, inflexible IT-Architecture, intrusion of malware, operator errors during backup or maintenance (Ernst & Young, 2011, p. 5). Any organization needs to limit its access to certain information and will protect its information and applications from any external harm or manipulation (Weill et al., 2002a; Weill and Vitale, 2002). As an inherent component recovery plays a decisive part of this category since it involves the plan to sustain IT services and functionalities in case a failure takes place (Choi and Choi, 2002).

The underlying chapter presented the main ITI competence categories which are utilized for the development of a comprehensive and multidimensional ITI competence construct to measure the influence of technical competences of IT-Infrastructure consultant on job performance. The latter is used as a proper success criterion and is depicted in the following.

3.3 Success Criterion Job Performance

In addition to the derivation of an intercultural competence construct and establishing the conceptual foundation for a new IT-Infrastructure construct, a third variable, job performance, which serves as a success criterion, is introduced as well to enable a close examination of the two constructs simultaneously in a quantitative context. After reviewing research, one can distinguish between two different yet complementary lines of argumentation with respect to using job performance as a success criterion for intercultural competences on one hand and technical competences like the IT-Infrastructure competences on the other hand. In the following these two different lines of argumentation will be separately delineated.

3.3.1 The IT-Infrastructure Competence Perspective

While job knowledge is known as the necessary knowledge that is “involved in the accomplishment of core job tasks” (Rich et al., 2010, p. 620), the development of an ITI competence construct even goes beyond that and involves the necessary

---

44 see also HUNTER (1986)
competences linked to the implementation and maintenance of main technical processes for an IT-Infrastructure of an organization (Bergman et al., 2008). In contrast to the vast majority of research studies, the underlying thesis truly aims at investigating competences on a comprehensive level by not solely focusing on procedural knowledge but also taking into account the heuristic competence component as well (see Ch.2.5.2). Since the 1980s path analysis of research studies have empirically shown that for “civilian jobs, job knowledge is correlated with an average of 0.80 with job performance measured by objective work sample performance” (Hunter, 1986, p. 341). As a consequence, the same reasoning can be applied to the competence context as well.

E. L. THORNDIKE was among the first researchers to develop a theory of learning and performance in the 1920s which explains the aforementioned insights. This theory derives its predictions from the learning process and emphasizes that learning can happen in an official training setting or it possibly occurs while being on the job (Thorndike, 1930). However, the requirements and conditions under how and where learning takes place differ from both of the settings. In a training environment learning is associated with corresponding knowledge transfer by a teaching individual and is immediately presented to the learner as well as where attention is drawn to the essential content. Whereas learning in a professional setting develops after the employee realizes the importance of a particular event and accordingly is able to capture the “inherent lesson” of it (Hunter, 1986, p. 348). Following THORNDIKE’S theory of learning, performance is dependent on learning and the resulting knowledge. If an employee has not processed the necessary learning lesson and has not acquired knowledge to understand what to carry out in a particular job situation, then the employee will not be able to fulfill his tasks (Bergman et al., 2008). According to HUNTER (1986) and MOTOWIDLO ET AL. (1997) the level of cognitive ability mainly influences the linking process of connecting current information to stored knowledge to determine solutions to novel situations and exhibit superior performance based on learning (Motowildo et al., 1997; Bergman et al., 2008, p. 228).

![Figure 3-1: Path analysis model (Hunter, 1986; Motowildo et al., 1997)](image)

In a corresponding model the authors examine this relationship and emphasize that cognitive ability is highly relevant to learning from recognition since the
acquired knowledge needs to be properly restructured. There should be a high correlation between cognitive ability, learning, corresponding knowledge and performance (see figure 3-1). Learning, however, is a necessary but not sufficient condition for performance (Hunter, 1986, p. 348). Performance may require that the employee go beyond knowledge of the job and tasks. Therefore, the term job competency or job competence has been introduced by Boyatzis (1982) which is understood as an underlying characteristic of a person which results in effective and/or superior performance in a job. According to Spencer & Spencer (1993) in addition to knowledge these characteristics eventually involve motives, traits and self-concept. Knowledge and skills tend to be visible and comparatively surface characteristics, while self-concept, traits and motive competencies are latent characteristics, thus, they are linked to an individual's personality (Cummings and Worley, 2009). Knowledge is widely understood as the technical core which is relatively easy to develop through proper training; whereas the non-visible characteristics drive an individual's performance in the job and are rather difficult to develop (Bartram et al., 2002). Research revealed that both, motive and trait, have the most direct impact on self-concept and have an inevitable impact on knowledge as well (Boyatzis, 1982). Despite the fact that the wide range of related literature continuously stresses the importance of these behavioral characteristics to "criterion-referenced effective and/or superior performance in a job or situation” due to the changing environment of global workforce (Spencer and Spencer, 1993, p. 9), it continuously emphasizes the importance of learning and job knowledge especially in highly technical work settings such as an organization's IT-Infrastructure (Ivancevich, 2010). Since the amount of learning leads to content valid job knowledge, the classic theory predicts a high correlation between job knowledge and job performance. The underlying thesis builds up its empirical analysis on the classic learning theory by Thorndike and therefore uses job performance as the suitable success criterion for the ITI competence construct.

3.3.2 The Intercultural Competence Perspective

As emphasized in chapter 3.1.1 one of the issues of research on intercultural competence was a lack of a clear reasoning and line of argumentation for the selection of its success criteria. By referring to the widely accepted success variables, adjustment, effectiveness, and appropriateness this thesis uses job performance as an overall success indicator for its intercultural competence model for the following commonly acknowledged reasons:

1. Intercultural competence is often described as a psychological adjustment process with particular awareness on how individuals overcome stress in an international work setting through understanding, sensitivity, steady communication, and intensifying activities to become effective professionals in their novel cultural setting. Many of the studies that examined the adjustment of technical and business people considered job performance one of the most important criteria in determining whether expatriates have adjusted (Stoner, 1972; Vadivelu and Klein, 2008; Pan et al., 2010; Lee and Donohue, 2012). Job performance, however, depicts only one facet and is often mistaken with overall adjustment to generate
contradictory outcomes (Benson, 1978). RUBEN ET AL. (1977) claimed that intercultural adjustment and job performance are the two main results of an intercultural work experience (Ruben et al., 1977). These are both distinct yet interrelated features of intercultural adaptation. A person can be effective at his profession only if he is well adjusted to the foreign culture, as intercultural adjustment has empirically proven to greatly influence job performance. In a corresponding research study of Canadian technical assistants working in African and Asian countries, HAWES & KEALEY (1981) separated adjustment from “overseas effectiveness,” and delineated the latter as a construct including task accomplishment, job performance, and transfer of skills. The authors revealed that interpersonal skills have the highest impact on overseas effectiveness and that inappropriate intercultural interactions hindered the transfer of relevant skills. They suggested that a person needs to continuously attempt to culturally adjust when working in a foreign cultural environment (Hawes and Kealey, 1981). For that reason, intercultural adjustment and job performance should be significantly correlated. At the same time one needs to keep in mind, that job performance should not be confused with cultural adjustment (Benson, 1978). For example, a professional can be very successful in his profession but indeed not very well adjusted to his social environment, since adjustment to a foreign culture’s working environment is different from the social environment. High job performance does not automatically lead to intercultural adjustment. Both stand for two different concepts that yet embody two related aspects of a person’s intercultural experience (Hammer, 2002).

2. Given the conceptualization of the construct job performance, one can hardly deny it is closely related to effectiveness which supports its selection as a success dimension. Literature on job performance has argued that there exist two distinct dimensions of work behaviors which define job performance: task performance and contextual (also called citizenship) performance. The influence of both dimensions on important factors such as job satisfaction (van Scotter and Motowidlo, 1996), stress (Boswell et al., 2004), or earnings (Suleman, 2012) have been independently and extensively investigated. While job performance is a behavior that can be evaluated as positive or negative for professionals, it needs to be distinguished from effectiveness in the first place, which is always dependent from the point of view of the researcher and is regarded as the result of particular objectives relative to effort and other alternatives (Borman and Motowidlo, 1997). This differentiation indicates that effectiveness is an outcome of behavior and can be influenced by performance. Accordingly, many studies have demonstrated that both task performance and contextual performance contributes to effectiveness, hence, exhibiting a high correlation of both (Podsakoff, 1997). Task performance involves patterns of behaviors that are directly associated with performing profession related task, or activities that provide indirect support for the organization’s core technical processes such as using information, processing the information, performing technical procedures, making judgments, solving problems and making decisions related to core technical functions (Kahya, 2009, p. 98). It involves skills in applying rele-
vant technical knowledge to perform the necessary actions rapidly and without any issues. A causal relationship between task performance and effectiveness is assumed, where an increase in task performance automatically leads to higher effectiveness outcomes. Contextual performance is typically conceptualized as being under the motivational control of individuals and less constrained by work characteristics than task performance (Borman, 1993). There are many reasons to expect high levels of contextual performance on the part of organizational members to contribute to organizational effectiveness (Borman, 2004). Contextual performance behaviors involving persistence, effort, compliance, and self-discipline might enhance the effectiveness of individual workers. The theory of individual differences in task performance and contextual performance developed by Motowidlo et al. (1997) argue that both performance dimension contribute independently to an aggregated whole that shows a professional’s overall contribution to the organization (Kiker, 1999). By that, any performance item with high level leads to higher outcome of one particular measure of effectiveness.

3. Kraimer & Wayne (2004) offered a review of expatriate success dimensions which have been investigated by research studies over the past decades. These constructs include perseverance (remaining in the assignment until the end of the term), adjusting to living conditions and performing well on the job (Kraimer, 2004). Many variations of these constructs have been described and used in empirical studies and it could be revealed that especially most of the job performance constructs even include main facets of ICC such as: speaking a foreign language, social interaction, understanding the business culture of the host country, establishing business relationships, and adjusting to foreign business practices. As stated above, performance theory suggests that performance is multi-faceted (Campbell, 2011). By disaggregating job performance into separate performance factors that also take into account avoidance of rule violation, being accommodating, courteous, compassionate, or adaptable in a given situation within a certain culture, job performance can certainly addresses the third success dimension, appropriateness, of intercultural competence. Furthermore, one needs to keep in mind, that the two success variables, appropriateness and effectiveness, share an interdependent relationship. As Spitzberg (2000) has outlined, behavior that is primarily appropriate only reaches the level of sufficing. Every individual in an intercultural encounter, however, brings expectations and goals to the exchange that need to be met and accomplished. Achieving goals relative to effort and other alternatives is considered to be effectiveness (Spitzberg, 2006).

The line of argumentation made clear, that for the underlying research purpose a valid job performance construct can represent an appropriate choice for a success criterion. As a well-designed success criterion for intercultural competence, job performance usually highly correlates with intercultural adjustment and can obviously predict individual effectiveness as well. By developing a factorial measurement structure that also incorporates particular facets of appropriateness, the underlying thesis aims at using a operationalization of a suitable job
performance scale that addresses all aforementioned success related issues of an intercultural competence model. Table 3-5 shows the six items and corresponding questions that cover the job performance construct based on the work of WILLIAMS & ANDERSON (1991) which is utilized for the quantitative research study.

Table 3-5: Job performance items (Williams and Anderson, 1991)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>This worker usually completes her task fast.</td>
</tr>
<tr>
<td>2</td>
<td>Overall this worker's performance is of good quality.</td>
</tr>
<tr>
<td>3</td>
<td>This worker is successful in dealing with unforeseen and/or unexpected events (disturbances, interruptions, losses/deficiencies, crises, stagnations).</td>
</tr>
<tr>
<td>4</td>
<td>This worker adjusts herself well to changes and innovations.</td>
</tr>
<tr>
<td>5</td>
<td>This worker acts in cooperation with others in a sociably acceptable manner.</td>
</tr>
<tr>
<td>6</td>
<td>This worker acts in cooperation with others in a sociably acceptable manner.</td>
</tr>
</tbody>
</table>

3.4 Derivation of Research Questions

Besides answering research question 1 and 2 the results of the Literature Review can be used to derive and solidify the research questions depicted in chapter 1.1.1. To derive a comprehensive intercultural competence construct for this thesis that meets the requirements of a rigorous variable, MERTESACKER’S (2010) selection approach and corresponding results for intercultural competence dimensions have been presented and adopted in chapter 3.1.2. Despite not being directly related to the competence domain and research, chapter 3.2.2 has clearly revealed that there are various dimensions which constitute an ITI and are of great importance for research and profession as well as provide the necessary foundation for competences in this field. Even though there is no consistent terminology, a comprehensive analysis could identify eight different dimensions which are validated by qualitative studies with chosen experts in this field (see Ch.4.1.1). In this context it could be also disclosed that there is not a detailed and commonly agreed set of requirements, or rather specific competences, for each dimension relevant for any ITI professional (see Ch.4.4). Chapter 3.3 could demonstrate a thorough line of argumentation based on conceptual thoughts from intercultural competence research on one side and insights from learning theory by THORNDIKE on the other side that job performance represents the most suitable variable to measure the success of intercultural competence and ITI in a factorial measurement structure. However, due to the lack of a methodologically sound ITI competence construct up to now there is no empirical study which examines the influence of both, intercultural and ITI competences,
on professional’s job performance. Table 3-6 summarizes the research gaps that could be identified through the Literature Review of the intercultural competence and ITI domain. It not only shows the research gaps but also which of the already mentioned research questions are addressed. The following chapter 4 and 5 elaborate on these research questions by means of an empirical survey and applying qualitative and quantitative research methods to provide answers in chapter 6.

Table 3-6: Research gaps of the underlying thesis

<table>
<thead>
<tr>
<th>Research Category</th>
<th>Research Gap</th>
<th>Research Question(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITI</td>
<td>There is no commonly agreed set of competences that are required by today’s IT-Infrastructure consultants.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Despite the fact, that ITI dimensions are discussed, there is no consistent terminology used for the dimensions throughout the literature.</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>There is no study that comprehensively and appropriately measures and examines ITI dimensions and corresponding competences.</td>
<td>3, 5, 6, 7</td>
</tr>
<tr>
<td></td>
<td>There is no quantitative and empirical confirmation of the ITI dimensions.</td>
<td>4</td>
</tr>
<tr>
<td>Intercultural Competence</td>
<td>Even though job performance has been widely accepted in the intercultural research community, up to now there is no study that specifically examines the influence of a complex and sound intercultural competence construct on job performance.</td>
<td>1, 6, 7</td>
</tr>
<tr>
<td></td>
<td>There is no study that examines the moderation and mediation effect that intercultural competences can display in a job performance model.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Up to now, there is no intercultural competence study in the business and information systems domain.</td>
<td>6</td>
</tr>
<tr>
<td>Job Performance</td>
<td>There is no study that examines technical competences like ITI competences and intercultural competences at the same time in a quantitative model to quantify the relevance of each dimension on job performance.</td>
<td>6, 7</td>
</tr>
<tr>
<td></td>
<td>Up to now, there is no job performance study in the business and information systems domain.</td>
<td>6</td>
</tr>
</tbody>
</table>
Chapter 4

Qualitative Study

In the previous chapter eight different ITI domains have been identified which can build the foundation for the development of corresponding ITI competence dimensions. In the following chapter, these domains are validated and extended by means of a qualitative interview study to gain an up-to-date picture of the competence dimensions of an ITI consultant. For this purpose, five expert interviews are conducted and subsequently analyzed by using the qualitative content analysis following MAYRING (2010).

Moreover, as there is no commonly agreed set of competences for each of the identified dimensions to display a detailed technical profile in this field, a comprehensive job profile analysis is conducted to identify the specific competences of an IT-Infrastructure consultant. 250 different job profiles are thoroughly collected, systematically analyzed and the identified requirements are assigned to the competence dimensions. By combining interviews and job profile analysis, an inductive-deductive approach is implemented to eventually develop the most accurate understanding of the competence dimensions and their relevant competences for an ITI consultant.

Chapter 4.1 explains the objective and method of the interview study and focuses on expert interviews as the underlying survey method as well as on the qualitative content analysis. Subsequently, chapter 4.2 elaborates more on the qualitative survey by depicting the development of the interview guide, the selection of experts as well as on conducting the interviews and transcribing them. Based on that chapter 4.3 elaborates on the data analysis and introduces the qualitative content analysis at first, before deriving and explaining the categorization system and coding rules as well as how the references are extracted and transferred. Finally, the results of the interviews are presented. After having introduced the methodology and results of the qualitative interview study, the qualitative analysis of the 250 job profiles of IT-Infrastructure consultants are delineated. Chapter 4.5 explains the objective of the job profile analysis. The latter follows a qualitative content analysis analogously to the interview analysis.

Chapter 4.6 presents the selection of the job profiles before depicting the data analysis and the applied methodology to extract the information and transfer them. Chapter 4.7 concludes with the results of the job profile analysis.
4.1 Methodology

The qualitative research paradigm is characterized by its drive to concentrate on new issues and ideas, thereby investigating complex phenomena. According to Lamnek (2010) the conceptual pair of explaining / understanding and particularistic / holistic appropriately illustrates the difference between quantitative and qualitative research (Lamnek, 2010, p. 272).

According to Wrona (2010) qualitative studies aim at developing hypotheses and theories of the middle range, at classification and typification, and at discovering developmental dynamics (Wrona, 2010). Since qualitative research argues investigating from single cases to the general, an inductive reasoning, a particular methodological openness as well as a flexible approach is associated with it (Przyborski and Wohlrab-Sahr, 2010). This may lead to an identification of the researcher with the research subject (Flick, 2012). Furthermore, qualitative research is characterized by a theoretical sampling strategy, a low measurement level, closeness to data and an interpretative analysis of data (Bortz and Döring, 2006).

During the last decade mixed methods research designs became increasingly popular with social sciences mostly driven by the increasing complexity of research problems (Andrew and Halcomb, 2009). It can be defined as “the collection or analysis of both quantitative and qualitative data in a single study” ( Creswell et al., 2010, p. 212). In general, one can differentiate between sequential or simultaneous data collection involving a different prioritization and integration of the data in the research process. By incorporating both quantitative and qualitative research methods, it enables researchers to take advantage from the results of the other and gaining a deeper understanding of the phenomenon (Hanson et al., 2005, p. 224).

The present qualitative survey consisting of an interview study and subsequent job profile analysis are used to validate, extend, deepen and update the results of the Literature Review (see Ch.3.2.1) which led to the main ITI dimensions. By that, these insights are used to develop ITI competence dimensions and matching competence items which represent the main input for the subsequent quantitative survey. The underlying thesis therefore uses a mixed method design with a sequential data collection process in which each study addresses particular research questions and in which each study is of equal importance (Morse, 1991).

The first part of the qualitative survey used semi-structured, guide-supported expert interviews with five IT-Infrastructure consultants. All interviews were recorded, transcribed and analyzed with respect to the content to provide insights on the ITI dimensions based on professional experience by the interviewees. The second part of the qualitative survey uses job profile analysis to determine the competences needed by today’s IT-Infrastructure consultants from an employer perspective. 817 job advertisements were collected, coded and analyzed.

---

45 A detailed introduction to the qualitative research paradigm is provided by Denzin & Lincoln (2003).
to not only identify relevant tasks and corresponding competences of the target group but also confirm if the previously identified and further examined ITI dimensions can be used as a categorization system for the job related tasks of the examined job advertisements. Following research question are addressed by the qualitative survey:

**Research Question 3:** How can you consolidate competences in the field of IT-Infrastructure?

**Research Question 4:** Which requirements have to be met by today’s IT-Infrastructure consultants?

Chapter 4.1.1 delineates the methodological foundation for the expert interviews. Afterwards, chapter 4.1.2 introduces the qualitative content analysis to analyze the interview data.

### 4.1.1 Interviews

Qualitative research relies on four methods for data collection methods: participating in the setting, observation, interviews, and textual or visual content analysis (Marshall and Rossman, 2006, p. 97). Nevertheless, interviews are widely regarded as the standard data collection instrument for determining facts, knowledge, opinions, attitudes and assessments of a research subject (Philips, 1971, p. 3). As indicated in figure 4-1, there are three main types of research interviews: structured, semi-structured and unstructured (Gill et al., 2008, p. 291).

![Figure 4-1: Types of Interviews (Gill et al., 2008)](image)

The main difference between these types is the degree to which participants have control over the process and content of the interview (Corbin and Morse, 2003, p. 339). Structured interviews are verbally controlled questionnaires, in
which a list of predetermined questions is asked the interviewee, involving only little or no discrepancy and with no extent for follow-up questions to answers which permit additional explanation (Dicicco-Bloom and Crabtree, 2006). On the other side, unstructured interviews do not reflect any preconceived theories or ideas and are performed with little or no preparation (Gill et al., 2008). Main goal of unstructured interviews is to gather in-depth understanding on phenomena where not much knowledge exists (Janz, 1982). As a consequence, they are typically very time-consuming, difficult to manage, and to participate in (Gill et al., 2008). The last type of interviews, semi-structured interviews, consist of several key questions that support the interviewer to characterize the research field to be investigated, but unfolds in a conversational manner offering interviewees to channel the interview to issues they consider more essential (Clifford et al., 2010, p. 103). Moreover, qualitative research offers a variety of interview techniques each holding a different level of depth and scope on the research question (Stein, 2007). Among the various techniques the narrative and the problem-centred interview are considered to be the most relevant ones for the social sciences as both allow an effective access on social life (Louchart and Aylett, 2004: Lamnek, 2010, pp. 356–380). Within the narrative interview the interviewee is asked to tell something about a certain story or situation in his life ad hoc (Hollway and Jefferson, 2000). It therefore involves an open and unstructured interview setting allowing approaching the participants “experiential yet structured world in a comprehensive way” (Flick, 2014, p. 265). Conversely, the problem-centered interview technique was mainly suggested by WITZEL (2000) and is a theory generating approach which focuses on a particular problem and explicitly uses the previous knowledge of the interviewer in an open discussion with the participant. The previous knowledge is reflected in the interview guide that the interviewer utilizes as a heuristic reference framework for his orientation (Witzel, 2000). It is characterized by three phases: problem-centering phase (outlining the issue from the interviewee’s point of view), object-orientation phase (taking a certain methodology as a basis to approach the problem) and process orientation phase (collecting data and testing it for its suitability to solve the problem) (Friebertshäuser et al., 2010).

According to MEUSER & NAGEL (1991) the expert interview poses a certain type of the problem-centered interview and uses a semi-structured approach. In contrast to all other interview types, the interviewee represents a specific target group with expert knowledge in a particular field of activity (Flick, 2014, p. 227). According to literature in this field, there are three different objectives of expert interviews: exploration in a new field and generating new hypothesis, generating additional information to complement other methods and to develop new theories or typologies (Bogner and Menz, 2009, p. 46). MEUSER & NAGEL(1991) emphasize that process and context knowledge can be rebuilt by expert interviews (Flick, 2014). As a consequence, expert interviews are most suitable for the underlying research questions and are used in this thesis. After conducting expert interviews and transcribing them, the data needs to be analyzed by using interpretative approaches such as the qualitative content analysis which is depicted in the following chapter.
4.1.2 Qualitative Content Analysis

According to qualitative research literature, there are several methods to analyze qualitative data. However, following three approaches have mostly been used by researchers (Kuckartz, 2007): Grounded Theory, objective Hermeneutics and qualitative content analysis. However, due to the fact that there is already existing knowledge in the field of IT-Infrastructure competence and Grounded Theory is mostly applied when no knowledge about the research topic is available, content analysis is utilized for the underlying thesis to analyze the data from the expert interviews.

Overall, literature generally distinguishes between a qualitative and a quantitative content analysis approach. In a nutshell, the quantitative content analysis aims at quantifying certain text units like words, sentences, symbols and other characteristics of the material (Lamnek, 2010, p. 449). Qualitative content analysis, as it is used in this thesis, consists of a collection of techniques for efficient text analysis which was developed in a comprehensive social study of unemployed teachers (Ulich, 1985). After some modifications by Mayring (2000) it became increasingly popular in the German research community (Mayring, 2000). The object of qualitative content analysis is usually based on any kind of recorded communication such as interview transcripts, protocols of observations or video tapes (Mayring, 2000, p. 1). However, content analysis examines not only the visible content of the corresponding object but also clearly differentiates between levels of content. While qualitative content analysis oftentimes focuses on the topics and main ideas of the object, it also goes beyond that and aims at the context information. Indeed, the analysis of formal aspects of the data is taken into account either (Altheide, 2013). As stated by Krippendorff (1969), "content analysis can be regarded as the use of replicable and valid method for making specific inferences from text to other states or properties of its source" (Krippendorff, 1969, p. 103). According to Mayring (2000) qualitative content analysis has following main objectives (Mayring 2000, p. 3):

1. Fitting material into a communication model: The communication model determines the objective of the analysis. This step reveals the type of material and how it was generated

2. Rules of analysis: The material is structured and analyzed based on explicitly determined rules

3. Categories in the center of analysis: The analyzed data are assigned to categories which were thoroughly generated. The categorization system is either determined by inductive or deductive reasoning and should be revised throughout the process.

4. Criteria of reliability and validity: The entire process aims at intersubjective comprehensibility by clearly describing each step, at comparabil-

---

46 For more details on the different qualitative data analysis methods see Bortz & Döring (2006) or Kuckartz (2007)
ity through triangulation of the results with other studies and at carrying out reliability checks by using a second coder.

In general, the qualitative content analysis differentiates between two approaches with respect to the development of the categorization system. Within the inductive category development the aspects of interpretation are developed as close as possible to the material and out of the material. By that, the material is revised after 10-50% of its scope (Mayring, 2005, p. 12). The idea behind is to characterize a criterion of definition based on theory and research objectives, which eventually decides which aspects of the material are considered. Following a feedback loop the categories are constantly changed and reduced to main categories. Deductive category application in contrast, uses previously determined and theoretically founded aspects to analyze the material. Therefore, based on relevant theory, category definitions, coding examples and coding rules for each deductive category are provided for accurately specifying under which circumstances a text unit of the material can be assigned to a certain category (Mayring, 2000). Moreover, following a quantitative content analysis approach the number of text units assigned to each category can be counted as well to provide an indication on the meaning of the categories. WEINGART ET AL. (2004) have emphasized the benefits of a “vivid” coding approach which incorporates coding loops open for any improvement of the coding at any time (Weingart et al., 2004).

According to his process model, MAYRING categorizes the qualitative content analysis based on three essential techniques (Mayring, 2002): Summarization, explication and structuring. All techniques can be either consecutively or separately used for analyzing the material (Lamnek, 1993). The summarization technique aims at maintaining the content of the material despite the implementation of an abstraction process. As a consequence, by using a reductive process of the material inductive categories are developed out of the material. In contrast, the explication technique adds content to particular text units of the material to develop a more accurate and comprehensive understanding of the content. The structuring technique aims at identifying certain patterns in the material to develop a corresponding structure with respect to formal, contextual, typifying or scaling aspects (Mayring, 2002 pp. 84-88). While the formal structuring is concerned with filtering the content based on formal criteria like syntax or semantics, the contextual type extracts and summarizes the material to certain topics and content. Moreover, the typifying structuring aims at extracting distinctive meanings, types, from the text and describing them in depth. The scaling structuring involves a quantitative aspect and aims at rating the material on an ordinal scale of the coder (Ritsert, 1972). The structuring technique requires accurate definitions of the structuring dimensions to assure a clear assignment of the text units (Bortz, 2006). It therefore represents the previously mentioned deductive category application. Figure 4-2 illustrates the main types of the content analysis. REICHERTZ (2007) argues that it is of crucial meaning to apply the qualitative content analysis with a high degree of reflection based on the proper research objective (Reichertz, 2007). The qualitative content analysis is perfectly suited to validate an existing categorization system and is therefore used for the underlying thesis. By using material from expert interviews, espe-
ciaIly the structuring technique allows for confirming the identified competence categories from the comprehensive ITI Literature Review of chapter 3.2.2.

<table>
<thead>
<tr>
<th>Content Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantitative</strong></td>
</tr>
<tr>
<td>An analysis method that quantifies text units of a source material to gain insights on the feature characteristics of the material.</td>
</tr>
<tr>
<td><strong>Qualitative</strong></td>
</tr>
<tr>
<td>An empirical method that allows for specific inferences by developing a categorization system.</td>
</tr>
<tr>
<td><strong>Frequency Analysis</strong></td>
</tr>
<tr>
<td><strong>Contingency Analysis</strong></td>
</tr>
<tr>
<td><strong>Impact Analysis</strong></td>
</tr>
<tr>
<td><strong>Summarization</strong></td>
</tr>
<tr>
<td><strong>Explication</strong></td>
</tr>
<tr>
<td><strong>Structuring</strong></td>
</tr>
</tbody>
</table>

Figure 4-2: Main types of the content analysis (cf. Mayring, 2010)

In the following the corresponding data collection of the expert interviews is presented before the content analysis is applied.

## 4.2 Data Collection

After providing methodological insights on the underlying qualitative approach, the following chapter depicts the entire data collection process for the qualitative content analysis based on expert interviews. According to BORTZ & DÖRING (2006) the process starts with a proper preparation for the interviews (Bortz and Döring, 2006). This involves decisions on the objective of the interviews, on the scope and type of questions and on the use of a standardized methodology. Moreover, to efficiently conduct interviews and gain the best possible results a corresponding interview guide needs to be developed and the proper sampling of experts has to be determined as well (see Ch.4.3.1).

After the contextual preparation process is finished some organizational issues need to be tackled as well. This incorporates not only the contacting and instructing of the interviewees but also the identification of a second independent researcher to check on the categorization system and the coding rules. After a mutual introduction and briefing on the interview process itself, the expert interviews can be conducted in an open and trustful environment based on the interview guide (see Ch.4.2.2). As the interviews need to be analyzed in detail all interviews are recorded and subsequently transcribed by the author.
4.2.1 Interview Preparation

In order to validate the existing competence dimensions of the ITI Literature Review and to get a comprehensive and practice-oriented understanding of the topic, expert interviews are used (Miles and Huberman, 1994). Main aim of the underlying expert interviews is to confirm or correspondingly modify the results from literature and thus, to conceptualize a multi-dimensional ITI competence construct which can be tested in a quantitative model (Creswell and Plano Clark, 2011). Conducting expert interviews or semi-structured interviews usually involves the development of an interview guide (see figure 4-3), that incorporates all important aspects of the research topic which need to be addressed during the interview (Wilkinson and Young, 1999).

![Figure 4.3: Interview guide](image)

As it not necessarily requires a specific sequence of questions it therefore is considered to be an orientation framework for the researcher allowing comparability between the interviews (Dittmar, 2009). The interview guide is developed by using only a limited, however, prioritized number of questions and a clear formal design (Helfferich, 2009). To gain a broad picture of the issues, the underlying interview guide consists of five units and was cross-checked by a second independent qualitative researcher. At the beginning of the conversation both, interviewee and interviewer, introduce oneself. While the author previously informed the interviewee about the research topic and objectives, an open question is
used as a reference point to start with the topic and get some general insights on
the research environment. By that, the interviewee can not only provide insights
on the competences by himself but also allows for collecting valuable opinions
and experiences that can be used for the subsequent analysis stage. Afterwards
the interviewee is presented the ITI competence categorization system and the
definitions of each category based on the Literature Review. The interviewee is
supposed to thoroughly read the definitions and provide feedback on each of the
categories and the content with respect to the scope and level of depth, compre-
hensibility and consistency. Moreover, one of the objectives is to gain infor-
mation on hot topics in practice that could allow for even adding new categories
to the existing ones. Finally, the interview closes with some overall professional
and company related details. During the interview the author needs to maintain
an open communication to allow the interviewee to spontaneously provide any
important information at any time. Indeed, one of the major requirements of the
interview is to follow the interviewee’s own argumentation and memory process
and not interrupting it by any means (Patton, 2002).

Based on Grounded Theory qualitative research usually incorporates a theoreti-
cal sampling approach which aims at interviewing the proper interviewees for a
given research objective based on the existing theoretical foundation (Glaser and
Strauss, 2005). In this context, one can distinguish between a maximum contrast
strategy in which totally different cases or interviewees are surveyed and a min-
imum contrast strategy representing the opposite. It is strongly recommended to
conduct as many interviews as possible until a theoretical saturation is reached
and no more significantly different insights are gained by the interviews
(Strübing, 2008, p. 33). For the acquisition of interview partners only ITI con-
sultants from one of the top-tier IT-Consultancies were taken into account to
ensure not only highly professional and multi-faceted work settings but also
international project experiences. Moreover, as the depth of on-site project expe-
rience and corresponding type of projects depends on the professional level of the
consultants, a preferably heterogeneous sample of consultants has been chosen
(Kvale, 2007). All interviewees were contacted either via phone or Email. While
for the latter a three-page interview-teaser has been used to introduce the re-
search objective, to promise data privacy by all means and to provide some sam-
ple questions, the former involved an average of ten minutes of conversation to
convince the consultants to participate on the survey and to arrange an inter-
view date at the person’s office (Kumar et al., 1993). Indeed, all interviewees
have been selected from the private network of the author. Following a mini-
mum contrast strategy, the underlying survey has only surveyed ITI consultant
to provide relevant insights. After conducting interviews with three ITI consult-
ants from different consultancies, the theoretical saturation point was already
reached unveiling significant parallels between all three interviews. To avoid
any misinterpretation two additional interviews were conducted after a five
week interview break. Following table 4-1 provides key background information
about each of the five ITI consultants. The average age of the interview partners

See also LÜNDENDOK (2013) for the top 25 IT-Consultancies in Germany (Lünendonk, 2013b)
was 31.8 years. While two of the consultants were female the entire sample clearly represents experienced professionals.

Table 4.1: Participants of the expert interviews

<table>
<thead>
<tr>
<th>ID</th>
<th>Position</th>
<th>Sex</th>
<th>Age</th>
<th>Place</th>
<th>Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC1</td>
<td>Manager</td>
<td>m</td>
<td>31</td>
<td>Berlin</td>
<td>12.08.2012</td>
<td>35'</td>
</tr>
<tr>
<td>IC2</td>
<td>Consultant</td>
<td>m</td>
<td>25</td>
<td>Berlin</td>
<td>24.09.2012</td>
<td>20'</td>
</tr>
<tr>
<td>IC3</td>
<td>Senior Consultant</td>
<td>f</td>
<td>29</td>
<td>Frankfurt</td>
<td>04.11.2012</td>
<td>21'</td>
</tr>
<tr>
<td>IC4</td>
<td>Manager</td>
<td>m</td>
<td>42</td>
<td>Phone</td>
<td>26.11.2012</td>
<td>28'</td>
</tr>
<tr>
<td>IC5</td>
<td>Team leader</td>
<td>f</td>
<td>32</td>
<td>Phone</td>
<td>18.11.2012</td>
<td>17'</td>
</tr>
</tbody>
</table>

4.2.2 Interview Process and Transcription

All interviews were conducted from August 2012 till November 2012 either at the interviewer’s office at ESCP Europe Campus Berlin, at a consultant’s office in Frankfurt or on the phone. As indicated above, the interviews took on average 24.2 minutes and were guided by the previously developed semi-structured interview guide (see Ch.4.2.1). Each interviewee is a renowned expert in the field of ITI and hence, highly capable of elaborating on the topic. After the self-introduction part in which the author described his background and outlined the research objective, all interviewees were clearly briefed on the data privacy of their statements and were asked for permission to record the interview for analysis purposes later on. Again, a general question with respect to the research topic enables the interviewee to get comfortably started (Rubin and Rubin, 2005). Afterwards, more target-oriented questions can be asked. In general, all interviewees exhibited a clear understanding of the questions and provided comprehensive insights to each question. Therefore, only at very few times the interviewer had to interfere and ask for more details on the topic. Nevertheless, the interviewer asked the interviewee, if there were any topic which has not been appropriately addressed and should be mentioned in the interview. At the end of the interview a short wrap-up by the interviewer was presented and the interviewee was asked for cross-checking the final transcripts of the interview to assure highest quality. The provision of the research results was offered to the interviewee as well.

Based on the recordings all interviews were transcribed by the author leading to comprehensive material which have been rendered anonymous as promised. The transcription process especially ensures high reliability (Atkinson and Heritage, 1984). By following clear transcription rules, all interviews were precisely transcribed word by word ensuring on one side that no information was left such as conversation breaks, simultaneous speaking of both partners or indistinct wording/grammar and on the other side that no interpretation takes place from the
author. Each paragraph was numbered indicating a change of the speaker. Moreover, all transcripts were sent back to the interviewees so that the transcripts could be validated and any additional idea or recommendation could be included by them. Therefore, a more detailed support could be provided by the interviewee (Cassell et al., 2009). The CD-Rom in the appendix contains the transcription of all interviews. The transcriptions were used for analyzing the material by means of the qualitative content analysis.

4.3 Data Analysis

As indicated before in chapter 4.1.2 the underlying thesis uses a qualitative content analysis approach with a focus on the structuring technique. Hence, a deductive category application is used based on prior defined, theoretical derived categories (Mayring, 2000) (see figure 4-4).

Following the comprehensive ITI Literature Review a first competence categorization system with eight dimensions has been developed which is used as the reference framework. These eight categories are used as the main categories to assign the text material of the transcribed interviews and finally validate, modify or even remove the categories. In order to assure intersubjective comprehensibility and methodological quality, a coding guide was developed which determines the coding rules by providing clear definitions of the deductive categories and examples as well as rules under which a text unit of the transcripts can be

---

48 For more details on the transcription rules see DRESING & PEHL (2013) or BORTZ & DÖRING (2006)
Chapter 4
coded with a category of the categorization system (Mayring, 2000). Chapter 4.3.1 delineates in detail the development of the coding guide as the main reference point for the content analysis. After the development of the coding guide the transcripts are analyzed in a first step. All categories are used in this context to assign text units to the codes. According to MAYRING (2010), after approximately 20% of the transcripts have been worked through, the categorization system and the corresponding definitions and coding agenda should be revised to ensure an appropriate fit (Mayring, 2010). Based on the first material analysis the entire transcripts are comprehensively analyzed, text units are coded and reference points are extracted to eventually generate the new categorization system. In case modifications of the categorization system are needed again, a revision can take place as well. The underlying thesis uses the results of the deductive category application for the subsequent job profile analysis and final quantitative study.

4.3.1 The Coding Guide

For the underlying qualitative content analysis and the associated validation of the categorization system all transcripts from the expert interviews need to be thoroughly analyzed and coded. Main aim of the underlying coding is to summarize particular text units under essential terms and provide a structuring of the meaning behind the interview material. As a consequence, the categorization system is of crucial meaning for the qualitative content analysis as it contains the necessary codes. Based on the comprehensive Literature Review of the ITI domain (see Ch.3.2.1), following eight competence dimensions or categories could be identified by the Literature Review: Networks, Application Functionality, Platform, Business, Data Management, Architecture & Standards, IT-Servicemanagement and Security & Risks. During the material analysis process all text units have been assigned one of the categories if interviewees have explicitly or implicitly mentioned one of them. Moreover, interviewees can express their opinion on the categories and recommend, for instance, adding, removing, summarizing or modifying a category. The coding guide contains not only anchor examples to assure a proper understanding of the codes but also the rules on how to assign the codes (Dresing and Pehl, 2013). In the following the coding guide for the underlying transcripts of the expert interviews is depicted.

Competence Dimension

Competence dimensions are coded according to the categorization system of the Literature Review. A text unit is assigned a competence dimension if the interviewee explicitly mentions the competence dimension or one can indirectly deduce the competence dimension. In case a clear coding is not possible the code Others is used. Following table 4-2 shows the categorization system and one anchor example for coding the competence dimensions. In contrast to the initially derived categorization system, an additional category, Social Skills, is included as it was mentioned multiple times by the experts.
### Competence Dimension and Anchor Examples

<table>
<thead>
<tr>
<th>Competence Dimension</th>
<th>Anchor Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networks</td>
<td>“the installation, configuration, support and maintenance of networks is something which I have to handle.” (IC2 – 32) (IP1-22)</td>
</tr>
<tr>
<td>Application Functionality</td>
<td>“[...] you need to possess competence on the application level.” (IP2-28)</td>
</tr>
<tr>
<td>Platform</td>
<td>“[...]** well obviously you mustn’t forget areas such as the entire hardware area.” (IC1-22)</td>
</tr>
<tr>
<td>Business</td>
<td>“[...] furthermore, project management competences are inevitable. <em>2</em> i need to understand how to implement a project and this is simply known as project management. um * this is a big barrel itself but I leave it at that.” (IC1-26)</td>
</tr>
<tr>
<td>Data Management</td>
<td>“...if i think about that than <em>well</em> i even need to reach back more and need to mention the field of database administration.” (IC1-24)</td>
</tr>
<tr>
<td>Architecture &amp; Standards</td>
<td>“...m hm and the fact that you separately include architecture and standards is in my opinion * um very good.” (IC1-75)</td>
</tr>
<tr>
<td>IT-Servicemanagement</td>
<td>“it-servicemanagement cannot be implemented, if you are not acquainted in detail with these milestones.” (IC1-30)</td>
</tr>
<tr>
<td>Security &amp; Risks</td>
<td>“[...] it-security, role and um authorisation concepts [...]” (IC5-38)</td>
</tr>
<tr>
<td>Social Skills</td>
<td>“...* he must be able to communicate [...].” (IC4-12)</td>
</tr>
<tr>
<td>Others</td>
<td>“[...] well * cloud computing can be defined as a combination of application-services and virtualizations-services in the sense of an on-demand utilization.” (IC5-26)</td>
</tr>
</tbody>
</table>

Moreover, as during the interview the competence dimensions are presented to the experts a corresponding opinion on the categorization system could be provided by each of them (see table 4-3). In general, an expert could either agree (code: Zustimmung) or disagree (code: Ablehnung) with a dimension. In some cases experts mentioned that dimensions should/could be renamed (code: Umbenennen), a new dimension could be added (code: Hinzufügen) or dimensions could be even summarized (code: Zusammentassen). While the latter case could be detected throughout the analysis and makes perfectly sense, dimensions could be potentially divided (code: Aufteilen) into several other ones as well.

---

49 IC1-22 specifies the expert and the paragraph of the transcript. IC stands for infrastructure consultant (German: Infrastrukturbetater) and 22 indicates the 22nd paragraph of the transcript.
However, no expert has surprisingly mentioned this last opinion on the competence dimensions. Thus, no anchor example can be provided.

### Table 4-3: Anchor examples for opinion on competence dimensions

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Definition</th>
<th>Anchor Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrees</td>
<td>Expert agrees with a competence dimension with respect to the content and its scope.</td>
<td>&quot;# i absolutely agree with the categories. umm really.&quot; (IC1-73)</td>
</tr>
<tr>
<td>Summarize</td>
<td>Expert mentions that two or more dimensions should or could be summarized.</td>
<td>“umm * and i consider the area of data management rather as a part of networks, since it is closely related to each other.&quot; (IC4-63)</td>
</tr>
<tr>
<td>Split</td>
<td>Expert mentions that on competence dimension should or could be divided into two or more other dimensions.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Add</td>
<td>Expert mentions that an additional competence dimension should or could be added.</td>
<td>“well the area of virtualization might be an own category? umm however, in combination with cloud.&quot; (IC3-44)</td>
</tr>
<tr>
<td>Remove</td>
<td>Expert disagrees with a competence dimension with respect to the content and its scope. Hence, it should be removed.</td>
<td>“[…] umm i have rather difficulties with architecture and standards.&quot; (IC4-67)</td>
</tr>
</tbody>
</table>

Overall, the coding rules involve that the remarks of the interviewees are coded and that particular remarks by the interviewer are only coded if they are part of the line of argumentation of the interviewee. By that, one code can comprise several paragraphs. However, in order to provide some limitations the largest text unit of analysis comprises 5 paragraphs while the smallest can be a term. Moreover, in order to avoid any misinterpretation and ensure that no information is left rather more information should be coded by the coder if any doubts arise (Dresing and Pehl, 2013).

### 4.3.2 Results

Software such as ATLAS.ti can efficiently support the coding process of the qualitative interview transcripts. However, due to the scope and content of the interviews, the underlying thesis does not take advantage of one of the numerous software tools and pursued a coding approach by using Microsoft Excel. According to LAMNEK (2010) to ensure the fit of the categorization system and intercoder-reliability a second independent researcher coded the first interview as well (Lamnek, 2010). The analysis of both coding results revealed that almost 78% of all codes have been used by the researchers. Furthermore, the frequency of codes was identical indicating an almost perfect fit between both results. Despite this almost perfect matching result both researchers were still not sure about the coding rules on particular situations. For instance, the first expert expressed
numerous competences related to the Business competence dimension. Indeed, these remarks were mainly focused on specific competences that are rather considered a component of the business dimension. Both researchers decided to use the business dimension as the corresponding code but expressed at the same time that it displays a subordinate level. To avoid any misunderstanding for the transcription process, it was agreed to maintain this rule of coding. All text units are assigned with the corresponding code if one can clearly associate the text unit with the dimension. No further adjustments were additionally made by the author. Following table 4-4 summarizes the frequency of competence dimensions after the transcription of all five interviews by the author.

Table 4-4: Frequency of the competence dimensions per consultant

<table>
<thead>
<tr>
<th>Competence Dimension</th>
<th>IC1</th>
<th>IC2</th>
<th>IC3</th>
<th>IC4</th>
<th>IC5</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networks</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>13</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Application Functionality</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>19</td>
<td>30</td>
<td>66</td>
</tr>
<tr>
<td>Platform</td>
<td>4</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>10</td>
<td>38</td>
</tr>
<tr>
<td>Business</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>-</td>
<td>17</td>
</tr>
<tr>
<td>Data Management</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>Architecture &amp; Standards</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>IT-Servicemanagement</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Security &amp; Risks</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Social Skills</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td>6</td>
<td>22</td>
</tr>
</tbody>
</table>

The high number of codes already indicates that a paragraph can be assigned multiple codes if it contains the relevant references. The competence dimension Others was used 22 times which shows that a considerably large number of text unity could not be clearly assigned to one of the competence dimensions.

To present the results of the coding process in a structured format the results of each interview were depicted and summarized with the most important information in a separate document (see figure 4-5). As stated above oftentimes experts rather mentioned particular requirements or competences that are associated with a competence dimension. Accordingly, the specific competences and reference points were listed in the final documents as well. These insights can be used for the development of the measurement instrument of the competence dimension and its application in the quantitative survey.

Moreover, to allow for comprehensive insights on the coding results a final coding list of all interviews was developed with Microsoft Excel. This document contains a complete list of the 274 codes from five interview transcripts and is used for the subsequent comprehensive analysis of the interview results. The results of the analysis reveal that some interviewees particularly emphasized or comprehensively discussed certain competence dimensions and mentioned that the
importance of a dimension depends mainly on the task focus. Infrastructure consultant (IC1 and IC3 highlighted the IT-Servicemanagement dimension (IC1-21, IC3-20-24) by explicitly mentioning its importance for their career.

### Analysis GLIS_Comp Interview 1

<table>
<thead>
<tr>
<th>Competence Category</th>
<th>Confirmed</th>
<th>Results</th>
<th>Place(s) of Discovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-Servicemanagement</td>
<td>✓</td>
<td>Category confirmed</td>
<td>22, 30, 30, 32, 73, 79</td>
</tr>
<tr>
<td>Platform</td>
<td>✓</td>
<td>Category confirmed</td>
<td>22, 28, 83, 73, 83</td>
</tr>
<tr>
<td>Application Functionality</td>
<td>✓</td>
<td>Category confirmed</td>
<td>22, 45, 47, 73</td>
</tr>
<tr>
<td>Networks</td>
<td>✓</td>
<td>Category confirmed</td>
<td>22, 37, 73</td>
</tr>
<tr>
<td>Data Management</td>
<td>✓</td>
<td>Category confirmed</td>
<td>24, 39, 73</td>
</tr>
<tr>
<td>Management</td>
<td>✓</td>
<td>Category confirmed</td>
<td>26, 28, 73, 87</td>
</tr>
<tr>
<td>Security &amp; Risks</td>
<td>x</td>
<td>Subcategory of all other categories</td>
<td>89</td>
</tr>
<tr>
<td>Architecture &amp; Standards</td>
<td>x</td>
<td>Subcategory of IT-Servicemanagement and Platform</td>
<td>75, 77, 85,</td>
</tr>
<tr>
<td>Social Skills</td>
<td>✓</td>
<td>Category confirmed</td>
<td>14</td>
</tr>
</tbody>
</table>

### Figure 4-5: Example of the analysis results

IC2 and IC3 on the other hand stressed the value of virtualization technologies and its relation to as well as importance of the Application Functionality dimension (IC2-18, IC3-44) for his day to day work, whereas IC4 pointed out the significance of Business (IC-67). Moreover, since the coding guide also allowed for adding new categories, IC4, for instance, even suggests adding a new dimension virtualization (IC4-34) which, according to IC5, needs to contain cloud computing topics (IC5-24-25). IC2 and IC4 recommend removing the dimension Architecture&Standards (IC2-54, IC4-73) since this is part of the IT-Servicemanagement dimension in particular as well as other dimensions in general. While IC2 and IC5 acknowledged the significance of Security & Risks (IC2-28, IC5-32) numerous times, both experts don’t see the necessity of using an own dimension for it. Additionally, some interviewees have emphasized existing dependencies between the competence dimensions. For instance, IC4 outlines the relation between data management and networks (IC4-63-64) and thus, opted for combining both dimensions under the Network dimension.

While table 4-4 displayed how frequently each dimension was discussed by the experts, table 4-5 shows in fact the validation of the competence dimension. However, as indicated above, Architecture& Standards and Security&Risks have not been considered as standalone dimensions of the initial eight competence dimension system by the majority of experts.
Three out of the five experts have explicitly disapproved these two dimensions:

„uhmm i would rather see the security aspect as a fundamental part of each category.” (IC1•89)

„okay with architecture and standards i have some difficulties […]. i don’t know, i wouldn’t include it like this and rather see it as part of networks or platform.” (IC2•54)

„i like the dimension security and standards, but it is part of all of the categories and could even be eliminated. otherwise this isn’t all on the same level.” (IC5•54)

An in-depth analysis of the references reveals that experts perceived both dimensions as sub-components of the other dimensions and therefore would incline to integrate them into other dimensions:

„i like that you separately include here architecture and standards. […] for me this goes all into the area of it servicemanagements and its including frameworks and standards.” (IC1•75•79)

„besides that the area of security and standards is correct but simply always part of hardware, networks and also applications, and even of business. therefore, i would rather move it to another category.” IC3•44)

As a consequence, a new competence dimension system consisting of six main dimensions can be derived by the interviews. Indeed, the content of the expert interviews has generated valuable information on the competence dimensions from proven expert in the field of ITI. All experts have provided detailed insights on their day to day tasks and corresponding requirements as well as necessary competences. The content and results of the qualitative interviews not
only supplement the results of the comprehensive job profile analysis (see Ch.4.4) but also influence the design of the subsequent causal analysis (see Ch.5.2.2). Within the scope of the operationalization and development of the measurement instrument, the underlying results of the qualitative interviews are used to appropriately deduce questionnaire items for each of the six main competence dimensions. In the following the results for each competence dimension are depicted and final definitions based on the interviews and Literature Review (see Ch.3.2.1) are presented.

**Networks**
The *Networks* dimension has been clearly confirmed by all experts during the interviews. Particularly IC2 emphasized the importance of Networks by saying that

> “the installation, configuration, support and maintenance of networks is something which i have to handle.” (IC2 – 32)

IC4 stated that *Networks* is a fundamental part of the IT-Infrastructure in any enterprise and therefore must be focused on by consultants:

> “[...] in my opinion, networks are the things which finally constitute the it – infrastructure.” (IC4-59)

However, IC4 also mentioned at the same time that he disagreed with the terminology of Networks due to its inherent association with social networking activities:

> “[...] i think that the title networks is rather a misunderstanding because it does not deal with social networking. maybe you can call it it-networks and then you have no problems.” (IC4-65)

While IC2 strongly agreed with the Network dimension he also pointed out, at least to a certain degree, the relation to the Application Functionality dimension by referring to important Microsoft products which are relevant for any networking tasks:

> “[...] competence concerning the whole microsoft line – especially if it deals with the topic networks.” (IC2-26)

IC4 agreed with the relation to other dimensions and even linked it to several dimensions such as Data Management and Platform which are both certainly affected:

> “in connection with networks i rather see the combination of different technical, primarily autonomous electronic systems especially of computers, but also sensors, actuators, agents and other radio technological components which facilitate the communication among the separate systems, because here the target is the common use of resources like network printers, servers and also data banks. additionally, the opportunity of a central administration of network hardware, network users, their authorization and data.
indeed, the direct communication between the network users thus has a special meaning.” (IC4-18)

Moreover, the majority of the experts not only confirmed the Networks dimension, the corresponding definition and finally its importance for the IT-Infrastructure of enterprises but also provided details on the specific technical know-how involved with this dimension. IC4 continued his remarks by mentioning the need to know various protocols as well that are structured by the ISO/OSI reference model (IC4-18). IC3 supported these insights and additionally explained the relevance of IP based networks and related technical competences:

“in connection with the topic realization of ip technical network infrastructure in high availability areas one simply has to know active directory, dns, dhcp, tcp/ip for reacting to customer demands referring to the setting, the problems or modifications of the network infrastructure or simply for advising.” (IC3-18)

As intended by the author, the experts could provide technical details to the competence dimension. Despite the fact that some experts stated obvious relations to other dimensions, Networks has been unanimously confirmed as a standalone dimension of great relevance. To avoid any misunderstanding, the author decided to rename the category into IT-Networks. All interviews have shown that the definition, used by the author and which is based on the Literature Review, is confirmed by the experts. Therefore, following definition is still used throughout the underlying thesis: ‘IT-Networks focuses on the technology and protocols that facilitates digital communication within an organization or with external stakeholders’ (Weill and Vitale, 2002, p. 31).

Application Functionality

The Application Functionality dimension has been variously discussed by the experts. In general, all experts confirmed this dimension to the fullest. According to IC2 an IT-Infrastructure consultant need to have competences in the field of application:

“well, an it – infrastructure consultant simply also has to possess competences on an application layer.” (IC2-22)

Despite its confirmation on the importance and corresponding content of this dimension, three out of the five experts (IC2, IC3, IC4) voiced their discomfort with the denotation of this dimension and rather suggested Software as the most suitable term for the suggested definition by the interviewer:

“application functionality well, i think you can simply put it under software.” (IC4-61)

In this context IC3 issued the misunderstanding which is evoked by the used terminology and stressed the fact that IT-Infrastructure consultants are less concerned with the functionality of applications but mainly focus on the implementation of various applications per se. As a consequence, IC3 opted for renaming this dimension into Software as well:
“[…] in this context I also see the category application functionality rather critically. Either you maybe call it application implementation or in another way, here, my profession does not deal with the functionality but rather with the implementation of software and it does not catch like this.” (IC3-48)

A closer look at the remarks by the experts clearly revealed specific technical details or competences for this dimension. Most of the experts agreed on certain software solutions by popular commercial providers like Microsoft, Oracle or Citrix that need to be understood and mastered by a competent consultant:

“[…] particularly operating systems play a significant role and acquire secure knowledge of Linux, Unix, Windows Server.” (IC4-20)

This not only involves rollout and deployment processes but also basic software programming skills, especially scripting competences:

„a bit VBA or overall object-oriented knowledge needs to be possessed by today’s consultants. This means not that you have to program a software completely by yourself, however, you need basic knowledge about it.“ (IC1-47)

As intended by the interviewer, during the interviews the expert had the chance adding new dimensions if they felt a need for it. As stated above, virtualization has been mentioned by almost every expert as an important competence which is part of the day to day activities by any consultant independent from his occupational job status:

“[…] I have to be well versed in virtualization on the basis of usual industry standards. Our customers want the setup of an area based on a virtualization technology which guarantee them the eased provision of resources.” (IC5-20)

Moreover, IC1 went beyond the emphasis of virtualization as an important task requirement and has even exhibited it as an own competence dimension which involves Cloud Computing knowledge:

“well, I would even include the topic virtualization as an own category but this in combination with cloud.” (IC3-44)

However, despite its relevance for the job as an IT-Infrastructure consultant and its great importance for their clients, two experts (IC1, IC2) explicitly stated that it is rather part of the Application Functionality dimension. Due to the fact that consultants deal with virtualization technology which is predominantly implemented via software solutions such as VMware, Xen or Microsoft Server, both IT-Infrastructure consultants opted against the addition of a new virtualization competence dimension:

“just include virtualization in the topic application functionality, in my opinion, it makes more sense there because we just work with virtual-
ization solutions which are generally based on software.” (IC1-93).

Based on these insights the Application Functionality dimension is renamed Software in the following. Since all experts confirmed the validity of the competence dimension content-wise, Software is understood as: “The ability to add, adapt, and eliminate the components of software applications to benefit an organization without having any extensive effect on the applications collectively (Weill and Vitale, 2002; Gheysari et al., 2012). In order to integrate the virtualization aspect as comprehensively as possible the measurement instrument integrates the virtualization issue with a corresponding item (see Ch.5.2.2.).

Platform
As one of the main component of an IT-Infrastructure, Platform is another dimension that was unanimously confirmed by all experts:

“infrastructure is a complex structure consisting of hardware, network technology and application layer which are provided to a superior level for automated distribution of information by means of a subordinated level.” (IC4-16)

“[…] the set-up and moreover, the administration of hardware servers and client are part of my daily work and have to be controlled by myself.” (IC5-16)

Nevertheless, while experts concentrated on the Platform dimension from the beginning and displayed no issues with the presented definition by the interviewer, two experts expressed their difficulties (IC2, IC5) with the denotation and understood the inherent meaning only after the interviewer introduced the definition of it:

“apart from that, i do not really understand what you mean by platform because somehow it does not fit to the description.” (IC5-52)

According to suggestions from the expert, the Platform dimension was renamed Hardware to emphasize the technical focus on one side and the associated scope of it behind on the other side:

“platform, what do you mean by that? […] just call it hardware. so everybody understands it then.” (IC2-58-62)

With respect to the specific competences and task requirements associated with this dimension, experts provided some detailed insights, as exhibited by following remarks:

“as an it – infrastructure consultant i have to know the conditions, especially the speed conditions and connection conditions or design implementations of different components of computers or within a computing center. but i need the knowledge of main memory, motherboard, electronic periphery or generally have to know cpu.” (IC3-8)
“[...]i have to be well versed in hardware architecture and the design of computers and especially about their organization and their external and internal set – up.” (IC1-83)

“[...] server consolidation and the connected knowledge of the topic hardware and data center are indispensable. i have to say that backup – and recovery strategies also belong to my competences.” (IC2-24)

Based on the Literature Review and insights from the interviews, following definition is used: “Hardware is understood as computer systems and associated components needed in an application environment of an organization that also includes redundant or backup strategies and power supplies, redundant data communications connections, and environmental controls (e.g., air conditioning, fire suppression)” (Liu, 2002, p. 17). Again, further details from the interviews as well as job profile analysis are integrated into the measurement instrument later on to ensure the best possible content coverage.

Business
Similar to the Platform dimension the Business dimension represents another inevitable dimension of an IT-Infrastructure competence framework which was questioned with respect to its denotation. While IC4 appreciated the use of this dimension,

“I think business as a category, i find it really well.” (IC4-67)

IC3 and IC1 by contrast strongly related this dimension to project management or general Management activities due to their client-oriented project work.

“Business knowledge is a competence which is a apart of my project management competences. so, i would rather rename the category business. either project management or also just only management.” (IC3-42)

Even though interviewees distinguish themselves upon their task focus and degree of management responsibilities, all experts emphasized the need for business related competences throughout their day to day work activities. Today’s IT-Infrastructure are first and foremost project workers and are required to understand the business processes of their clients and how IT can effectively and efficiently support and optimize these business processes. Therefore, IT-Infrastructure consultants need to know how to align client’s requirements on the IT-Infrastructure and the available budget to offer suitable solutions under given circumstances:

“I work very process orientated and work closely together with the customers on solutions. but i just have to be able to foresee fully work and weigh up requirements and costs. like a project manager although perhaps i am not immediately responsible for the budget. but i am responsible for the measures and therefore i must understand what the customer want. but this does not work without business – management understanding.” (IC3-32)
In accordance with the experts and the previous definition, Management was chosen as the new denotation for any business and project management related activities of IT-Infrastructure consultants:

“Management relates to the understanding of business processes on one hand and to the competence of coordinating and controlling all of the activities required for completing an information systems project.”

Data Management
With respect to the Data Management dimension experts have voiced a complex understanding behind. Overall, with exception of IC4 who considered Data Management as a close part of the Network dimension (IC4-63), all experts agreed with the importance of it during the interviews. Most experts (IC1, IC3, IC4) mainly associated this dimension with any competences related to database management systems, database analysis and design and emphasized the importance of relational databases, for instance:

“sometimes it is war determining if during an it-infrastructure analysis it is identified that the data bank system of a client depicts a central optimization lever and thus there is a need for action. [...] for that purpose, it is good that consultants can understand and manipulate data banks with respect to relational data banks. sql knowledge is very important.” (IC4-24)

On the other side, IC2 and IC4 directed their remarks with respect to the Data Management dimension to a different focus. Both experts highlighted that data migration and the development of efficient migration strategies represents another highly important issue within this dimension which is continuously required by enterprises and hence, needs to be addressed by competent IT-Infrastructure consultants.

“i would say installation of the data bank server is definitely a facet, the set – up and the migration of all existing data is another one [...]” (IC2 – 42)

“we are very busy with developing and realizing migration strategy as well as third level support for all core- and middleware services, thereby, it accrues advisory activities for the customer concerning the definition of targets with respect to separate services and the resulting supplying products within the migration.” (IC4-28)

As stated above, the initial Security&Standards dimension was not clearly confirmed by all experts and was rather considered to be a vital component of all other dimensions. Indeed, within the Data Management domain, IC3 explicitly stressed security related competences as a top-tier priority for consultants:

“in this operational environment data privacy and data security have high priority and thus require significant competences.” (IC3 – 12)
Again, the amount of input and remarks by the interviewees showed that not all information could be integrated into a new definition. However, as the initial definition incorporated the most relevant details on a high-level following slightly modified definition can be used for the Data Management competence dimension:

„Data Management is the collection of information, database design, sorting and reporting of data, establishing links to external databases, guaranteeing data compatibility, and developing as well as implementing migration strategies to the effective management of electronic information.”

**IT-Servicemanagement**

According to IC1 and IC4 IT-Servicemanagement depicts another essential dimension that is of particular relevance in the Management domain of IT-Infrastructure consultants (IC4-45). IC1 further explained during the interview that this dimension builds the foundation for guiding the work of IT-Infrastructure consultants on a high level:

“obviously, managers are rather familiar with this topic. possibly it is not wrong to see this as a comprehensive topic which controls the work of consultant as a kind of base.” (IC1 – 22)

Nevertheless, all experts agreed with the fact that consultants are required to know to a certain extent service management related frameworks such as ITIL or Cobit. While IC1 rather discussed these frameworks on a generic level (IC1-30), IC3 provided in-depth details on her ITIL related competences by elaborating on maintaining service and operations level at the client as well as optimizing IT-Services by following ITIL standards and best practices.

“we orientate ourselves very strong on itil and this leads to activities with respect to request fulfillment, incident management, problem management and software asset management.”(IC3-22)

Another very interesting issue was comprehensively delineated by IC5. While virtualization and cloud computing have been independently discussed by all experts, IC5 related both, cloud services and IT-Servicemanagement, to another with particular emphasis. Due to the fact that cloud services are realized by outsourcing contracts, service provider and client need to determine the service level agreements (SLAs) and to what extent ITIL processes are still part of the client’s IT department. As an IT-Infrastructure consultant with management responsibilities, IC5 described her responsibility of supporting and guiding these decisions with the client:

“in order to setup cloud – services, outsourcing-contracts are necessary which are also called underpinning contracts according to itil. the improvement of the service is represented by the service-lifecycle so that it can be decided which itil – processes remain at the user and which have to be realized by the supplier. i am responsible for the decision and take care of the customers.” (IC5-32)
As not doubts were issued in context of the IT-Servicemanagement dimension, a new adapted definition of this dimension based on the additional insights from the interviews is presented:

“IT-Service Management is concerned with the activities to plan, coordinate and control the quality and quantity of IT services to support business processes for reaching organizational objectives by implementing established frameworks and best practices that support reducing cost, increasing quality and satisfying customers.”

Social Skills
While the experts have provided technical details on their job-related task and requirements which influences the development of the corresponding measurement instrument later on, all experts repeatedly emphasized the importance of social skills in the project context. Even though it has not been explicitly mentioned as a standalone competence dimension, it became clear that it ultimately involves a broad spectrum of associated competences. Hence, it represents a multidimensional competence dimension. Skills such as team orientation and spirit were named as an obvious requirement for any professional by IC4 and IC5. However, according to IC1, IC3 and IC4 empathy was clearly stressed a crucial trait for successfully dealing with clients which could even facilitate or extend a business contract with the client.

“if you are not able to show empathy towards your customers, you can not get an assignment. this can happen quite fast.” (IC3-4)

Moreover, IC4 stated that a consultant needs to be able to effectively communicate with the client in order to maintain successful business relationships. Especially within an international context, consultants are required to combine communication skills and intercultural competences:

“a consultant has to be able to act with our clients and this means he must be able to communicate. especially in international context it is more important, there he absolutely has to show intercultural proficiency besides the language skills. […] this is simply important and maintains our national as well as international customers.” (IC4-12)

These insights from the experts showed the extent of how important social skills, in particular emotional intelligence, are in the IT-Infrastructure context. While IC4 explicitly delineated intercultural competences without providing any further details on it, the other experts expressed great awareness of interpersonal competences in a variety of ways. Again, the underlying thesis attempts to ex-

---

50 According to Salovey & Mayer (1990) emotional intelligence refers to “the subset of social intelligence that involves the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions” (Salovey and Mayer, 1990, p. 189).
amine the influence of intercultural competences by developing a specific quantitative research model. Since the social skills dimension is mostly covered within the intercultural competence construct (see Ch.3.1.2), in the following no additional Social Skills dimension is introduced to the six previously confirmed dimensions of the IT-Infrastructure competence framework. Based on the five expert interviews a new modified view on the IT-Infrastructure competence dimensions could be generated by the author. Following figure 4-6 illustrates the competence dimension framework as it is used for the subsequent qualitative job profile analysis and the questionnaire of the quantitative study.

**Data Management**
“Collection of information, database design, sorting and reporting of data, establishing links to external databases, guaranteeing data compatibility, and developing as well as implementing migration strategies to the effective management of electronic information.”

**IT-Networks**
“Focuses on the technology and protocols that facilitates digital communication within an organization or with external stakeholders.”

**IT-Servicemanagement**
“Is concerned with the activities to plan, coordinate and control the quality and quantity of IT services to support business processes for reaching organizational objectives by implementing established frameworks and best practices that support reducing cost, increasing quality and satisfying customers.”

**ITI Competence Dimensions**

**Management**
“Relates to the understanding of business processes on one hand and to the competence of coordinating and controlling all of the activities required for completing an information systems project.”

**Software**
“The ability to add, adapt, and eliminate the components of software applications to benefit an organization without having any extensive effect on the applications collectively.”

**Hardware**
“Computer systems and associated components needed in an application environment of an organization that also includes redundant or backup strategies and power supplies, redundant data communications connections, and environmental controls (e.g., air conditioning, fire suppression).”

**Figure 4-6: ITI Competence Dimensions**

4.3.3 Additional Insights

In addition to the insights with respect to the IT-Infrastructure competence dimensions, the expert interviews provided further insights and competences which are taken into account for the development of a measurement instrument of the IT-Infrastructure competence construct. Due to space limitation only by the majority emphasized insights that were noticed during the interview analysis are presented in the following. A closer look revealed that two major topics were explicitly stated by the experts: **Green IT** and **Big Data**.

**Green IT**

One of the major challenges which need to be increasingly addressed by IT-Infrastructure consultants is Green IT. According to IC1 Green IT represents an essential shift in priority for the IT department of any enterprise, especially large enterprises. Overall, with respect to data centers most enterprises are mainly concerned with IT equipment processing power and associated equipment costs and are also working on requirements such as power, cooling, and data center space. Nevertheless, this is not sufficient anymore since environmental impact of the infrastructure requirements and its use need to be taken into account as well.

“Noadays, most enterprises, and I am deliberately talking about the big corporations with real data centers, are not only interested in pro-
cess performance, cooling of the computers, cabling and the whole equipment anymore, but also in ecological aspects, that means in more efficient capacity utilization of resources, a reduction of the expulsion of carbon dioxide as well as a higher energy efficiency.” (IC1-26)

IC2 stressed that the IT sector and users must develop a constructive approach toward addressing ecological concerns and implement forward-looking, green-responsive policies and practices. This incorporates following major points (IC2-24):

1. a rigorous and comprehensive green IT strategy
2. guidelines that delineate what ecologically sustainable IT really stands for
3. a clear opinion on where IT can have most impact and at what cost
4. an evaluation of the current green performance of IT
5. an analysis of, and detailed plan to improve the energy efficiency of all IT and supporting infrastructure such as air conditioning and power, including the servers, networks, client devices and printing
6. an analysis of and plan for decreasing and managing general misuse appropriately, including disposition of PCs and more

IC5 further stated that there is a trend toward smaller size but greater density in data centers combined with a tendency to analyze performance per kilowatt, which ultimately leads to a new energy management within enterprises:

“the increasing issue for us consultants refers to a new energy management for the customers, the reduction and efficient use of the computing centres of the customers, thus, to create the environmentally friendly and resources conserving use of the infrastructure over their whole lifecycle. by that, the decline of the energy consumption, the reduction of the energy and of the material consumption at the production, the minimization of waste heat and of polluting emissions concerning the use and production but also things like resources saving programming of software are meant.” (IC5-48)

**Big Data**

Since the quantity of data generated by enterprises raises with no limits, there are new options associated with it with respect to both scale and diversity. Nowadays conventional data warehouses have not the capacity anymore to efficiently deal with it anymore. As a consequence, so called Big Data emerges which enterprises aim at analyzing to identify tendencies that could provide valuable insights for decision making processes. However, as most of the data is not structured at all, enterprises need new approaches to implement corresponding data analytics based on pattern based strategies. Since Big Data solutions are

51 „Big data is high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making.” (Gartner, 2014)
CURRENTLY INCREASINGLY MARKETED AFTER THE SOFTWARE AS A SERVICE (SaaS) \(^{52}\) MODEL, THERE IS AN URGENT NEED FOR CONSULTANTS TO PROPERLY ADDRESS THIS ISSUE. OVERALL, ACCORDING TO IC3 YOU CAN DISTINGUISH FIVE DIFFERENT ROLES ASSOCIATED WITH BIG DATA PROJECTS IN ORGANIZATIONS WHICH COVER SPECIFIC TASKS: A SPECIALIST WHO IS RESPONSIBLE FOR THE DATA QUALITY, AN EXPERT WHO IDENTIFIES RELEVANT DATA, AN ARCHITECT WHO PROCESSES THE DATA, AN ANALYST WHO DEVELOPS DATA MODELS AND AN IMPLEMENTER WHO CONVERTS THE INFORMATION INTO RESULTS:

"FOR ALREADY 10 YEARS IT (BIG DATA) IS AN IMPORTANT TOPIC BECAUSE CORPORATIONS USE THE ANALYSIS OF HUGE DATA FOR IDENTIFYING PATTERN CONCERNING THEIR STRATEGIC DECISIONS WHICH CANNOT BE CALCULATED WITH THE USUAL DATA BANK MANAGEMENT SYSTEMS. IN THIS CONTEXT CONSULTANTS ARE ASKED. WE BASICALLY SEE DIFFERENT ROLES AT SUCH BIG DATA PROJECTS WHICH DOES NOT ALWAYS HAVE TO BE REALISED BY DIFFERENT PERSONS. THERE ARE SPECIALISTS FOR DATA QUALITY WHO MAKE SURE THAT THE DATA ARE UNIFORM: THE FINDER WHO DETECTS THE RIGHT DATA; THE ARCHITECT WHO APPROPRIATELY PREPARE THE DATA FOR THE ANALYSIS: THE RESEARCHER WHO CREATES SUITABLE ANALYSIS MODELS AND THE MAKER WHO ACTUALLY REALISED THE GAINED INFO." (IC3-50)

However, while IC3 provided details on relevant competence domains and associated processes in Big Data projects, IC2 limited his remarks on the Big Data topic by stating that IT-Infrastructure consultants are rather concerned with implementing and adjusting necessary software solutions that support the entire information processing:

"INFRASTRUCTURE CONSULTANTS, AS ME, HAVE TO BE WELL VERSED IN BIG DATA SOLUTION SCOPES. THESE DAYS, THESE ARE VERY IMPORTANT FOR LEADING CORPORATIONS. FIRST OF ALL I MEAN WITH IT THAT WE SUPPORT THE REALIZATION AND ADJUSTMENT OF THE BIG DATA SOLUTIONS OF DIFFERENT SUPPLIER, E.G. LIKE HP OR NETAPP." (IC2-18)

In general, the interviews revealed different interesting issues which could not all be integrated into the underlying thesis. Since each expert has a different focus within his work as an IT-Infrastructure consultant, each expert provided different insights either. For instance, IC5 stated that operating systems will lose their importance in the future due to the increase in browser-based applications. In contrast, however, server based operating system will steadily become more important. Hence, IT-Infrastructure consultant will need to be prepared for this to appropriately support their clients:

"HOWEVER, I ALSO SEE DEVELOPMENTS AT MY PROFESSION WHICH WILL STRONGLY AFFECT US OR ALREADY DO, BECAUSE THERE IS A TREND IN DIRECTION OF BROWSER-BASED APPLICATIONS, THE CLASSIC OPERATING SYSTEM WILL NOT EXIST ANY-

---

\(^{52}\) According to Turner (2003) “SOFTWARE AS A SERVICE ENVISAGES A DEMAND-LED SOFTWARE MARKET IN WHICH BUSINESSES ASSEMBLE AND PROVIDE SERVICES WHEN NEEDED TO ADDRESS A PARTICULAR REQUIREMENT.” (Turner et al., 2003, p. 38)
more as known and we have to be prepared for the necessary consequences in favor of our clients. however the importance of sever – based operating systems will increase.” (IC5-40)

IC1 provided other interesting insights with respect to upcoming challenges and trends for IT-Infrastructure consultants. He emphasized the increase of storage needs, particularly unstructured storage, in organizations due to a rising demand for multimedia and collaborative platforms. As a consequence, IC1 stressed that information management and the introduction, support and adjustment of new corresponding software solutions will be needed by organizations in the future:

“i see the constantly increasing demand for multimedia and collaborative platforms which lead to need for more storage, particularly unstructured storage. on each level of organizations it is asked for more information management; so that the producers integrate more and more the relevant data indexing- and data categorization functionalities as standard services in the products. we consultants have to be able to deal with it and know how to correctly introduce, support and adjust the information management at the costumer.” (IC1-53)

Again, despite the importance and relevance of all of these additional insights, only explicitly emphasized and multiple times mentioned remarks by the experts are taken into account for the questionnaire of the quantitative study. In the following, the job profile analysis is introduced to identify the specific requirements and tasks of today’s IT-Infrastructure consultants. In contrast to the expert interviews the job profile analysis does not aim at validating competence dimension in the first place but at discovering particular competences for each dimension for the subsequent development of a measurement instrument based on an inductive approach.

4.4 Job Profile Analysis

Based on the Literature Review of the ITI domain, there is lack of resources on requirements and detailed competences for each of the disclosed and validated ITI dimensions. According to BARON ET AL. (2009) a job profile is defined as the obligatory qualifications and competences to fulfill the tasks and activities that arise during work and business processes (Baron et al., 2009, p. 12). Therefore, in the following a job profile analysis is used to identify the tasks and necessary requirements for IT-Infrastructure consultants to classify the skills employers seek and to cross-validate the results of the Literature Review and interviews. These insights are used to ultimately develop a competence operationalization and measurement instrument that is investigated in a structural equation model of a corresponding quantitative survey (see Ch.5).

The objectives of the job profile analysis are also reflected by the third research question of the underlying thesis:
Research Question 4: Which requirements have to be met by today’s IT-Infrastructure consultants?

The following chapter briefly classifies the methodological approach of the job profile analysis before exhibiting the data collection.

4.4.1 Data Collection

To address the research question, various data sources and analysis methods can be used (Drews, 2012, p. 2). Besides conducting qualitative interviews with authorities from HR and departments, a systematic job profile analysis has been proven to be a very useful approach to gain insights (Todd et al., 1995). As figure 4.7 illustrates, the data collection of the job profile analysis can be illustrated as a process chain, which consists of several distinct steps.

![Data Collection Phase](image)

Figure 4.7: Phases of the job profile analysis

In a first major step the job profile analysis was prepared by the author. Therefore, not only the relevant search sources were identified but also a second independent researcher was invited and instructed to validate the proper selection of the job profile and data analysis later on. For this thesis a job profile analysis is based on a sample of job advertisements published in top-ranked German job portals selected by the two researchers. Following search engines were tracked over a six month period from January to June 2012:

- www.monster.com
- www.stepstone.de
- www.jobboerse.arbeitsagentur.de
- http://de.indeed.com/
- www.kimeta.de
- www.kalaydo.de
- www.de.gigajob.com
- www.stellenanzeigen.de
- www.jobscout24.de

To even increase the search results all major German newspapers and trade journals have been examined as well by the author during this study period. The actual content search was performed using the mutually agreed search terms „IT-Infrastrukturberater“, „IT-Infrastruktur Consultant“, „IT-Berater Infrastruktur“ and the Anglo-Saxon counterpart IT-Infrastructure Consultant (see table 4.6). Each search term was put into quotation marks, in order to search for the term as a whole and not for each word individually, hence, limiting the search results to the essentials.
Table 4-6: Criteria of the job profile search

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Shaping</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Newspapers and trade journals</strong></td>
<td>Tagesspiegel, Handelsblatt, Frankfurter Allgemeine Zeitung, Süddeutsche Zeitung, Berliner Morgenpost, Financial Times Deutschland, Frankfurter Rundschau</td>
</tr>
<tr>
<td><strong>Key phrases</strong></td>
<td>“IT-Infrastrukturberater”, “IT-Infrastruktur Consultant”, „IT-Berater Infrastruktur“, “IT-Infrastructure Consultant”</td>
</tr>
<tr>
<td><strong>Search period</strong></td>
<td>01.01.2012 - 30.6.2012</td>
</tr>
</tbody>
</table>

In total 817 job profiles could be harvested by the author after the search. The subsequent selection process started with a first reviewing step independently conducted by the author and the second researcher to sort out all job profiles that had only a minor or no reference to the ITI domain.

Figure 4-8: Extract of the list of relevant job profiles

These postings included jobs with a focus on city-infrastructure, consulting assistance and first level support without displaying any hands-on technical implementation activities. As a consequence, 479 job profiles were left from the initial 817. However, some of the companies have cross-posted their job profiles on multiple occasions and even used various formatting designs complicating a distinct identification of the relevant job profiles. Thus, duplicated postings needed to be eliminated as well by the team. After a second review step, 250 relevant job profiles could be finally identified which were particularly aimed at the group of IT-Infrastructure consultants. In order to have a consistent data pool, all job profiles were saved as a pdf file by the author. Additionally, a short job profile highlighting the job title and main focus, the company name, the cor-
responding job location/federal state, the industry sector and date were all saved in a separate Excel file for the data (see figure 4-8).

4.4.2 Data Analysis

Once again, the qualitative content analysis by Mayring (2010) was applied as an analysis method. As part of the data analysis, each of the 250 job profiles was systematically examined. In general, every job profile not only depicts the necessary tasks but also the requirements of a particular position and company for an IT-infrastructure consultant. Both areas were of interest and unveil in-depth insights to the profession. In order to comprehensively use the data from the job profiles all requirements and tasks were transferred and coded. The coding process itself represented a major challenge by agreeing on the proper level of depth for the used terminology. Moreover, oftentimes job profiles have used a different vocabulary by eventually meaning the same content (e.g., leading a project, project management, and supervising resources for a project). Or sometimes they have even used the same terms which, however, required a different coding to maintain a content-related distinction (e.g. execution sometimes means implementation, in another context it can also mean realizing a project or introducing particular software). All codes were generated by using an inductive approach from the existing data set and by using a terminology as close as possible to the source terminology to avoid any misconception. To ensure the content of each requirement and task was accurately coded and transferred by the author, the second researcher cross-validated each allocated code. In case the researcher had a different understanding of a text passage or term a mutually agreed solution was developed in an open discussion. The final coding list of requirements and tasks was saved in an MS-Excel file. In total, the coding of the requirements consisted of 3414 terms based on 657 different codes. The coding of the task-related activities revealed 1912 codes based on 241 different codes.

Furthermore, since the underlying thesis is dealing with competences and its application in a professional context, all job-related tasks and corresponding activities were additionally coded in a second step. As described in chapter 4.1.2 qualitative content analysis strives for intersubjective replicability as a goodness criterion based on an incremental approach (Wrona, 2006). The underlying job profile analysis used the identified ITI competence dimensions of the qualitative interview study and their definitions based on the Literature Review as its categorization system. To assure intersubjective replicability a qualitative content analysis requires a coding guide next to the categorization system which contains content-related and methodical coding rules depicting how to apply the codes. Each ITI dimension of the categorization system represents one code. Referring to the coding guidelines, text passages or terms of job-related tasks were assigned a code if the competence dimension was explicitly mentioned or the content implied its affiliation to it. Again, each code assignment was cross-validated by the independent researcher. In case a clear assignment to a code was not feasible or commonly agreed by both, author and independent researcher, the code Others was used.
Table 4-7: Anchor examples for coding of the ITI dimensions

<table>
<thead>
<tr>
<th>ITI Dimension</th>
<th>Definition</th>
<th>Anchor Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-Networks</td>
<td><em>IT-Networks</em> focus on the technology and protocols that facilitates digital communication within an organization or with external stakeholders.</td>
<td>“Implementation of network environments” (Task 13)</td>
</tr>
<tr>
<td>Software</td>
<td><em>Software</em> refers to the ability to add, adapt, and eliminate the components of software applications without having any extensive effect on the applications collectively</td>
<td>“Migration of software infrastructures” (Task 26)</td>
</tr>
<tr>
<td>Hardware</td>
<td><em>Hardware</em> relates to computer systems and associated components needed in an application environment.</td>
<td>“Conception of server structures” (Task 4)</td>
</tr>
<tr>
<td>Management</td>
<td><em>Management</em> relates to the understanding of business processes on one hand and to the competence of coordinating and controlling all of the activities required for completing an information systems project.</td>
<td>“Planning and executing of project management activities” (Task 2)</td>
</tr>
<tr>
<td>Data Management</td>
<td><em>Data Management involves</em> the collection of information, database design, sorting and reporting of data, establishing links to external databases, guaranteeing data compatibility, and developing as well as implementing migration strategies to the effective management of electronic information.</td>
<td>“Development of the data base design” (Task 15)</td>
</tr>
<tr>
<td>IT-Service management</td>
<td><em>IT-Service management</em> is concerned with the activities to plan, coordinate and control the quality and quantity of IT services to support business processes for reaching organizational objectives by implementing established frameworks and best practices that support reducing cost, increasing quality and satisfying customers.</td>
<td>“Requirement analysis of IT-Service management“ (Task 14)</td>
</tr>
</tbody>
</table>

Table 4-7 provides an overview on the definition and anchor examples of the ITI dimensions of the categorization system. Next to the content-related coding rules some methodical guidance was determined as well. For instance, any information on the employer or content that did not focus on the job as an IT-Infrastructure consultant was not coded. One code could cover several paragraphs. As a consequence, the author decided that the context unit accounted for two paragraphs while the smallest text component which could be coded is
defined as on word. In case there was any doubt on the coding scope rather more than less of a text passage should be coded in order to maintain and reproduce the meaning of the coding. Therefore, one text passage could also be assigned multiple codes.

### 4.4.3 Results

The following chapter presents the results of the job profile analysis. While the first part delineates the coding results for the requirements and tasks of an IT-Infrastructure consultant, the second part shows the coding with respect to the categorization system or ITI dimensions which were developed within the previous qualitative interview survey. Overall, 174 different small and medium sized as well as large-scale enterprises from the IT sector have issued 250 different job advertisements in order to search for inhouse or on-site consultants (see figure 4-9).

![Overview on Employers](image)

**Figure 4-9: Overview on the employers in the job profile**

Eventually, 240 ads were explicitly searching for on-site consultants displaying only a minor need for permanent consulting. Moreover, 116 of them even indicated the industry focus in which automotive (41), banking (37), trade (19) and logistics (19) were mentioned, while the rest (134) didn’t provide any further details. As stated before, nowadays consulting processes take place in an international environment. Out of the 250 job profiles 207 explicitly mentioned international work settings and 86 ads emphasized the need to work on various locations inside or outside of Germany.

---

53 According to the Institut für Mittelstandsforschung (IfM) small enterprises encompass less than 50 employees, while medium-sized enterprises employ between 50 and 499 employees. Consequently, large enterprises involve more than 500 employees (Günterberg and Wolter, 2003, p. 11).
Requirements
The 250 job profiles revealed which requirements need to be met by potential applicants. As indicated before, the author compromised on coding the requirements as close as possible to the source text and clustering similar wordings under a common keyword. 3414 codes could have been assigned to the requirement section whereas the number of 657 different codes indicates a heterogeneous requirement range. During the coding process no difference was made between mandatory and preferable requirements. If certain programming languages, SAP modules or applications were explicitly mentioned in the job profile they were particularly coded as well. All job profile asked for a University degree in an IT related field of study or alternatively for vocational training in the IT sector with several years of on the job experience.

Overall, the requirements cover a wide range from general skills such as analytical, conceptual or problem-solving skills to personality traits such as open-mindedness, flexibility or diligence. Nevertheless, the majority of requirements focus clearly on technical know-how on one of the six ITI dimensions. Table 4-8 provides an overview of the top-ten requirements for IT-Infrastructure consultants mentioned by the pool of 250 job profiles. Indeed, project management knowledge was required the most by all companies.

Table 4-8: Top-ten requirements of ITI consultants

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Total Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project management knowledge</td>
<td>111</td>
</tr>
<tr>
<td>Know-How in dealing with network protocols</td>
<td>83</td>
</tr>
<tr>
<td>Hardware design experiences</td>
<td>82</td>
</tr>
<tr>
<td>Experienced in dealing with client deployment processes</td>
<td>73</td>
</tr>
<tr>
<td>Ability to work in a team</td>
<td>71</td>
</tr>
<tr>
<td>Comprehensive experience in dealing with MS Server</td>
<td>70</td>
</tr>
<tr>
<td>Understanding hardware and software requirements of the customer</td>
<td>69</td>
</tr>
<tr>
<td>Experience in developing concepts and tools for the operation and usage in client server architectures</td>
<td>64</td>
</tr>
<tr>
<td>Technical network knowledge</td>
<td>63</td>
</tr>
<tr>
<td>Experience with software management and distribution</td>
<td>50</td>
</tr>
</tbody>
</table>

Tasks
The coding processes of the tasks lead to 1912 codes based on 241 different codes. As stated in chapter 2.5.2, competence comprises a heuristic and an epistemic component. While the epistemic component depicts the knowledge aspect of competence, the heuristic part involves experience gained through activities. Therefore, the underlying thesis puts a particular emphasis on job tasks and their related activities to get the best possible insights on IT-Infrastructure competences. Again, the coding of the tasks was conducted by keeping the wording as close as possible to the source text and putting similar wordings together.
Main task of the consultant is mainly to systematically identify the requirements of the internal or external client and based on that to develop an efficient solution. As most of the work of an IT-Infrastructure consultant is done in a project setting, project management competences is required. Depending on the focus and experience level of the consultant the project management responsibilities increase including particularly budget liability. However, most of the demanded tasks from employers involve project management activities such as planning and coordinating activities or understanding the cost/benefits of IT-Resources. To understand the requirements of the client business process analyses can play a decisive within the consulting process as well. Not surprisingly the job profile analysis revealed that one can generally differentiate between rather operational or strategic job focus of IT-Infrastructure consultants. While the latter oftentimes involves issues on IT-Strategy such as outsourcing, standardization or investments decisions, the former is more focused on software migration or implementing hardware and network environments.

To obtain a clear assignment to the competence categories, all codes were coded a second time based on the previously developed categorization system. In a first step, the first five job profiles were independently coded again by the research team to validate the categorization system and guarantee intercoder reliability. Following this, the coding results of both researchers were compared and analyzed with each other. All of the existing codes were used and 80% of the codes match with respect to their frequency indicating a solid result for the coding process. Following table 4-9 reveals the top-ten coded tasks and the coding results based on the validated categorization system.

<table>
<thead>
<tr>
<th>Task-related activities</th>
<th>Count</th>
<th>Competence Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and execution of project management activities</td>
<td>104</td>
<td>Management</td>
</tr>
<tr>
<td>Installation and configuration of the MS product line</td>
<td>95</td>
<td>Software</td>
</tr>
<tr>
<td>Designing of server structures</td>
<td>56</td>
<td>Hardware</td>
</tr>
<tr>
<td>Designing of network environments</td>
<td>47</td>
<td>Networks</td>
</tr>
<tr>
<td>Implementation of IT-Servicemanagement frameworks</td>
<td>42</td>
<td>Management</td>
</tr>
<tr>
<td>Assessment of IT-Services in enterprises</td>
<td>38</td>
<td>IT-Servicemanagement</td>
</tr>
<tr>
<td>Customer-oriented acting</td>
<td>33</td>
<td>Management</td>
</tr>
<tr>
<td>Quality assurance of software solutions</td>
<td>29</td>
<td>Software</td>
</tr>
<tr>
<td>Adjustments of SAP</td>
<td>28</td>
<td>Software</td>
</tr>
<tr>
<td>Hardware installation</td>
<td>28</td>
<td>Hardware</td>
</tr>
</tbody>
</table>

Overall, all tasks could be coded a second time based on the categorization system. In case any tasks could be assigned more than one competence dimension or the code assignment remained unclear, both researchers mutually agreed on the most rational solution. As the categorization system have been thoroughly
defined and validated and all tasks have been consciously coded in the first coding process aiming at clarity from the beginning, only at three occasions the author had to cross-check the coding with the independent researcher.

Due to the large number of different tasks and corresponding activities demanded by the employer companies, only those tasks have been taking under consideration for the competence development of each ITI dimension which has been counted at least 10 times throughout the job profile analysis. As a consequence, table 4-10 summarizes the list of the total count of codes for each ITI dimension.

<table>
<thead>
<tr>
<th>ITI Dimension</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-Service Management</td>
<td>6</td>
</tr>
<tr>
<td>Networks</td>
<td>10</td>
</tr>
<tr>
<td>Hardware</td>
<td>14</td>
</tr>
<tr>
<td>Software</td>
<td>23</td>
</tr>
<tr>
<td>Database</td>
<td>6</td>
</tr>
<tr>
<td>Management</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

By that, the author could ensure a solid degree of relevance and abstraction level of the final pool of tasks. Finally, 70 out of 241 codes met the requirements and were used for developing the measurement instrument of the ITI competence dimensions and the quantitative survey which are depicted in the next chapter in detail.
Chapter 5

Structural Equation Model

After the qualitative expert interviews confirmed six of the initial eight main competence dimensions of IT-Infrastructure consultants and the job profile analysis identified 70 highly relevant tasks for IT-Infrastructure consultants, a quantitative model is supposed to empirically test the competence dimensions. Main objective of the quantitative research study is to develop and test comprehensive IT-Infrastructure and intercultural competence constructs that can analyze the influence of both on job performances of consultants on one side, and to identify the interaction of both constructs on the other side.

IT-Infrastructure competence is understood as a second order construct (see Ch.5.1.3) that consists of six main competence dimensions (see figure 5·1), which again are composed of particular competences as revealed by the job profile analysis. By introducing different abstraction level a more comprehensive analysis and higher generalization can be achieved. The following quantitative study uses explicitly IT-Infrastructure consultants as research subject. By using struc-
tured interviews and corresponding survey questionnaires, following three re-
search questions 5, 6 and 7 are answered based on a sorting approach and Par-
tial Least Squares (PLS) analysis:

**Research Question 5:** How can an IT-Infrastructure competence construct be operationalized?

**Research Question 6:** Which dimensions have an impact on the job performance of IT-Infrastructure consultants?

**Research Question 7:** Are there effects between intercultural and IT-Infrastructure competences?

The following chapter briefly introduces the main theoretical foundation on causal analysis and highlights the difference between variance and co-variance based approaches. Subsequently, chapter 5.2 derives the research model and the corresponding hypothesis. Moreover, the operationalization of the main constructs and the development of the questionnaire are presented. Upon this, a description of the pretest, the sample and the data collection process is depicted in chapter 5.3. Chapter 5.4 presents a detailed analysis of the collected data and outlines the validation and evaluation of the measurement and structural model to present the final results in detail.

## 5.1 Theoretical Foundation

The presented quantitative study applies comprehensive structured interviews to collect data. In this context, the author on one side and a matching evaluation of the respective job performances by the supervisor ask individual attitudes from IT-Infrastructure consultants concerning their IT-Infrastructure and intercultural competences on the other side. By that, hypothetical causal relationships can be examined. Since these attitudes represent latent phenomena, which cannot be directly observed, structural equation modelling (SEM) are used as the suitable analysis approach. It allows for holistically testing hypothesis systems and can therefore, exhibit the complexity of the research questions. Chapter 5.1.1 introduces the methodological foundation on SEMs and shows the overall structure of a causal model. Afterwards chapter 5.1.2 compares the two main approaches for estimating SEMs before explaining in detail second order constructs in chapter 5.1.3 as the main technique for modelling the two underlying latent phenomena IT-Infrastructure and intercultural competences. In order to provide the necessary theoretical insights on joint effects of the two main phenomena, the final chapter 5.1.4 discusses the methodological foundation on interaction effects.

### 5.1.1 Structural Equation Model

Many empirical studies focus on investigating latent variable, which are connected by a network of hypothesis. As latent variables cannot be directly ob-
served, they need to be measured by a suitable operationalization (Backhaus, 2011, p. 344). Due to their multi-facetted structure and dimension, this also applies to both, the intercultural competence and the IT-Infrastructure competence construct. Therefore, latent variables need to be clearly defined and corresponding indicators have to be identified which empirically represent these latent variables (Hodapp, 1984). The estimation of interrelationships of latent variables results from multivariate analysis approaches of the second generation (Fornell and Wernerfelt, 1987). While analysis techniques of the first generation solely consider empirically observable (manifested) variables, the techniques of the second generation not only acknowledge latent variables but are also able to display higher complexity and account for measurement errors (Backhaus, 2011). SEMs are assigned to the latter which explicitly examine complex causal relationships and hence, combine regression and factor analytical elements (Homburg et al., 2008, p. 549). By that, SEMs test if a theoretically developed hypothesis system conforms to the empirical data of a survey. According to literature SEMs exhibit a confirmatory character and are known as hypothesis testing approaches (Backhaus et al., 2006).

A SEM is comprised on the one hand of interrelations between latent and manifest variables, the measurement model, on the other hand of interrelations between various latent variables, the structural model. The latter is based on theoretical and logical considerations to represent a hypothesis system which is investigated at large (Diller, 2006b). The structural model comprises the relationship among the latent variables or constructs, whereas the measurement model compasses the relationship between the latent variables and the manifested (measurement) indicators (Marcoulides and Schumacker, 1996). Thus, an important prerequisite for research studies is to identify relevant variables for the related research question and to establish a causal relationship based on hypothesis from literature (Huber et al., 2007). Figure 5-2 illustrates the structure of an exemplary SEM by visualizing the “paths” between the latent variables on
one side (structural model) and between the latent and manifested indicators (measurement model) on the other side. One of the major advantages of SEM is that measurement and structural model can be analyzed at the same time. Based on the factor analysis the parameters of the relation between measurement variables and latent variables are estimated and at the same time the causal relationships between the constructs are evaluated (MacKenzie et al., 2011). Latent variables can be either exogenous or endogenous. While the former, illustrated by the Greek letter ξ, represents the cause of an effect and is not explained by the model, the latter, illustrated by the Greek letter η, is explicated by the other variables. Based on the regression analysis of the first generation approaches, the actual causal relationship is depicted by the γ-values and significance levels (Tenenhaus et al., 2005). The SEM is therefore composed of the structural model, the measurement model of exogenous latent variables and the measurement model of the endogenous latent variable (Götz and Liehr-Gobbers, 2004). To depict the interrelationship between the variables, following equation can be used:

$$\eta = B\eta + \Gamma \xi + \zeta$$

While $\eta$ and $\xi$ represent the mathematical vectors of the endogenous and exogenous variables, the relations of the structural model are displayed by path coefficients in the form of $B$ and $\Gamma$ parameter matrices. The measurement error of the latent variables, the residual variable, is represented by the $\zeta$ coefficient. Table 5·1 provides an overview of the variables and their meanings.

<table>
<thead>
<tr>
<th>Variable/Parameter</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x_i$</td>
<td>Indicator variable of a latent exogenous variable</td>
</tr>
<tr>
<td>$y_i$</td>
<td>Indicator variable of a latent endogenous variable</td>
</tr>
<tr>
<td>$B$</td>
<td>Parameter matrix of a latent endogenous variable</td>
</tr>
<tr>
<td>$\Gamma$</td>
<td>Parameter matrix of a latent exogenous variable</td>
</tr>
<tr>
<td>$\gamma_i$</td>
<td>Path coefficient between a latent exogenous and a latent endogenous variable</td>
</tr>
<tr>
<td>$\delta_i$</td>
<td>Error term in the exogenous measurement model (residual variable)</td>
</tr>
<tr>
<td>$\epsilon_i$</td>
<td>Error term in the endogenous measurement model (residual variable)</td>
</tr>
<tr>
<td>$\zeta_i$</td>
<td>Error term in the structural model (residual variable)</td>
</tr>
<tr>
<td>$\eta_i$</td>
<td>Latent endogenous variable</td>
</tr>
<tr>
<td>$\lambda_i$</td>
<td>Path coefficient between a latent variable and a reflective indicator variable</td>
</tr>
<tr>
<td>$\xi_i$</td>
<td>Latent exogenous variable</td>
</tr>
<tr>
<td>$\rho_i$</td>
<td>Path coefficient between a latent variable and a formative indicator variable</td>
</tr>
</tbody>
</table>
Each latent variable is operationalized by indicators $x_i$ and $y_i$, known as manifested or observable variables, and hence features an own measurement model (Ringle et al., 2006). In general, research differentiates between a *reflective* and a *formative* operationalization of latent variables based on the causal direction of their measurement indicators (Diller, 2006a; Eberl, 2006). In reflective measurement models, latent variables influence the manifested variables within the path relationships. The latent variable reflects all corresponding indicators at the same time in which a modification of the latent variable also leads to a change of all measurement indicators (Weiber and Mühlhaus, 2010). Due to the high correlation of all indicators, removing one indicator does not lead to a significant change of the underlying variable with respect to the content (Diamantopoulos and Winklhofer, 2001).

Each indicator is linked with its dedicated latent variable by means of a linear regression equation. This is depicted as follows for the endogenous and exogenous measurement model:

**exogenous reflective measurement model:**

$$x = \lambda_x \xi + \delta_x$$

**endogenous reflective measurement model:**

$$y = \lambda_y \eta + \epsilon_y$$

The regression coefficients $\lambda_x$ and $\lambda_y$ represent the path coefficients or so called loadings between the latent variable $\xi$ and $\eta$ and their reflective indicator variables $x$ and $y$. Again, each indicator symbolizes an inaccurate measurement of its corresponding latent variable (Bollen and Lennox, 1991). This is exhibited by the errors terms or residual variables $\delta_x$ und $\epsilon_y$. By assigning multiple indicators to one latent variable, measurement errors and distortions can be even reduced (Fassott, 2006). Compared with a reflective measurement model, the direction of action between indicators and latent variables are opposite in *formative* measurement models. The indicators are not derived from the latent variable, instead they specify it. Therefore, dropping or adding a formative indicator can lead to a significant change of the inherent content of the latent variable (Eberl, 2004). Moreover, the various indicators of a formative measurement model should correlate as little as possible (Bliemel et al., 2005). While measurement errors of reflective models occur on an indicator level, corresponding errors of a formative operationalization take place on the construct level as it is assumed that indicator variables cannot completely represent the construct (Edwards and Bagozzi, 2000). This is depicted by the following equation in which $\pi_\xi$ und $\pi_\eta$ represent path coefficients, or weights, between the latent and manifest variables.

**exogenous formative measurement model:**

$$\xi = \pi_\xi x + \delta_\xi$$

**endogenous reflective measurement model:**

$$\eta = \pi_\eta y + \epsilon_\eta$$

The latent variable is therefore estimated as a linear combination of its various indicator weights (Higgins et al., 1995). By that, the formative measurement

---

54 Obviously, dropping an indicator has no significant impact as long as there are a sufficient number of indicators. In case the number of indicators falls below a certain number, reflective measurement models are not sufficiently specified (Fuchs and Diamantopoulos, 2010).
allows for identifying the importance of different drivers based on the indicator weights (Okazaki, 2012). Following table 5-2 summarizes the main differences between reflective and formative measurement models.

Table 5-2: Reflective vs. formative measurement models (Jarvis, 2003)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Reflective Measurement Model</th>
<th>Formative Measurement Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causality</td>
<td>Direction of causality from the latent variable to the indicators</td>
<td>Direction of causality from the indicators to the latent variable</td>
</tr>
<tr>
<td>Reliability</td>
<td>Indicators have to correlate and should be interchangeable</td>
<td>Indicators should not correlate and are not interchangeable.</td>
</tr>
<tr>
<td>Validity</td>
<td>Dropping an indicators leads not necessarily to a change of the meaning of the latent variable</td>
<td>Dropping an indicator leads to a change of the meaning of the latent variable</td>
</tr>
<tr>
<td>Measurement Error</td>
<td>Errors are considered on an indicator level</td>
<td>Errors are considered on a construct level</td>
</tr>
</tbody>
</table>

The reversal of causality within the path relationship between indicators and latent variables in reflective and formative measurement models causes significant difference for the evaluation of the quality of models. Hence, the corresponding decision has a great impact on the research process and for the selection of analysis tools (Lohmöller, 1989). In case a model is incorrectly defined as formative, despite its reflective character, the consequences are usually not significant, since all indicators are incorporated in the latent variable. However, by that more parameters are estimated than needed in fact which could lead to a rejection of the hypotheses system (Diamantopoulos et al., 2008). In contrast, when a measurement model is misleadingly operationalized as reflective, significant indicators of a construct might be deleted due to low correlations. In fact, this leads to reduced validity of the construct as the analyzed construct does not reflect the real construct. Therefore, Jarvis ET AL. (2003) emphasized that the selection of measurement model should occur before the empirical survey and even developed a corresponding question guide for that (see table 5-3).

Table 5-3: Decision rules for formative and reflective constructs (Jarvis, 2003)

<table>
<thead>
<tr>
<th>Question</th>
<th>Reflective Model</th>
<th>Formative Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Are the indicators (items) (a) defining characteristics or (b) manifestations of the construct?</td>
<td>Manifestations</td>
<td>Defining characteristics</td>
</tr>
<tr>
<td>2  Would changes in the indicators/items cause changes in the construct or not?</td>
<td>N</td>
<td>Yes</td>
</tr>
<tr>
<td>3  Would changes in the construct cause changes in the indicators?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Diller (2006) emphasized that in contrast to reflective indicators, formative indicators constitute the starting point for practical implications due to their insights Diller (2006b, p. 614).

---

55 Jarvis ET AL. (2003) emphasized that in contrast to reflective indicators, formative indicators constitute the starting point for practical implications due to their insights Diller (2006b, p. 614).
### Question 4
Do the indicators share a common theme?
- Yes
- Not required

### Question 5
Would dropping one of the indicators alter the conceptual domain of the construct?
- No
- Possible

### Question 6
Should a change in one of the indicators be associated with changes in the other indicators?
- Yes
- Not required

### Question 7
Are the indicators/items expected to have the same antecedents and consequences?
- Yes
- Not required

In order to determine the appropriate measurement model the question set from Jarvis et al. (2003) is used for the underlying thesis. Indeed, all constructs and corresponding indicators are evaluated based on these questions, which even include already validated constructs (Fassott, 2006). The following chapter introduces and distinguishes between variance and co-variance based approaches of SEMs.

#### 5.1.2 SEM Model Estimation — Comparing Two Approaches

For the estimation of SEMs research scholars generally distinguish between variance and co-variance based approaches (Henseler et al., 2009, p. 277). As already indicated, measurement and structure model are determined together within SEMs. Covariance-based approaches via LISREL, however, use for estimating the model the covariance matrix which best possibly replicates the covariance structure of the data (Backhaus, 2011).

Due to the iterative estimation, procedure for PLS, complex models converge rather rapidly and can be effectively used with smaller samples sizes (Fornell and Bookstein, 1982). With very small sample sizes, however, variance based approaches tend to over-estimate the “factor loadings” within the measurement model and under-estimate the path coefficients in the structure model (Chin, 1999). Small sample sizes show no asymptotic characteristic, which leads to a deflation in quality for estimators and global goodness indicators, so called FIT indices. This is the reason why LISREL needs a fairly greater sample size, is limited to smaller numbers of variables, and constructs. For instance, in order to calculate static FIT-indices and to reach positive “degrees of freedom” it requires 5–10 times the number of variables (Homburg and Baumgartner, 1995, p. 1103).

While LISREL depends on a multivariate normal distribution, the iterative estimation method of PLS does not require any stipulations regarding distributions. Since explorative studies usually have smaller sample sizes and do not have a normal distribution, PLS is mostly used in this context (Panten and Boßow-Thies, 2007).

---

56 Literature often uses the software application LISREL as a synonym for covariance based approaches and PLS for variance based approaches (Henseler et al., 2009).

57 FIT indices show the overall degree to which a model is acceptable (Marsh et al., 1996).
While covariance based approaches use FIT indices for evaluating the model, variance based approaches developed goodness indicators only for parts of a model. For assessing the structure model, heuristics like t-values or coefficients of determination ($R^2$) need to be used (Gerlach et al., 1979). Another restraining factor of LISREL is its overall limitation to reflective measurement models which can only hardly be overcome and only allows for strictly exogenous constructs to be formatively specified (Albers and Hildebrandt, 2006). Therefore, research hardly ever uses LISREL for formative construct operationalization. On the other hand, PLS can estimate both, reflective and formative measurement models (Ringle, 2004). It becomes apparent, that covariance-based approaches like LISREL and variance-based approaches like PLS have significant differences. Therefore, the choice for one of these analysis methods depends mainly on the research question and design. PLS appears to be better suited for the testing of theories at an early development stage. PLS aims at maximizing the degree of explanation of the structure model and can thus, be used in research settings where there is a lack of understanding for existing interrelationships like forecasting scenarios and theory development (Chin and Newsted, 1999; Schloderer et al., 2009). LISREL on the other hand is rather used for confirmatory purposes and is especially useful for the validation of a priori determined models that have a solid theoretical foundation (Straub et al., 2000). Table 5-4 illustrates the characteristics of LISREL and PLS.

Table 5-4: Comparing PLS and LISREL (Chin and Newsted, 1999; Panten, 2005)

<table>
<thead>
<tr>
<th>Criterion</th>
<th>PLS</th>
<th>LISREL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of analysis</td>
<td>Least-Square-Analysis</td>
<td>Covariance structure analysis</td>
</tr>
<tr>
<td>Estimation approach</td>
<td>Iterative Least-Square · Estimation</td>
<td>Maximum-Likelihood-Estimation</td>
</tr>
<tr>
<td>Estimation principle</td>
<td>Minimizing the residual variances in the measurement and structural model</td>
<td>Minimizing the distance between conceptual and empirical covariance matrix</td>
</tr>
<tr>
<td>Distribution assumption</td>
<td>No distribution assumptions</td>
<td>Usually multivariate normal distribution of the data</td>
</tr>
<tr>
<td>Characteristics of the estimation parameters</td>
<td>Estimator only consistent with high number of indicators</td>
<td>Estimator is consistent</td>
</tr>
<tr>
<td>Sample size</td>
<td>At least ten times of the highest number of indicators or the highest number of paths to an endogenous variable</td>
<td>At least five to ten times of the entire number of variables</td>
</tr>
<tr>
<td>Relations in the measurement model</td>
<td>Reflective and formative relations</td>
<td>Usually reflective relations</td>
</tr>
<tr>
<td>Scales of measurement</td>
<td>No limitations</td>
<td>At least interval-scaled</td>
</tr>
<tr>
<td>Application</td>
<td>Explorative character</td>
<td>Confirmatory character</td>
</tr>
<tr>
<td>Model evaluation</td>
<td>Heuristic ($R^2$, t-values)</td>
<td>Static Fit-Indices</td>
</tr>
</tbody>
</table>
There are several reasons for using PLS as the main analysis method. First, the underlying competence model is developed and tested for the first time; hence, it features an explorative character. Secondly, the IT-Infrastructure competence construct is operationalized as a second order formative construct, which cannot be suitably specified by means of covariance, based approaches. Thirdly, due to the rather low sample size of the quantitative study based on the length of the questionnaire and the target group, LISREL cannot be accurately applied in this context. Finally, it is questionable whether the data represents a multivariate normal distribution, which is required for LISREL. Consequently, PLS is used for the quantitative study in which the matching PLS-analysis was conducted with SmartPLS 2.0 for the pre-test and WarpPLS 4.0 for the main study (Ringle et al., 2005; Kock, 2011).

As the underlying thesis uses a structural model consisting of second order constructs, the following chapter presents the concept of multidimensional constructs.

5.1.3 Second Order Constructs

In the context of SEM, multidimensional constructs are discussed as well which are defined as constructs involving more than one dimension or constructs layers (Edwards, 2001; Petter et al., 2007). According to literature, there are following generic reasons for using multidimensional or second order constructs in research (Gorsuch, 1983; Rindskopf and Rose, 1988; Law et al., 1998; Jarvis et al., 2003; Wetzels et al., 2009):

1. Testing very abstract issues in the context of theories
2. Adjusting the level of abstraction for predictor and criterion variables
3. Reducing complexity

WETZELS ET AL. (2009) emphasize that second order constructs are generally characterized (reflective) or constituted (formative) by its lower first order constructs. Consequently, it is no question of causality between first and second order constructs but rather of the underlying nature of the higher order construct (Wetzels et al., 2009, p. 362). BECKER (2012) and RINGLE ET AL. (2012) distinguish between four types of models based on the relationship between first order latent variables and their indicators (Ringle et al., 2012), and between the second order latent variables and the first order latent variables (see figure 5-3).

58 According to WETZELS ET AL (2009) multidimensional constructs are also referred to as hierarchical constructs.
The first type, the **reflective-reflective type 1** model, consists of reflectively measured first order constructs, which represent reflective indicators of a second order construct (Lohmöller, 1989). Even though this type is the most implemented and examined model in research, it has been highly criticized by researchers since reflective measures should be unidimensional (Lee and Cadogan, 2013).

The second type, the **reflective-formative type 2** model, exhibits lower first order constructs which are reflectively measured and in which the first order constructs represent formative indicators of the second order construct.

The third type the **formative-reflective type 3** model, describes a model where the latent first order construct represent the second order construct and are measured by formative indicators.

The last type, the **formative-formative type 4** model, is a model in which the first order constructs are formatively measured and shape an abstract second order construct.

Indeed, the direction of the causality between indicator, first and second order latent variable plays the most important role for an accurate specification of second order constructs (Albers and Götz, 2006, p. 672). Second order models can be estimated by using SEM. Both covariance-based SEM and variance-based SEM, can be used to estimate the parameters in a multidimensional model (Tenenhaus et al., 2005). However, covariance-based SEMs display different limitation factors. To identify reflective higher-order construct models, for instance, there need to be a minimum of four lower-order factors for each single higher-order factor. With respect to uncorrelated higher-order factors, at least
three lower-order factors should be existing; whereas for correlated higher order factors, at least two lower-order factors are required. Furthermore, Rindskopf & Rose (1988) emphasize that a minimum of two manifest variables are desired for lower order factors (Rindskopf and Rose, 1988). However, in addition to the aforementioned benefits of variance based approaches such as PLS (see Ch.5.1.2), it is commonly agreed that PLS path modelling is safer against unacceptable solutions by the removal of factor indeterminacy: latent variable scores are determined and can be directly assessed. Moreover, because the residual covariance structure for the measurement error terms and the disturbance terms is not limited, no classification issues for recursive models exist within PLS (Wetzels et al., 2009, p. 180). As a consequence, this thesis uses PLS for assessing the underlying second order structural model, as delineated in chapter 5.1.3.

In PLS SEM there are three main approaches to model second order latent variables (Becker et al., 2012, p. 375): the repeated indicator approach (Wold, 1982), (2) the two-stage approach (Ringle et al., 2012), and (3) the hybrid approach (Wilson and Henseler, 2007). With respect to the repeated indicator approach, a second order construct is modelled by specifying a latent construct, which embodies every manifest indicator of its lower first order latent constructs. For instance, when a second order construct is composed of four underlying first order variables, of which each consist of 5 indicators, the second-order construct is modelled by using all 20 manifest variables of its first order constructs. This means that all indicators are utilized for the first order latent variable (“primary” loadings/weights) and for the second order construct (“secondary” loadings/weights) (Becker et al., 2012, p. 375). Indeed, the repeated indicator approach can be perfectly used for even higher construct levels (Wetzels et al., 2009). The two-stage approach on the other hand is mainly based on the utilization of latent variable scores (Tenenhaus et al., 2005). In a first step, it calculates the construct scores of the first order constructs by not considering the higher second order construct. Afterwards, this approach uses the estimated latent variable scores of the first order constructs as variables for the second order construct in a separate second level analysis (Becker et al., 2012). Finally, the hybrid approach uses each indicator once in the entire model to circumvent any non-relevant correlations. By dividing the indicators of each first order constructs into two equally sized parts, one part is used to calculate the first order constructs and the second part for the second order construct (Becker et al., 2012).

5.1.4 Interaction Effect in PLS

Traditional causal analysis is focussing on direct and linear relationships by assuming that an independent variable effects a dependent variable without any

---

59 For more information on formative higher order constructs (see Diamantopoulos et al. (2008) or Wetzels et al. (2009))
variable influencing this relationship (Herrmann et al., 2008, p. 731; Schloderer et al., 2009, p. 596). However, in the socio-economic context more complex causal relationships are usually of interest, which requires other statistical analysis methods as well (Eggert et al., 2005). Among the various techniques interaction effects are considered to be highly relevant for improving the predictive validity of the dependent variable and have been increasingly used in management research (Jaccard and Turrisi, 2003; Weiber and Mühlhaus, 2010). Overall, interaction effects have been variously conceptualized in social sciences. However, there is a common understanding that an interaction effect "exists if the effect of an independent variable on a dependent variable differs depending on the value of a third variable" (Jaccard and Turrisi, 2003, p. 3). Overall, one can differentiate between two different types of interaction effects: mediation and moderation.

**Mediation Effect**

A mediation effect describes the outcome of a variable, which accounts either partially or fully for the effect of an independent variable on a third variable (Müller, 2007) (see figure 5-4).

A mediation effect reduces the value of path coefficient $c$ and requires that both path coefficient values $a$ and $b$ display significant values. On one hand a full mediation exists if the value of $c$ is not significantly different from zero, on the other hand a partial mediation only decreases the value of $c$ to a certain degree (Eggert et al., 2005).

**Moderation Effect**

Moderating effects are not an inherent part of the relationship between independent and dependent variable but rather externally influence the strength of a causal relationship (see figure 5-5). BARON & KENNY (1986), as the most cited researchers in this context, have defined moderator variables as follows: "In general terms, a moderator is a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of..."

---

60 For more information on mediation effects see HUBER ET AL. (2007)
61 A Sobel-Test reveals if a mediation effect significantly differs from zero (Eggert et al., 2005).
the relation between an independent or predictor variable and a dependent or criterion variable” (Baron and Kenny, 1986, p. 1174).

Indeed, a moderation variable can have a direct influence on the dependent variable as well by representing an independent variable (Henseler and Fassott, 2012, p. 717). Moderation variables especially influence direct causal relationships of complex interdependencies (Müller, 2007).

Since PLS only allows for direct causal relationships, the analysis of a moderation effect is indirectly performed and dependent on the underlying scale level of the moderator variable. If the independent or moderator variable is not continuous, Rigdon et al. (1998) recommend a multigroup comparison approach. The underlying method does not assume any distribution. Each sample performs a separate analysis of the model. Moreover, the calculated p-value represents an α-error, which indicates the probability that the null hypothesis is wrongly classified as negative (Henseler et al., 2009).

However, the multigroup comparison approach is not suited for metric variables but rather the so-called product term approach (Henseler and Fassott, 2012). Again, the independent variable depends on the level of the moderator, which can be described as follows:

\[ Y = a + (b + d \cdot M) \cdot X + c \cdot M \quad (1) \]

\[ Y = a + b \cdot X + c \cdot M + d \cdot (X \times M) \quad (2) \]

While equation 1 simply shows the mathematical relationship between the independent, dependent and moderator variable, equation 2 illustrates how the moderating effect can be analyzed in a PLS path model (Henseler and Fassott, 2012, p. 718). The interaction term represents an additional variable, which includes the product of the moderator M and independent variable X. While in first order construct models PLS interactions are calculated as the multiple of the number of indicators for the predictor and moderator constructs (Chin et al., 2003), the approach on a second order level is different (Henseler and Chin, 2010; Becker et al., 2012). For a second order interaction moderation effect a combination of the repeated indicator and the two stage approach (see Ch.5.1.3) are used. First the repeated indicator approach is applied in order to model the second order constructs. After running the PLS algorithm, the latent variable scores of both constructs are determined. Secondly, by calculating the element wise product of the latent variable scores of the moderator and predictor variable M and X an inter-
action term can be created which is then used as an independent variable in a multiple regression on the latent endogenous variable Y (Chin et al., 2003).

In order to examine whether a moderator has a relevant influence on the causal relationship, its significance as well as the strength of the influence are of particular importance. Therefore, the explained variance of the entire moderator model is put into relation with the explained variance of the direct causal relationship (Cohen, 1988).

### 5.2 Research Design

The following SEM is based on a corresponding research model, which is deductively developed by means of a comprehensive theory analysis on one hand and with the aid of qualitative interviews and job profile analysis on the other hand. The development of the SEM is presented in chapter 5.2.1 which depicts the hypothesis exhibited in the causal relations between the second order latent constructs of the structural model. The data was collected by means of comprehensive interviews. By that, the various latent first order constructs could be measured via particular scales or measurement instruments, which consist of different questionnaire items. Chapter 5.2.2 delineates how these constructs are operationalized and additionally describes the scale development process for the IT-Infrastructure competence construct based on an established methodology.

#### 5.2.1 Research Model

As stated before, the underlying research model of the quantitative study is mainly based on classic learning theory by THORNDIKE (1930) (see Ch.3.3.2). Following MERTESACKER’S (2010) structured variable selection approach of existing literature in the intercultural competence domain, eight different constructs could be identified that meet the requirements of the sound selection methodology and represent a comprehensive view of the second order construct of intercultural competence:

- **Intercultural Sensitivity Inventory** (ICSI which describes the ability to think and correspondingly “act in intercultural appropriate ways” and is examined in both, a collectivistic and individualistic setting) (Hammer et al., 2003, p. 422)
- **Openness** (ability to be unprejudiced and perceptive to other ideas and behaviors)
- **Flexibility** (willingness to change one’s own behavior according to the challenges ahead)
- **Foreign Language Competence** (FLC is understood as the outcome of an effective and contextually appropriate interaction of knowledge about and skills of a foreign language)
Nonverbal Communication Competence (NVC comprises the ability to identify, understand, and interpret culture specific nonverbal signals)

Personal Self Awareness (PSA comprises the perception of the consequences of one’s own actions)

Home Cultural Awareness (HCA is the underlying foundation to engage in self-disclosing behaviors as a function of the reciprocal exchange expectations that form any communication process)

While the PSA and HCA are both part of the Intercultural Self Awareness Scale (ISAS), the latter also involves the Reputation Awareness, which has not been considered for the underlying thesis due to a lack of relevance for the target group. Based on the qualitative interviews (see Ch.4.3) and job profile analysis (see Ch.4.4), the IT-Infrastructure competence construct is composed of the six main competence dimensions:

- **IT-Servicemanagement** (ITSM deals with the activities to plan, coordinate and control the quality and quantity of IT services to support business processes for reaching organizational objectives by implementing established frameworks and best practices that support reducing cost, increasing quality and satisfying customers)
- **IT-Networks** (focuses on the technology and protocols that facilitates digital communication within an organization or with external stakeholders)
- **Hardware** (relates to computer systems and associated components needed in an application environment)
- **Software** (refers to the ability to add, adapt, and eliminate the components of software applications without having any extensive effect on the applications collectively)
- **Data Management** (involves the collection of information, database design, sorting and reporting of data, establishing links to external databases, guaranteeing data compatibility, and developing as well as implementing migration strategies to the effective management of electronic information)
- **Management** (relates to the understanding of business processes on one hand and to the competence of coordinating and controlling all of the activities required for completing an information systems project)

In addition to these main first order constructs of the two generic competences, Job Performance is examined as delineated in chapter 3.3. Therefore, the structural model consists of two main areas (see figure 5-6). While the left hand side provides insights on the comprehensive competence domains of IT-Infrastructure consultants regarding technical competences (hard skills) on one
side and intercultural competences (soft skills) on the other side, the right hand side is concerned with the corresponding impact of it.

These influences and dependencies are depicted in the following by the four main hypotheses (see table 5-5) which are developed based on theory and empirically tested. Indeed, the entire competence model provides several more causal relationships next to the main hypotheses. For instance, one can develop causal-effect dependencies between the numerous first order constructs and the corresponding second order constructs leading to additional 14 hypotheses.

Table 5-5: Main hypotheses (H1 – H4)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Cause-Effect Relationship</th>
<th>Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Intercultural Competence will be positively related to job performance.</td>
<td>(+)</td>
</tr>
<tr>
<td>H2</td>
<td>IT-Infrastructure Competence will be positively related to job performance</td>
<td>(+)</td>
</tr>
</tbody>
</table>

62 According to SCHULZ (2008) hard skills are the relevant technical requirements taught and learned for the job. Soft skills complement hard skills on the job by representing interpersonal skills and personal traits of employees that can offer a competitive advantage (Schulz, 2008, pp. 147–149)
CHAPTER 5

Hypothesis Cause-Effect Relationship Influence

H3 Intercultural Competence will moderate the relationship between IT-Infrastructure Competence and Job Performance such that the IT-Infrastructure Competence – Job Performance path will be stronger when Intercultural Competence increases (+)

H4 Intercultural Competence will mediate the relationship between IT-Infrastructure Competence and Job Performance. (+)

Moreover, as there are many moderating variables such as income, professional experience or gender there are additional hypotheses to examine either. However, as the underlying model is mainly developed to test these three main hypotheses, those hypotheses are not explicitly stated for the research model. The main hypotheses system is tested based on empirical data. Therefore, the latent first order constructs need to be operationalized and exhibited in a matching measurement model. By adding already existing scales of the intercultural competence domain and developing a new IT-Infrastructure competence scale, structured interviews can be conducted based on a questionnaire. Following chapter presents these steps.

5.2.2 Competence Scales

Since latent constructs like intentions, attitudes or competences cannot be directly measured, these phenomena need to be operationalized or measured by suitable manifest indicators. The underlying research model uses and combines existing scales from the intercultural competence research and organizational science (see Ch.3.1.2) to build a second order intercultural competence construct and to examine job performance. As discussed in chapter 5.1.3 multidimensional constructs can be used to illustrate highly abstract issues and to reduce complexity. The theoretical discussion of the intercultural competence domain (Ch.2.2) clearly revealed the multi-dimensionality and various facets of this phenomenon that requires a multidimensional operationalization as well (Rundstrom, 2009). As stated above, the selection of the intercultural facets was based on MERTESACKER'S (2010) variable selection approach to identify the most suitable and methodologically sound constructs for this research. The results disclosed that each of these constructs is represented by a different number of indicators; hence, a reflective measurement for each construct is presented. Due to the large number of existing intercultural facets, which are discussed by literature, the selected intercultural variables reflect facets or first order constructs of the overall intercultural competence construct. Therefore, the underlying thesis uses a type 1 second order operationalization for the intercultural competence measurement instrument (see Ch.5.1.3). Furthermore, the comprehensive selection
process and Literature Review revealed that some of the constructs, like the Intercultural Sensitivity Index (ICSI), contain out-dated references or not relevant content. Following the results of a qualitative pre-test with a small sample of the target group, some of the items had to be removed or rephrased (see Ch. 5.3.1.).

The fifth overall research question of the underlying thesis is concerned with the operationalization and measurement of a distinct IT-Infrastructure construct (see Ch. 5.2.2). According to the IT-Infrastructure Literature Review (see Ch. 3.2.1), there is no established IT-Infrastructure scale which comprehensively measures the different facets or competence dimensions of this particular domain. Therefore, relevant research publications were searched which examine particular constructs or aspects of the IT-Infrastructure domain and could contribute to the theoretical underpinning of a new second order measurement instrument of the IT-Infrastructure competence construct. In order to ensure content validity of the new construct, the corresponding scale development process was conducted in three steps based on the highly recognized publications of MOORE & BENBASAT (1991) and SHARMA (2010). All first order constructs of the IT-Infrastructure competence construct are reflectively operationalized which involves that all developed items of each construct show a high correlation and are disposable.

Based on the identified tasks (70) of the qualitative interviews job and description analysis, 64 question items could be generated which were each printed on cardboards. In a first step, three IT-Infrastructure consultants were asked to allocate these cards to the six competence dimension and their derived definitions. In this context, the participants were asked to assign each item card to a superior factor which best possibly explains the underlying item based on their gut feeling. There was also the possibility to allocate an item card to no construct if the consultants thought that this item is not explained by any of the constructs. Cards that were sorted out by more than one participant or were assigned to other constructs as opposed to be intended by the researcher were excluded or replaced. Therefore, the reduced number of 40 item cards was once again presented to two other IT-Consultants (new participants) with the same instruction. By that, the number of items was constantly reduced due to sorting and unintended allocation by the consultants.

In the second step of the scale development process, three IT-Infrastructure consultants were asked (new participants) to rate on a scale from 1 (poor reflection) to 3 (high reflection) how well these remaining items were explained by the respective constructs. In this context, the items cards were grouped according to their matching constructs and subsequently presented to the consultants. Items

---

63 For instance, according to the results of the pre-test, one item of the initial flexibility scale, “Soviet influence is threatening the national identity of many Asian countries”, was deleted due to its irrelevant content.

64 Content validity (also called expert validity) implies that the indicators of a construct represent the actual meaning (Bortz and Döring, 2006). Next to the criterion-related and construct validity, content validity is known as the third major validity component. In the present study, content validity was ensured by a stringent scale development process, as well as by searching for the inclusion of expert opinion (Hair et al., 2014).
which received an average value of less than 2 were again removed from the set indicators. In a third step, the remaining 18 question items were part of a pre-test (see Ch.5.3.1) and were analyzed with respect to reliability and one-dimensionality.  

In order to ensure the best possible operationalization, the underlying study aimed at developing a holistic measurement of competence constructs. As stated in chapter 2.5, competence can be divided into a heuristic component, which overall represents the knowledge side of a competence, and an epistemic component, which relates to the fact that any knowledge needs to be complemented by proper experience and application of the knowledge to become a competence. At this point of the scale development process, each of the remaining question items focused solely on the heuristic competences of IT-Infrastructure consultants. Therefore, each item was matched with a supplementing item which addresses the epistemic component. By that, each competence indicator of the first order competence constructs is measured on both the heuristic as well as epistemic level.  

Due to the three step-approach of scale development, a high content validity of the constructs can be assumed. Since the participants had to assign each item to a construct which best possibly explains the corresponding item, a reflective operationalization can be presumed. In order to avoid a flawed specification, all remaining items were additionally checked by means of the list of criteria based on JARIUS ET AL (2003) (see Ch.5.1.1). As an example, all indicators of Management clearly represent manifestations of the construct (criterion 1) so that modifications of the indicators don't lead to changes of the latent variable (criterion 2). However, changes of the latent variable would cause a change (e.g. I am qualified to actually estimate costs and benefits (both tangible and intangible) for the successful implementation of a particular project) which is another indication for a reflective operationalization. Furthermore, all indicators refer to the same topic (criterion 4) and the elimination of a measurement item would generally not lead to a change of the conceptual content of Management (criterion 5). With respect to criterion 7 one can assume that the measurement items have the same antecedents (the Management construct itself). As a consequence, criterions 1 to 5 as well as 7 indicate a reflective operationalization of the construct. However, criterion 6 cannot be clearly answered as a change of the characteristic of one indicator doesn't necessarily lead to an aligned change of the remaining indicators. Indeed, the list of criteria leads to the same results with respect to the other five competence dimension. Since six out of the seven requirements were met, all first order constructs of the IT-Infrastructure dimension should be reflectively operationalized.  

For the IT-Infrastructure construct a second order modelling appears to be the most suitable depiction in a SEM context. The underlying study uses a type two modelling and operationalization for the IT-Infrastructure phenomenon. While the six competence dimensions are represented by their reflective measurement indicators, each dimension characterizes and forms the IT-Infrastructure competence construct at the same time. By that, one can directly measure the influ-
ence of IT-infrastructure competence on job performance of IT-Infrastructure consultants (see table 5-6).

Table 5-6: First order items

<table>
<thead>
<tr>
<th>Construct</th>
<th>Competence Level</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITSM</td>
<td>Epistemic</td>
<td>I am qualified to actually implement service management frameworks in use today (e.g. ITIL Service Management Practices, ISO/IEC 20000, COBIT etc.).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I am qualified to actually assess the strengths and weaknesses of an IT-Service Organisation's service management capabilities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I am qualified to actually assess the quality of IT services against clearly-defined, documented service levels agreed to in a service level agreement (SLA).</td>
</tr>
<tr>
<td>ITSM</td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I actually implement service management frameworks in use today (ITIL Service Management Practices, ISO/IEC 20000, COBIT etc.).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In IT-Infrastructure projects I actually assess the strengths and weaknesses of an IT-Service Organisation's service management capabilities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In IT-Infrastructure projects I actually assess the quality of IT services against clearly-defined, documented service levels agreed to in a service level agreement (SLA).</td>
</tr>
<tr>
<td>IT-Networks</td>
<td>Epistemic</td>
<td>I am qualified to efficiently solve typical problems of underlying IP networks by identifying the problems and initiating the actions to improve or correct the situation (e.g. MTU settings, DHCP issues, IP subnetting etc.).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I am qualified to configure and implement network devices to create a reliable and available networking environment (e.g. content switch, OSPF, MPLS etc).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I am qualified to develop network architectures that meet the requirements on the network.</td>
</tr>
<tr>
<td>IT-Networks</td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I efficiently solve typical problems of underlying IP networks by identifying the problems and initiating the actions to improve or correct the situation (e.g. MTU settings, DHCP issues, IP subnetting etc.).</td>
</tr>
</tbody>
</table>

The questionnaire items for the first order constructs of the IC dimension and the endogenous job performance construct can be found at the CD Rom in the appendix.
<table>
<thead>
<tr>
<th>1.Order Construct</th>
<th>Competence Level</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-Networks</td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I configure and implement network devices to create a reliable and available networking environment (e.g. content switch, OSPF, MPLS etc.).</td>
</tr>
<tr>
<td></td>
<td>Epistemic</td>
<td>In IT-Infrastructure projects I develop network architectures that meet the requirement on the network. I am qualified to develop strategies and processes for managing data center in the interest of Green IT (incl. capacity requirements, location(s), redundant communications connections and security). I am qualified to manage problems of an operating data center by identifying the problems and initiating the actions to improve or correct the situation. I am qualified to actually assess the strengths and weaknesses of storage and backup solutions (esp. NAS and SAN) to finally realize the proper solution for an organization.</td>
</tr>
<tr>
<td>Hardware</td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I develop strategies and processes for managing data center facilities in the interest of Green IT (incl. capacity requirements, location(s), redundant communications connections and security). In IT-Infrastructure projects I manage the problems of an operating data center by identifying the problems and initiating the actions to improve or correct the situation. In IT-Infrastructure projects I actually assess the strengths and weaknesses of storage and backup solutions (esp. NAS and SAN) to finally realize the proper solution for an organization. I am qualified to install and configure operating systems (esp. Linux, Unix and Microsoft Server). I am sufficiently qualified to design and implement Active Directory and MS Exchange for Windows domains. I am qualified to implement virtualization solutions (esp. VMware, Citrix or Microsoft) to provide organizations the opportunities that virtualization can offer.</td>
</tr>
<tr>
<td>Software</td>
<td>Epistemic</td>
<td>In IT-Infrastructure projects I install and configure operating systems (esp. Linux, Unix and Microsoft Server).</td>
</tr>
<tr>
<td></td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I design and implement Active Directory and MS Exchange for Windows domains.</td>
</tr>
<tr>
<td>Order Construct</td>
<td>Competence Level</td>
<td>Item</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>------</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I implement virtualization solutions (esp. VMware, Citrix or Microsoft) to provide organizations the opportunities that virtualization can offer.</td>
</tr>
<tr>
<td></td>
<td>Epistemic</td>
<td>I am qualified to manipulate databases using SQL.</td>
</tr>
<tr>
<td><strong>Data Management</strong></td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I design databases.</td>
</tr>
<tr>
<td></td>
<td>Epistemic</td>
<td>I am qualified to identify data security risks and violations in data management system design.</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Heuristic</td>
<td>In IT-Infrastructure projects I manage IT resources to ensure that requirements are met.</td>
</tr>
<tr>
<td></td>
<td>Epistemic</td>
<td>I am qualified to actually interpret business goals of a client and recommend appropriate technical solutions.</td>
</tr>
</tbody>
</table>

The following chapter elaborates on the data collection and describes the pre-test of the questionnaires and its adjustment.

### 5.2.3 Structured Interviews and Methodological Issues

There are many approaches for data collection in quantitative research designs such as surveys, observations or experiments (Albers et al., 2009). In fact, each of these approaches has its advantages and drawbacks depending on the respective research setting and conditions. While nowadays surveys present the most dominant data collection method (Raithel, 2006, pp. 64–82), the majority of surveys use online access as the most convenient way to easily collect a large amount of data (Fowler, 2009). However, since the underlying study uses a com-
A comprehensive questionnaire consisting of almost 100 competence related items, an online survey bears a high risk of a low response rate and usually requires high incentives for the respondents to complete the questionnaire (Jobber et al., 2004). This thesis utilizes structured or standardized interviews to methodically avoid a high dropout rate and to increase the quality of the survey data as much as possible. While structured interviews oftentimes require a high amount of effort, they offer the most control of all interview techniques to the interviewer by not only defining the order of questions and presenting a fixed wording but also offering a predetermined choice of answers for the interviewee (Waltz et al., 2010, p. 288). Consequently, structured interviews are particularly suitable for any survey aiming for even high complex quantitative analysis of its data (Kromrey, 2006).

Overall, the quality of survey data is highly dependent on the procedures to avoid methodological issues. Studies have shown consistently, that there are particular error sources, which need to be taken into account for the development of the research design. In the following, these major issues are presented on one side as well as how the latter are addressed in the underlying survey.

One of the major objectives of any survey is to generate consistent and stable results, hence, to ensure reliability of its data. Because of the highly interactive character of an interview and its different biases and restrictions such as first impression error, extremity bias or acquiescence bias, which influence human decision-making, each interview represents unique results (Zikmund and Babin, 2012).

Conway et al. (1995), however, emphasized that this issue is considerably minimized by the utilization of standardized questionnaires (Conway et al., 1995). A consistent and well-elaborated structure of a questionnaire enhances the chances that any differences in the answers are “due to differences among the respondents rather than in the questions asked” (Gordon, 1975). An inherent goal is thus, to achieve that the interviewees share a common vocabulary in which each term has the same meaning to all interviewees (Bariball and While, 1994). By ensuring that only easy-to-understand words and technical terms usual in industry are incorporated for all measurement instruments, the questionnaire of the underlying thesis attempted to convey an equivalence of meaning to allow for comparability of the results (van der Stede et al., 2005, p. 670). To finally assess whether the target group fully comprehends the survey instrument and to add any necessary insights both, the questionnaire items and the questionnaire itself, were qualitatively pre-tested with corresponding participants as well.

The second major source of error is associated with validity of the data. In fact, there are two major types of validity errors: the error produced when the sample is not an adequate representation of the population, known as sampling error, and the error produced when the variation in the dependent variable is not re-

---

66 The first impression error refers to the first judgement of an interviewer, which could influence the entire interview. The extremity bias refers to the fact that some individuals tend to use extremes when answering questions. The acquiescence bias describes the tendency of respondents to agree with the viewpoints expressed by a survey (Zikmund and Babin, 2012, p. 157)
lated to variation in the independent variables, known as non-sampling error. There are different sources of sampling errors, which lead to variation from the true characteristics of the population (Fowler, 2009, p. 13). To minimize these corresponding random errors as much as possible, the underlying survey used a simple random sampling (SRS)\footnote{Within a SRS each unit is chosen by chance and each unit of the population has an equal chance of being selected for the sample (Babbie, 2012)} of IT-Infrastructure consultants to draw its statistical conclusions. The sample consists of a representative subset of the population and resembles all main characteristics of the target group, hence, increasing the chances of external validity\footnote{External validity is referred to as the extent to which results can be generalized (Aronson et al., 2010)} (van der Stede et al., 2005, p. 669). Additionally, the sampling error can even be further reduced and controlled by the sample size (Bartlett et al., 2001). Following the recommendations for PLS based SEM, the underlying thesis uses a sample size of 120 participants to allow for solid PLS application (Hoyle, 1995).

According to methodologists non-sampling errors have been proved to be the most rigorous contributor to overall survey error (Assael and Keon, 1982; Groves, 1990). Non-sampling error consist of two components. The first, non-response error, occurs when participants of the sample do not or refuse to answer, leading to the remaining responses to be non-representative of the total population (Denzin, 2009). The second component, response error, occurs when some respondents answer inaccurately, misinterpret questions or simply lie (Assael and Keon, 1982, p. 114). While non-sampling errors are tackled in this survey by a face-to-face interview setting ensuring the lowest possible drop-out rate, response errors can be only partially addressed by creating a trustful and highly confidential interview setting to reduce the chances of lying and deliberately false statements as well as by thoroughly pre-testing the questionnaire to reduce potential misinterpretations. The latter is particularly emphasized in literature (Ryan and Wang, 2001). In fact, poorly designed questions within a survey systematically jeopardize internal validity “by distorting responses or by inflating random errors if respondents make guesses because they do not understand the question” (van der Stede et al., 2005, p. 670). Researchers should pay particular attention to the questions they use, how they are worded and perceived, how their response format is designed, and how they are ordered and presented in the survey (Richter, 1970). On one side the development of the underlying questionnaire was based on established, valid and reliable scales of the intercultural competence research, on the other side the operationalization of the IT-Infrastructure competence dimensions was developed based on conceptual papers of the competence domain and research models of the Marketing domain (Ritter, 1998; Jacob, 2002). To avoid any potential halo effects\footnote{Halo effects in questionnaire design refer to the effect that the order of the questionnaire items can have an effect on response behaviour. Particularly, emotionally attached questions can bias subsequent responses (Rubin, 1969)} of the questionnaire items, different topics of content were clearly separated from each other within the questionnaire design (Raithel, 2006). Additionally, the wording of both, the intercultural competence and the IT-Infrastructure competence ques-
tions was carefully examined and devised in compliance with the recommenda-
tions by research literature (Stier, 1999, pp. 181–190). To ensure both, con-
sistency of the responses of the new IT-Infrastructure measurement dimensions
and content validity\(^70\), a *holistic competence item* was included for each of the six
competence dimensions (Homburg and Giering, 1996). This item aims at as-
sessing the competence level for each dimension with a single generic question,
which enables a validation of the correlation between the indirect measures of
the respective IT-Infrastructure competence constructs and a direct single item
measure later on. The operationalization of the holistic item was designed in the
same way as the items of the first order constructs. Furthermore, a seven-point
Likert scale was consistently used for the competence related answer options
which range from disagreement (=1) to agreement (=7). By that, not only the
most intuitive response scale was implemented but also statistical analysis can
be comprehensively applied (Bortz and Döring, 2006).

The application of structured interviews can provide a higher reliability of the
data due to the thoroughly designed outline, less interviewer bias and related
measurement errors leading to a higher validity as well as higher response rate
compared with other quantitative survey methods (Groves, 2004). The *common
method variance* represents another highly influential methodological issue par-
ticularly for competence related survey settings. The common method variance
refers to “the extent to which results in an empirical study are attributable to
measurement method rather than to the constructs the measures represent”
(Podsakoff et al., 2003, p. 879). Within the competence research context, com-
mon method variance arises when respondents provide self-reports of both
their own competences and correlates of competences such as job performance.
Researchers have comprehensively discussed the impending risks common
method variance generates in drawing conclusions from empirical research (Ng
variance bears the potential to either increase or reduce the observed correla-
tion between two measurement variables, depending on the respective data
collection method (1988). In fact, the implementation of self-report ratings to
measure two variables by one respondent, can lead to common method vari-
ance, which artificially increases or inflates the correlations between these two
variables (Ng and Feldman, 2012, p. 1024). Consequently, there are higher
chances to conclude statistically significant effects, known as Type 1 errors.
With respect to the utilization of self-ratings in competence research, following
four reasons can be highly associated with common method variance (Ng and
Feldman, 2012, p. 1024): *consistency motive, implicit theories, social desirabil-
ity, and mood state*.\(^71\) Indeed, each of these effects can highly influence the self-

\(^70\) Content validity describes the degree to which the variables of a measurement instrument
represent all facets and meanings of a construct (Lawshe, 1975).

\(^71\) Consistency motive describes the tendency of respondents to maintain consistency in their
answers; implicit theories refers to the respondent's evaluation that certain constructs covary;
social desirability refers to the tendency of respondents to provide a socially preferred answer
whether they believe it is true or not (Brink, 1991); mood state refers to the fact that respond-
ents have overall a rather positive or negative attitude towards their environment.
ratings of competences and the overall job performance. Respondents might attempt to sustain cognitive or attitudinal consistency in their answers to questions related to the intercultural and IT-Infrastructure competences on one side and self-ratings of their job performances on the other side, thus, engendering not only high correlations between the exogenous variables but also between the exogenous and the endogenous variable. Secondly, respondents might have an idea about which phenomena should correlate with each other, for example, an employee displaying a high flexibility should also be highly open in an intercultural setting. Therefore, flexibility and openness can possibly positively correlate with each other independent of the factual character of the affiliation. Thirdly, since high job performance is considered to be a core objective for professionals (Sonnentag, 2002, p. 1), respondents might tend to report higher self-ratings of their performances to enhance their status in the eyes of others like peers or supervisors. Finally, the respondent behaviour of the participant can be biased by their mood causing an individual in a positive mood to provide high ratings for all items.

However, despite these justified objections towards self-ratings, there are also valid and pragmatically methodological reasons to use self-ratings in research (Shalley and Blum, 2009). In fact, many researchers argue that the utilization of self-ratings of competences is the most appropriate approach since respondents are better able to judge their competence level than other like supervisors or peers can do (Ng and Feldman, 2012). It has also been repeatedly emphasized that competences is a very complex behaviour which is hard to observe and difficult to assess (van der Vleuten, 1996). Employees themselves may be in the best position to assess the intensity or frequency of these intended behaviours on their own. Interestingly, peers might not perceive an employee’s contributions except this employee “simultaneously engages in impression management tactics” intended at gaining supervisors’ and co-employees’ support (Janssen, 2000). Finally, there are various circumstances when peer and supervisor ratings of employees’ competences and performances cannot be admitted (Ng and Feldman, 2012, p. 1024). To illustrate this, there might be situations in which either anonymity or confidentiality cannot be guaranteed to respondents or trust in assurances of anonymity or confidentiality is not sufficient. There might be other cases where objective measures of competences and performances, such as comprehensive psychometric tests, are not available (Shalley and Blum, 2009). In these situations, self-ratings of competences may be the only suitable alternative. In fact, the analysis of long-term research results has confirmed substantial convergent validity among self-ratings, peer-ratings, and supervisor-ratings (Moneta et al., 2010; Ng and Feldman, 2012).

The above discussion suggests that self-ratings of competences can be useful in some circumstances, but may also generate a bias in the assessment of the correlations in other cases. Research results have shown that in case common method variance is present in a survey, single-method correlations are higher than multi-method correlations (Spector, 2006). This survey uses a self-reporting of the competences due to two major reasons. First, the underlying thesis analyzes competences of IT-Infrastructure consultants. This group of professionals usually deals with a high job fluctuation rate and hardly works with the same peers over long periods of time due to the project work settings (BDU, 2011). Hence, valid peer-evaluation of matching professionals is hard to
achieve. Secondly, from a research-practical point of view, implementing a peer-evaluation for each IT-Infrastructure consultant of this study requires very high organizational efforts and is tedious to execute for a large number of participants. However, in order to reduce the most threatening common method variance source, the underlying survey uses supervisor ratings for its endogenous variable. Each consultant’s supervisor is asked to provide an assessment of his consultant’s overall job performance along a particular set of well-established questions. By that, a comparatively objective assessment can be provided. While the self-reporting of the competences still contains many sources for common method variance, these risks can be partially lowered by a thorough preparation and comprehensive information of the respondents.

In order to stick with the majority of the most relevant literature and research in this field, the underlying survey questionnaire was composed in English. The questionnaire for the IT-Infrastructure consultants or employees comprised six pages of competence related questions and one page for demographic information as well as one page for the data security regulations. Additionally, each supervisor received a short questionnaire for each of his associated IT-Infrastructure consultants consisting of three pages: a short introduction page, a second page with the job performance items and a third page with demographic and general job related information. A first version of both questionnaires were pre-tested and validated by four experts to improve and revise the questions and design. Following table 5-7 shows the structure of the questionnaire.

Table 5-7: Structure of the ITI consultant questionnaire

<table>
<thead>
<tr>
<th>Page</th>
<th>Content</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Welcoming, Introduction, ID</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IT-Infrastructure competence dimensions (ITSM, IT-Networks and Hardware)</td>
<td>18 items</td>
</tr>
<tr>
<td>3</td>
<td>IT-Infrastructure competence dimensions (Software, Database and Management)</td>
<td>18 items</td>
</tr>
<tr>
<td>4</td>
<td>Intercultural Sensitivity (ICSI Individualism and Collectivism items)</td>
<td>20 items</td>
</tr>
<tr>
<td>5</td>
<td>Flexibility, Openness, Intercultural Self Awareness Scale and Communication Competence (Home Cultural Awareness Scale, Situational Self Awareness Scale, Foreign Language Competence Scale, Nonverbal Communication Competence Scale)</td>
<td>32 items</td>
</tr>
<tr>
<td>6</td>
<td>Demographics, job related items</td>
<td>12 items</td>
</tr>
</tbody>
</table>

In the first part of the employee interviews, all IT-Infrastructure consultants were welcomed and thanked for their participation in the survey. The data security issue was handed out and all participants were asked to sign it to officially guarantee that each individual response is highly confidentially treated and anonymously evaluated. By that, the effect of social desirability for the responses should be further reduced. While repeatedly delineating the purpose of the in-
terview, the interviewer also explained that each participant is assigned an identification number, which allows the interviewer to match his or her responses with the supervisor ratings later on. Furthermore, the interviewer emphasized that only IT-Infrastructure consultants are allowed to participate who work in an international project setting. While the second page of the questionnaire of the IT-Infrastructure consultants contained 18 items for the ITSM, IT-Networks and Hardware constructs, the third page included another 18 items of the Software, Database and Management constructs. As indicated above, the underlying survey uses a 7-point Likert scale in which only the endpoints of the scale are described (1=disagreement, 7=agreement). Main reason for choosing this rating category was the fact that some pre-test participants strongly vowed for a neutral value. Moreover, according to ALWIN (1997) rating scales with more response categories tend to be more accurate and are both more valid and reliable (Alwin, 1997). In order to provide respondents with the longest but most familiar rating scale, the 7-point Likert scale was chosen. The fourth page of the interview questionnaire was solely dedicated to assess the ICSI Individualism (Ind.) and ICSI Collectivism (Coll.) competences of the IT-Infrastructure consultants. Again, since respondents are required to answer 10 different sensitivity items both from an individualistic and from a collectivistic point of view, 20 questions were asked in this section. The fifth page of the questionnaire consisted of the Flexibility, Openness, ISAS and communication competence (FLC, NVC) measurement instruments. In order to prevent incorrect consistency answers, the different items of the HCA and SSA constructs were mixed with each other. The same was applied with the NVC and FLC measurement items. The questionnaire for the IT-Infrastructure consultants closed with particular questions on demographics as well as general profession related questions such as earnings, tenure or working hour. At the end of the interview the interviewee were asked for contact addresses of any other potential participant for the underlying study. The entire questionnaire for the IT-Infrastructure consultants can be found in the CD-Rom of the appendix.

In contrast to the ITI consultant questionnaire, the three page questionnaire for the supervisors was short (see table 5-8).

<table>
<thead>
<tr>
<th>Page</th>
<th>Content</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Welcoming, Introduction, ID</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Job Performance</td>
<td>6 items</td>
</tr>
<tr>
<td>3</td>
<td>Demographics, job related and employee related questions</td>
<td>11 items</td>
</tr>
</tbody>
</table>

At the beginning of the interview, the main aim of the survey was explained to the supervisors and the data security statement was issued and signed as well. In order to enable matching ratings of the job performances by the supervisor, supervisors were asked to check each identification number on the introduction page. Afterwards the supervisor was asked to evaluate the employee based on the highly renowned measurement instrument by WILLIAMS & ANDERSON.
(1991). Every interview closed with questions regarding demographics and job related questions. As the later contained one employee related question\(^72\), only this particular question was asked in every interview to avoid unnecessary redundant repetition of the questions. The questionnaire for the supervisor can be found in Appendix E. After this sub-chapter has elaborated on the design of the quantitative study, the next chapter presents the data collection approach and the pre-testing of the questionnaire.

## 5.3 Data Collection

The following chapter delineates the data collection process. In a first step the initial version of the questionnaire was qualitatively pre-tested and discussed by four IT-Consultants to adjust, summarize or remove particular questionnaire items that did not appropriately reflect the purpose of the underlying study. In a second step the modified questionnaire was quantitatively pre-tested by 20 IT-Infrastructure consultants to reveal first relevant statistical insights. The subsequent chapter 5.3.2 introduces the data collection process itself and explains the sample and research design.

### 5.3.1 Pre-Test

According to research literature, pre-testing a questionnaire is a mandatory requirement for thoroughly preparing a questionnaire based research study (Porst, 1996). Even though many researchers solely mention its relevance for testing the questionnaire, HUNT ET AL. (1982) emphasize that pre-tests are highly important for testing and improving the entire research design. According to CONVERSE & PRESSER (1986) a pre-test can provide indication about following topics:

- comprehensibility and fit of the question items
- respondent well-being
- problems of the interviewer
- interest and attention of the interviewee during the interview
- frequency distribution or statistical key figures of the answers
- duration of the survey

With respect to the questionnaire of the underlying quantitative survey, there are different approaches for pre-tests\(^73\). According to SCHNELL ET AL. (2011) a pre-test requires a sample between 20-50 participants to effectively test a questionnaire in a field setting and to examine critical statistical indicators such as

\(^72\) This question asked for the years and months the supervisor knows the employee

\(^73\) For more details on the various approaches of pre-tests see REYNOLDS ET AL. (1993)
validity, reliability and (Schnell et al., 2011). While this represents a quantitative pre-testing of the questionnaire in a similar context as the main survey, research frequently uses qualitative pre-tests such as interviews or focus groups as well to “examine the relevance, purpose, content, and presentation” of the questions (Anderson et al., 1996, p. 598). Again, the structural model of the SEM consists of three main constructs: two exogenous variables (intercultural competence and IT-Infrastructure) and one endogenous variable (job performance). While the intercultural competence construct was derived by identifying already established and approved dimensions and the job performance construct has been used in plenty of research studies within the organizational science context either, the IT-Infrastructure competence construct represents the only variable which exhibits a new developed measurement instrument. Therefore, a quantitative pre-test of the IT-Infrastructure competence instrument is of crucial meaning to reveal any misconception and examine its statistical validity and reliability before conducting the main field study (Reynolds et al., 1993). Moreover, due to the vast number of indicators a quantitative pre-testing of the entire questionnaire items in the field was comparatively too complex and hardly applicable. Since the underlying first order dimensions of the intercultural competence construct have in part been developed decades ago and have sometimes even revealed inconsistent results in different settings, the corresponding measurement instruments were qualitatively pre-tested by conducting interviews to enable relevant adjustments of the measurement instruments. In the following the results of both, the qualitative and quantitative pre-test, are presented.

Qualitative Pre-test

For the qualitative pre-testing of the intercultural measurement instruments, four IT-Consultants from one of the top-tier IT-Consultancies have been surveyed. All interviews have been conducted via Skype and have been recorded as well to allow for a checkup later on. The interviews were conducted from September 2012 till November 2012 and took on average no longer than ten minutes. All interviewees have been contacted before via phone and Email. The former involved a conversation to convince the consultants to participate on the survey and to determine a date for the Skype interview; the latter was used to send the interviewees the intercultural competence questionnaire items and to allow the interviewees to properly prepare for the pre-testing.

The results of the qualitative pre-test clearly revealed that the different measurement instruments exhibit a lack of clarity concerning particular questionnaire items which needed to be addressed. With respect to the ICSI construct, the underlying thesis used the operationalization by Bhawuk & Brislin (1992) who mainly determined intercultural sensitivity by measuring people’s

---

74 One of the major goals of any scale is to provide a measure of an underlying construct. However, as the content and requirements on constructs are changing, there is sometimes a need to adjust already empirically examined and statistically validated measurement instrument in order to provide a consistent instrument (Clark and Watson, 1995). As all of the dimensions of the intercultural competence construct are reflectively measured, removing a questionnaire items does not necessarily lead to any significant change as opposed to a formative operationalization (Eberl, 2004).
knowledge and behavior related to individualistic or collectivistic settings\textsuperscript{75}. By appropriately recoding the results, the underlying thesis uses the same measurement instrument to determine two different latent constructs, individualistic as well as collectivistic intercultural sensitivity. Despite its overall acceptance (Schnabel et al., 2014), this measurement instrument has recently revealed some inconsistent statistical results (Mertesacker, 2010). Overall, after examining all 16 items, ITC1, for instance, noted that

“In general, i understand the wording and the intended meaning behind your questions. however, i didn’t recognize in the first place that these questions are referring to disclose intercultural sensitivity. I definitely understand that I would answer particular questions differently in different countries.” (ITC1)

However, the participants also mentioned the inappropriateness of certain questionnaire items of the intercultural sensitivity construct. At least two out of the four interviewees expressed mixed feelings with respect to questionnaire item number 2, 4, 9, 12, 13 and 15 of the original measurement instrument. For instance, concerning item number 2 of the original measurement instrument (“I would offer my seat in a bus to my supervisor”), ITC2 and ITC3 both emphasized:

“i don’t see the meaning behind. what are your intention? I would do the same in japan since it is a matter of politeness”. (ITC2)

“remove this item. i understand what’s behind. however, i would not ask a question like this.” (ITC3)

In general, ITC 3 and ITC4 emphasized they feel that certain questions don’t have any added value for the underlying measurement instrument.

“i think these question are attempting to show if i am aware of the fact that in asian cultures exist a different mentality and subsequently, that dealing with people is different. for some questions it is very easy for me. however, you have also presented me some questions such as question 2, 9, 12 and 13 which don’t convince me in this sense.” (ITC3)

„i ask myself if all questions are suitable for the collective or individual culture context. i believe it makes sense that you rephrase or change the relation questions like i have respect for the authority figures with whom i interact, i enjoy developing long-term relationships among people with whom i work, i say "no" directly when i have to or it is im-

\textsuperscript{75} BHAWUK & BRISLIN’S measurement instrument consists of 16 items of which 8 items focus on behavior that is more appropriate in individualistic countries and 8 item that focus on typical collectivistic behavior. All 16 items are required to be answered twice by the respondents as all people need to go through the items once with an individualistic culture in mind (Germany) and a second time with a collectivistic culture in mind (Japan) (Bhawuk and Brislin 1992, p. 435)
important to develop a network of people in my community who can help me out when I have tasks to accomplish.” (ITC4)

The interviews have shown that the IT-Consultants agree only in part with the intercultural sensitivity items. Due to the large number of questionnaire items and the maturity of the scale, it is of crucial meaning for the survey to use relevant items and not overload the questionnaire with questionable items. Therefore, item number 2, 4, 9, 12, 13 and 15 of the intercultural sensitivity scale were removed for this survey leading to a reduced number of 10 items for this scale.

Both constructs, openness and flexibility, are part of the multi-dimensional intercultural sensitivity index (ICSI) developed by Bhawuk & Brislin (1992) as well. Within their research, the authors hypothesized that both constructs would effectively complement the individualism and collectivism constructs to eventually represent important facets of the intercultural sensitivity (Bhawuk and Brislin, 1992, pp. 418–419). Based on a factor analysis and corresponding item loadings, both constructs could be validated for a reduced set of items by the authors. The pre-test revealed that the four items of the openness instrument were unanimously accepted and confirmed by all experts. However, with respect to the content and overall fit, 3 of the original 7 items of the flexibility scale were critically discussed and not unanimously confirmed by the experts.

“it strikes me that these set of questions is aiming at inquiring the willingness of people to let oneself in for an unknown behavior. however, i immediately noticed two questions that don’t fit into this and seem to be questionable. question 5 and 6 are out of place. i don’t understand the context in question 5 and the meaning behind. question 6 is obviously irrelevant since a reference to the former sovjet union is rather irritating than target aimed.” (ITC1)

“obviously the questionnaire is outdated since question 6 doesn’t fit to our current political situation. question 3 and 5 are also not suitable anymore. asking a question with respect to the professional suitability stands out and doesn’t fit to the questions which are dealing with cultural topic. this is not suitable. the other question concerning tolerance towards unannounced visitors rather fits to openness than to flexibility. i would rather remove it.” (ITC3)

“think about modifying question 5 and especially question 6.” (ITC4)

Since at least 2 out of 4 experts expressed dissatisfaction with question items 3, 5 or 6 of the original flexibility measurement instrument, these items were removed from the scale. Again, removing particular items appears to be the best

---

76 BORTZ & DÖRING (2006) emphasize that questionnaire should only contain items that are relevant for the target group.

77 In accordance to the original measurement instrument, this new modified scale consists of 5 individualistic and 5 collectivistic items.
suitable solution if the target group emphasizes so. Hence, openness and flexibility are respectively represented by four relevant questionnaire items.

Apart from the aforementioned scale, the remaining scales (Situational Self-Awareness, Home Culture Awareness, Foreign Language Competence, Nonverbal Communication Competence) were overall confirmed by the participants of the qualitative pre-test. However, ITC2 questioned the content of the measurement instruments to a certain extent:

“i am generally not convinced if you can cover intercultural competence with these questions. can these questions really inquire all relevant issues? or asked differently, are these dimensions really crucial?” (ITC2)

Moreover, according to ITC3 communication competences are mainly responsible for an effective intercultural interaction.

„from a practical point of view i believe that language competences are making a difference for an intercultural encounter. of course, empathy and associated sensitivity are important. however, i rather think these are components of a general social competence which isn’t a crucial part of intercultural competences.“ (ITC3)

Overall, the experts confirmed the comprehensibility of the intercultural competence items. No comments with respect to the wording were provided. ITC4 stated:

„as indicated i don’t always agree with the content of the questions and their association with the intercultural dimensions. however, all questions are comprehensible.“ (ITC4)

Regarding the new IT-Infrastructure measurement instrument, no major issues or improvements were mentioned in general. However, ITC 2 emphasized that he is not acquainted with the technical content in detail due to his professional background.

„as you know, i am not a infrastructure consultant. however, since i am generally acquainted with this topic i can claim that all mentioned aspects of your questionnaire are relevant and make sense to me.“ (ICT2)

All experts unanimously confirmed the comprehensibility of the measurement items and did not consider any revisions with respect to the phrasing of the questions. Nevertheless, ITC2 considered some of the questions might be too long and could be split into two questions.

„i think some questions are just too long. for instance, you could split the question i am qualified to efficiently solve typical problems of underlying ip networks by identifying the problems and initiating the actions to improve or correct the situation (e.g. mtu settings, dhcp issues, ip subnetting etc.) into two questions.” (ICT2)
ITC 1 and ITC4 only asked for the reasoning behind the competence operationalization of the IT-Infrastructure instrument.

„why do you ask this way?“ (ITC1)

„what do you expect of inquiring the qualification on one side and asking if the consultant really applies it in his project on the other side?“ (ITC4)

Based on the insights of the qualitative pre-test, modified measurement instruments for the intercultural sensitivity, flexibility and openness constructs were used in the subsequent quantitative pre-test and main survey. As no major issues with the new IT-Infrastructure measurement instrument were mentioned, this scale remained unchanged at this point. While major adjustments of the content have been addressed in the first place, ITC2 issued also security concerns with some of the underlying questions such as earnings. Since the underlying study aims at evaluating the job performance of IT-Infrastructure consultants by their corresponding supervisors, he strongly emphasized the need for setting up a confidentiality statement. This has been adhered and a confidentiality statement was integrated into the questionnaire. ITC 1 and ITC4 generally questioned the length of the questionnaire and expressed their difficulties to concentrate the entire time. Both participants additionally remarked that fatigue is an issue to deal with. While the author is aware of these potential risks, a structured interview approach was considered the best possible option to avoid these pitfalls by changing the dynamic of the interviews and adding supplementary information for the interviewee.

Quantitative Pre-test

Before conducting the main survey, new measurement instruments are required to be pre-tested with respect to statistical reliability, validity and objectivity\(^78\). The underlying study used a pre-test with 20 IT-Infrastructure Consultants to examine the statistical quality of the intercultural and IT-Infrastructure competence dimensions. In contrast to the main study, the underlying pre-test used a self-assessment by the consultants for their job performance. As indicated above, this was considered to be the most appropriate way. All professionals were contacted via phone call or Email to test the questionnaire. In order to ensure the highest possible response rate, structured interviews were used to get answers

\(^78\) Reliability is known to be “the degree of consistency in producing the same results for the two measures of same thing” (Black, 1999, p. 144). Reliability should be present on an indicator as well as construct level. Validity refers to the degree to what a measurement instrument can really measure the underlying construct. It comprises three types of validity: content validity, criterion-related validity, and construct validity (American Psychological Association, 1966). Content validity delineates the extent to which a measure represents the facets of a construct. Criterion validity measures how well a variable or a set of variables can predict an outcome based on information from other variables. Construct validity is defined as the degree to which an instrument measures what it claims to be measuring (Cronbach and Meehl, 1955, pp. 281–290) Finally, objectivity of an instrument is known as independence of a measurement instrument from the executing individual (Leonhart, 2008).
for every questionnaire item. Despite the rather small sample size, the pre-test revealed convincing results.

An explorative factor analysis based on SPSS 21\(^79\) revealed important statistical insights especially for the new measurement IT-Infrastructure competence instrument. According to FIELD (2000) a factor analysis is a correlation matrix in which high correlating variables or indicators measure one latent variable the so-called factor (Field). In order to assess if the data is suitable for a factor analysis the Kaiser-Meyer-Olkin-(KMO) criterion\(^80\) was calculated. Only HCA fell below the limit of 0,60 with a KMO value of 0,55, all other constructs clearly revealed KMO values above. The Bartlett-Test\(^81\) was performed for all IT-Infrastructure competence constructs and showed high significances; hence, the null hypothesis of the Bartlett test could be declined. All Cronbach’s Alpha\(^82\) values of the used measurement instruments were between \(\alpha = 0,82\) (PSA) und \(\alpha = 0,98\) (MGMT) displaying highly consistent results. The inter-item correlation of all constructs was between 0,43 and 0,90 which showed a very solid correlation of the reflective items. Overall, all scales exhibited a high internal consistency and therefore, high construct reliability.

With particular focus on the new measurement instrument, the results could show excellent results and that the obtained factors generated six dimensions for the IT-Infrastructure measurement items. On the indicator level, all items displayed factor loadings\(^83\) and item-total correlation\(^84\) which were above the recommended values. The Measure of Sampling Adequacy (MSA)\(^85\) and Communalities\(^86\) could confirm these positive insights as well by displaying values between 0,57 and 0,92. It could be proved that in fact the indicators of each IT-Infrastructure construct measure one common attribute (Wolff and Bacher, 2010). Therefore, high indicator reliability could be shown and no item needed to be removed. Compared with these highly positive outcomes, the statistical results of the intercultural competence dimensions were not as convincing. Item 7 and 9 of the HCA instrument showed factor loadings and MSA values below the limit of 0,5. Furthermore, item 6 of the PSA scale showed a factor loading of 0,60 and a relatively low item-total value of 0,45. In order to avoid poor accuracy of

\(^79\)See http://www-01.ibm.com/software/de/analytics/spss/

\(^80\)The KMO can have values between 0 and 1. It shows the degree to which a variable belongs to the other variables of a given population. Its value should be at least 0,6 (Kaiser and Rice, 1974).

\(^81\)The Bartlett examines the null hypothesis whether the variables derive from an uncorrelated population (Baur and Fromm, 2008, p. 325).

\(^82\)Cronbach’s Alpha is the most dominant reliability measure, which examines the internal consistency of a factor (Eckstein, 2006, p. 299). In order to display high consistency, Cronbach’s Alpha should display a value higher of at least 0,7 (Homburg and Giering, 1996).

\(^83\)Factor loadings are defined as the correlation between a measurement variable and a factor (Eckstein, 2006, p. 309). Its value should be at least 0,7 (Nunnally, 1978).

\(^84\)Inter-item correlation is the average correlation of all indicators of a construct Churchill (1979). Its value should be at least 0,3 (Robinson and Wrightsman, 1991).

\(^85\)The MSA shows the extent to which an indicator belongs to the indicators of a construct. Its value should be at least 0,5 (Kaiser and Rice, 1974).

\(^86\)Communalities indicate the percentage to which the variance of an indicator is explained by the extracted factor. Its value should be at least 0,5 (Weiber and Mühlhaus, 2010).
estimate, these three items were removed from the scale for the subsequent main survey.

To examine additional and more complex statistical analysis, SEM needs to be performed (Fornell and Larcker, 1981). Since the explorative factor analysis was required to present first statistical insights and reveal the statistical fit of the competence dimensions, a SEM provides relevant quality measures for the overall model. The two most important quality indicators for reflective measurement models are known as convergence validity and discriminant validity (Chin, 2010). In this context relevant quality measures like the correlation of the latent variables, the average variance extracted (AVE), the composite reliability and finally the Fornell-Larcker criterion are of high relevance. An in-depth analysis of the SEM with SmartPLS 2.0 M3 revealed high quality values for the composite reliability and showed only for Job Performance construct an AVE below the limit. However, with respect to both, the latent variable correlation and the Fornell-Larcker criterion, not all constructs could meet the requirements. Especially FLC showed high latent variable correlations with Flexibility, HCA, ICSI Coll. and NVC by exhibiting high values of up to 0,90. FLC did also not meet the requirements of the Fornell-Lacker criterion with the HCA construct by displaying a squared correlation of 0,82 compared with an AVE of 0,73. Moreover, some items showed high cross-loadings of up to 0,88 to other non-related constructs as well. It can be assumed that there are two main reasons for these high correlations and rather sobering results of the causal analysis: small sample size and large number of questionnaire items. Therefore, no items were removed from the questionnaire after these insights.

5.3.2 Data Collection Approach

After pre-testing the questionnaire and examining first results of the SEM, the final questionnaire was utilized for the main survey by means of face-to-face structured interviews with IT-Infrastructure consultants from 08.17.2012 until

---

87 Convergence reliability is composed of indicator and construct reliability (see footnote 78) as well as the average variance extracted (AVE) (Fornell and Larcker, 1981). Convergence validity is present if two measurement instruments provide the same results for a construct.

88 Discriminant validity shows in general whether a latent construct is an autonomous construct or belongs to other constructs (Fornell and Larcker, 1981).

89 The correlation between the latent variable should be lower than 0,7 (Backhaus, 2011).

90 AVE is defined as the extent to which a latent variable can describe the illustrated variance in relation to the measurement error. Its value should be at least 0,5 (Fornell and Larcker, 1981)

91 Composite Reliability is a reliability measure for the entire number of indicators and shows how well a latent variable is represented by its indicators. It value should be at least 0,6 (Bagozzi and Yi, 1988)

92 The Fornell-Lacker criterion is another criterion, which examines the discriminant validity by comparing the AVE value of a construct with the squared correlations of any other construct. The AVE value should be greater than the squared correlations (Fornell and Larcker, 1981).

93 See http://www.smartpls.de

94 Cross loadings are defined as loadings of an indicator to other not theoretically assigned constructs (Chin, 2010).
05.31.2013 in 13 different cities\textsuperscript{95} around Germany. In a first major step starting from 03.16.2012 until 07.10.2012, the author asked private contacts from the IT-Infrastructure consulting domain for dedicating time for the structured interviews and additionally asked each professional to provide direct contact details of fellow IT-Infrastructure consultants or supervisors. Since two of the private contacts already hold a supervising position, both, supervisors and employees, could be accessed from the beginning. Based on the private contacts 3 supervisors with a combined responsibility over 43 employees from leading IT-Consulting companies in Germany could be scheduled for interview appointments. Each supervisor and employee was directly contacted via phone call or Email. After explaining them the main objective and design of the survey, 7 out of the 43 IT-Infrastructure consultants asked for the questionnaire in advance. However, in order to avoid any potential bias the author refrained from sending the questionnaire beforehand. Instead, the author explained the reasons behind not sending the questionnaire and comprehensively responded to existing concerns. By that, all professionals agreed with the research setting. To increase the number of participants in the study, all personal contacts provided further contact information about other IT-Infrastructure consultants and supervisors or directly contacted them via Email or phone. After scheduling and organizing interview dates, additional 5 team leader with an aggregated supervision for 64 IT-Infrastructure consultants could be accessed. However, in order to reach a solid sample size of clearly above 100 participants for PLS analysis\textsuperscript{96}, a comprehensive online search was conducted in a second major step. Main aim of this search was to get contact information about IT-Infrastructure consultants or responsible HR professionals from consulting companies. From 01.25.2013 until 04.21.2013 117 professionals from various IT-Consulting companies and specific IT-Infrastructure consulting companies have been contacted. While private contacts and references enabled a comparatively convenient yet tedious access to the target group, the random contacting turned out to be very difficult with a very low response rate. Since the underlying thesis uses a supervisor rating of the endogenous variable job performance, a random search not only required to convince IT-Infrastructure consultants to dedicate time for an interview but also their corresponding supervisors to participate on the survey. In fact, when asked the vast majority of contacted people expressed time concerns and supervisor ratings as the primary reasons for refusing participation. Nevertheless, 13 additionally IT-Infrastructure consultants as well as their managing supervisor could be motivated to take part on the main study. At the end of the survey, 120 IT-Infrastructure and 9 supervisors have taken part on the survey.

\textsuperscript{95} Cities in alphabetical order: Berlin, Bonn, Bremen, Düsseldorf, Frankfurt, Hamburg, Hannover, Cologne, Munich, Nürnberg, Rüsselsheim, Stuttgart, Weinheim

\textsuperscript{96} See HOYLE (1995) who suggests a sample size above 100 people for PLS analysis
5.4 Data Analysis

After the previous chapter elaborated on the research design and how the data was collected, the following chapter depicts the data analysis. In the first step a description of the sample is provided (see Ch.5.4.1). Afterwards, in contrast to the pre-test, the data of the main survey was causally analyzed by means of WarpPLS 4.0 in order to test the hypothesis of the second order structural model. In contrast to SmartPLS, WarpPLS offers a broader range of pre-calculated statistical indicators and a more convenient way to assess higher-order constructs. The quality of the measurement model is evaluated and checked for the two main reliability measures indicator and construct reliability as well as on the main validity measures convergent and discriminant validity (see Ch.5.4.2). Based on these quality indicators, the estimation of the structural model and its quality assessment is performed in a final step (see Ch.5.4.3). At the end, the main results are briefly summarized (see Ch.5.4.4).

5.4.1 Survey Population and Sample Selection

The main survey targeted German based IT-Infrastructure consultants and their supervisors. Following figure 5-7 shows the characteristics of the sample.

![Characteristics of the sample](image-url)
Looking at the educational background, the consulting industry generally expects an academic degree from its consultants (Huber, 2012). While more than 90% (111) of the employees have at least a bachelor degree, 7.5% (9) of the IT-Infrastructure consultant have only a vocational training degree. This was not surprising due to the highly technical character of the IT-Infrastructure domain, which heavily relies on practical implementation skills. On contrary, 6 of the 9 supervisors had a master degree and 3 had a doctoral degree which supports the fact that a considerably large percentage of German top managers hold a doctoral degree (Blind, 2009).

Unfortunately, no reliable and comprehensive demographic data was available for the global IT-Infrastructure consulting market. Consequently, there is no sound estimation of the IT-Infrastructure consultant population, which allows for a critical examination of the sample. External validity and generalization claims can only be limitedly provided. The following chapter examines the quality of the measurement model.

5.4.2 Assessment of the Measurement Models

For the empirical analysis of the survey data, the measurement models of the exogenous and endogenous variables are examined in the following. Since this study uses a second order operationalization of its two exogenous constructs a two-step approach is used for the validation of the measurement models. Furthermore, both constructs represent two different types of second order constructs with different quality criteria. As presented above (see Ch.5.1.3), there are four different types of second order Wetzel et al. (2009), Politis et al. (2012).

The following assessment of the intercultural measurement model takes place on the first order construct level before the second order level is examined. The underlying assessment of the reflective measurement is based on established criteria and corresponding limit values from literature (see table 5-9).

Table 5-9: Quality criteria for reflective measurement models (Krafft et al., 2005, p. 75)

<table>
<thead>
<tr>
<th>Quality Criterion</th>
<th>Description</th>
<th>Limit Value/Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Validity</td>
<td>Content validity (also called expert validity) implies that the indicators of a construct represent the actual meaning</td>
<td>Expert Interviews, established scales</td>
</tr>
<tr>
<td>One Dimensionality</td>
<td>Extent to which a variable belongs to other variables</td>
<td>KMO ≥ 0.6, Bartlett test</td>
</tr>
</tbody>
</table>

97 See Jarvis et al. (2003)
An exploratory analysis of the intercultural competence dimensions could show promising results (see table 5-10).

Table 5-10: EFA of the intercultural competence dimensions

<table>
<thead>
<tr>
<th>Intercultural Competence Dimension</th>
<th>Cronbach’s α</th>
<th>Inter-Item Correlation</th>
<th>Bartlett Test</th>
<th>KMO-Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercultural Sensitivity Index Individualism (ICSI Ind.)</td>
<td>0.95</td>
<td>0.66</td>
<td>0.000</td>
<td>0.94</td>
</tr>
<tr>
<td>Intercultural Sensitivity Index Collectivism (ICSI Col.)</td>
<td>0.95</td>
<td>0.65</td>
<td>0.000</td>
<td>0.95</td>
</tr>
<tr>
<td>Openness (Open)</td>
<td>0.86</td>
<td>0.61</td>
<td>0.000</td>
<td>0.81</td>
</tr>
<tr>
<td>Flexibility (Flex)</td>
<td>0.86</td>
<td>0.61</td>
<td>0.000</td>
<td>0.83</td>
</tr>
<tr>
<td>Personal Self-Awareness (PSA)</td>
<td>0.90</td>
<td>0.60</td>
<td>0.000</td>
<td>0.89</td>
</tr>
<tr>
<td>Home Cultural Awareness (HCA)</td>
<td>0.94</td>
<td>0.58</td>
<td>0.000</td>
<td>0.86</td>
</tr>
<tr>
<td>Foreign Language Competence (FLC)</td>
<td>0.93</td>
<td>0.73</td>
<td>0.000</td>
<td>0.88</td>
</tr>
<tr>
<td>Nonverbal Communication Competence (NC)</td>
<td>0.88</td>
<td>0.60</td>
<td>0.000</td>
<td>0.83</td>
</tr>
</tbody>
</table>

In a first major step, an explorative factor analysis (EFA) was performed by using SPSS 21 in order to test whether the assignment of the indicators to the extracted factors of the EFA complies with the conceptual assignment based on

---

98 Composite Reliability is known to be the stronger value compared with Cronbach’s Alpha (Henseler, 2009, pp. 298-290)
literature insights (Huber, 2007, p.93). By using a principal axes factor analysis (PFA) to optimally detect latent constructs or factors, eigenvalues greater than 1 (Kaiser criterion) as well as an oblique-angled Promax rotation the EFA lead to a one factor solution for each of the eight latent variables. The KMO criterion for all the intercultural competence dimensions shows values between 0,81 and 0,95, which leads to the insight that the associated indicators of each construct belong together. The Bartlett test indicates highly significant values below the 0,001 level, the Measure of Sampling Adequacy (MSA) values and the communalities for each indicator showed consistently values above the 0,5 limit and confirms the appropriateness of the measurement instruments. Moreover, the EFA could also show that the item-total correlation for each construct was above the threshold value of 0,3 by showing values between 0,60 (PSA) and 0,81 (FLC). To further confirm the internal consistency of the constructs, Cronbach’s alpha reveals excellent result above the 0,90 level for most of the intercultural competence dimensions.

Afterwards, a confirmatory factor analysis was performed by using WarpPLS. In order to assess the quality of the reflective measurement models of the first order dimensions of the intercultural competence construct, the composite reliability (CR) and factor loadings were used to show the construct reliability of the first order constructs (see Appendix E). All intercultural competence dimensions show very satisfying results with CR values above 0,6. Additionally, WarpPLS analysis calculates the factor-loadings of each indicator, which allows for assessing the degree to which each indicator represents a construct. It can be shown that every indicator meets the requirements of displaying values greater than 0,7. However, the first table of Appendix E shows that there is a considerable large amount of high cross-loadings between some of the indicators, which excels the value of 0,7. In particular, indicators of the constructs Flexibility and Nonverbal Communication Competence showed cross-loadings to several other indicators of numerous constructs. While this can be a sign for lacking discriminant validity between the associated constructs indicating that the underlying measurement concepts are related, the following quality criteria for discriminant and convergence validity could proof the opposite.

As following table 5-11 shows, all intercultural competence dimensions showed AVE values between 0,72 (PSA) and 0,95 (FLC), thus, meeting the requirements for convergence validity on a highly satisfying level. Moreover, the Fornell-Larcker criterion for discriminant validity could be achieved for each construct showing that the AVE of each dimension is higher than the squared correlations between the other dimensions.

99 The PFA is a factor extraction method of the EFA and assumes that the observable indicators not only display variance but also measurement errors (Moosbrugger and Kelava, 2012).

100 Eigenvalues are calculated by the sum of the squared factor loadings of a factor over all variables. According to the Kaiser criterion only factors with eigenvalues higher equal or higher than 1 should be retained (Fabrigar et al., 1999).

101 The Promax rotation is a factor rotation approach, which allows for correlation between factors. Its main aim is to get side loadings near zero while keeping the highest possible factor loadings (Weiber and Mühlhaus, 2010).
For the underlying examination of the type 1 operationalization of the intercultural competence construct, the two stage approach was utilized for the second order construct analysis. As mentioned before, after analyzing the reflective measurement models of the first order intercultural competence dimensions, the latent variable scores of the first order constructs are estimated in a separate model and subsequently utilized as reflective measurement indicators of the second order intercultural competence constructs. As the intercultural competence construct assumes that its dimensions represent (reflective) and not form (formative) the underlying phenomenon, the aforementioned quality criteria for reflective measurements need to be applied for the second order level. Therefore, following table 5-12 shows the factor loadings and communalities of the respective 1st order constructs. This table show that all first order constructs demonstrated loadings above the 0,70 and communalities or indicator reliabilities above the 0,50 limit which confirms the overall high fit of the first order constructs.

Table 5-12: Loadings and Communalities of IC dimensions

<table>
<thead>
<tr>
<th></th>
<th>ICSI Ind.</th>
<th>ICSI Col.</th>
<th>Open</th>
<th>Flex</th>
<th>PSA</th>
<th>HCA</th>
<th>FLC</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loadings</td>
<td>0,84</td>
<td>0,87</td>
<td>0,85</td>
<td>0,83</td>
<td>0,79</td>
<td>0,88</td>
<td>0,93</td>
<td>0,86</td>
</tr>
<tr>
<td>Communalities</td>
<td>0,70</td>
<td>0,76</td>
<td>0,72</td>
<td>0,68</td>
<td>0,62</td>
<td>0,77</td>
<td>0,87</td>
<td>0,74</td>
</tr>
</tbody>
</table>

All loadings are significant on a p < 0,001 level

In order to analyze the discriminant and convergence validity of the first order constructs the corresponding AVE and CR of the second order intercultural competence construct needed to be manually calculated. Following WETZELS ET AL. (2009) the AVE (0,74) and CR (0,89) of the second order intercultural competence construct is estimated as follows (Wetzels et al., 2009):
While $\lambda_i$ stands for the loadings of each first order construct, $n_i$ represents the number of first order constructs and equals 8 for the intercultural competence construct. Both quality criteria showed very satisfying results with AVE above 0,50 and CR above 0,60. Furthermore, table 5-13 shows that the Fornell-Larcker criterion can be approved as well:

Table 5-13: Convergence and discriminant validity second order construct

<table>
<thead>
<tr>
<th></th>
<th>Job</th>
<th>INFRA</th>
<th>INTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>0,80*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFRA</td>
<td>0,35</td>
<td>0,44</td>
<td>0,72</td>
</tr>
<tr>
<td>INTER</td>
<td>0,48</td>
<td>0,02</td>
<td>0,74</td>
</tr>
</tbody>
</table>

* AVE > Corr², grey-colored fields represent AVE, other fields squared correlations

As indicated above, all quality criteria are met for the type 1 operationalization of the intercultural competence construct. Each criterion shows excellent values above or below the critical limit values.

**IT-Infrastructure Construct**

The following quality assessment of the second order IT-Infrastructure competence construct is based on a type 2 operationalization. In contrast to the type 1 operationalization of the intercultural competence construct, the type 2 model of the IT-Infrastructure construct uses a formative measurement for its second order construct. Therefore, the quality criteria for the formative measurement are different. In accordance with the intercultural competence construct, however, an EFA is performed with the same setting in the first place (see table 5-14).

Table 5-14: EFA of the ITI dimensions

<table>
<thead>
<tr>
<th>IT-Infrastructure Dimension</th>
<th>Cronbach's α &gt; 0,70</th>
<th>Inter-Item Correlation &gt; 0,30</th>
<th>Bartlett-Test &lt; 0,001</th>
<th>KMO-Criterion &gt; 0,60</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-Servicemanagement (ITSM)</td>
<td>0,97</td>
<td>0,83</td>
<td>0,000</td>
<td>0,89</td>
</tr>
<tr>
<td>Network (Net)</td>
<td>0,96</td>
<td>0,81</td>
<td>0,000</td>
<td>0,88</td>
</tr>
<tr>
<td>Hardware (HW)</td>
<td>0,97</td>
<td>0,84</td>
<td>0,000</td>
<td>0,88</td>
</tr>
<tr>
<td>Software (SW)</td>
<td>0,97</td>
<td>0,83</td>
<td>0,000</td>
<td>0,89</td>
</tr>
<tr>
<td>Database (DB)</td>
<td>0,95</td>
<td>0,79</td>
<td>0,000</td>
<td>0,87</td>
</tr>
<tr>
<td>Management (MGMT)</td>
<td>0,97</td>
<td>0,88</td>
<td>0,000</td>
<td>0,90</td>
</tr>
</tbody>
</table>

The KMO criterion for all the IT-Infrastructure dimensions shows values between 0,81 and 0,95, which leads to the insight that the associated indicators of each construct belong together. The Bartlett test indicates highly significant
values below the 0.001 level, the Measure of Sampling Adequacy (MSA) values and the communalities for each indicator shows consistently values above the 0.5 limit and confirms the appropriateness of the measurement instruments. Moreover, the EFA can also demonstrate that the item-total correlation for each construct is above the threshold value of 0.3 by showing values between 0.79 (DB) and 0.88 (MGMT). To further confirm the internal consistency of the constructs, Cronbach’s alpha reveals excellent result above the 0.90 level for all of the IT-Infrastructure competence dimensions.

After a first explorative examination on the construct level, a subsequent confirmatory analysis is performed. As delineated before, the assessment of the first level constructs is based on the aforementioned quality criteria like factor loadings, CR, AVE and Fornell-Larcker criterion in order to assess the overall reliability and validity of the constructs. The second table of appendix E provides the quality assessment of the reflective measurement of the first order level. It illustrates that the CR for each of the six developed IT-Infrastructure competence constructs is highly above the 0.60 limit and that each indicator displays factor loadings above 0.70. While this is a great indicator for the overall reliability of the constructs, it can also be a sign for very high correlations between the constructs, which could be a sign for low construct validity. However, a first look at the cross-loadings between the indicators of each construct also reveals that the loadings are below 0.70 and that the necessary requirements for discriminant validity are met.

To assess construct validity for the second order construct, following table 5.15 shows the quality criteria for discriminant and convergence validity of the first order constructs:

<table>
<thead>
<tr>
<th>ITSM</th>
<th>Net</th>
<th>HW</th>
<th>SW</th>
<th>DB</th>
<th>MGMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITSM</td>
<td>0.85*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net</td>
<td>0.14</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HW</td>
<td>0.19</td>
<td>0.08</td>
<td>0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW</td>
<td>0.03</td>
<td>0.02</td>
<td>0.12</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>0.12</td>
<td>0.10</td>
<td>0.07</td>
<td>0.15</td>
<td>0.82</td>
</tr>
<tr>
<td>MGMT</td>
<td>0.09</td>
<td>0.51</td>
<td>0.10</td>
<td>0.06</td>
<td>0.06</td>
</tr>
</tbody>
</table>

* AVE > Corr², grey-colored fields represent AVE, other fields squared correlations

All AVE values are above the 0.50 limit showing an excellent convergence validity of the constructs. Moreover, discriminant validity can be clearly confirmed for each of the IT-Infrastructure competence dimensions by confirming the Fornell-Larcker criterion.

After assessing the quality of the reflective measurement of the six various first order competence dimensions, the latent variable scores for each construct are estimated in a separate model in order to be used as new formative indicators for the second order ITI construct. The assessment of the formative measurement is
mainly based on require a different set of quality criteria as shown in table 5-18. The assessment of the formative measurement is mainly based on multicollinearity\(^\text{102}\), which requires the estimation of the Variance Inflation Factor (VIF)\(^\text{103}\). The latter determines that no indicator of a formative construct can be predicted by the other indicators. Following table 5-16 shows the main quality criteria for formative measurements as recommended by literature (Lohmöller, 1989; Homburg, 1996; Diamantopoulos, 1999; Diamantopoulos, 2008):

Table 5-16: Quality criteria for formative measurement models

<table>
<thead>
<tr>
<th>Quality Criterion</th>
<th>Description</th>
<th>Recommended Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights</td>
<td>Examination of the weights and their contribution to building the construct</td>
<td>(p &lt; 0.10, \text{error probability of 10%}) (p &lt; 0.05, \text{error probability of 5%}) (p &lt; 0.01, \text{error probability of 1%})</td>
</tr>
<tr>
<td>Multicollinearity</td>
<td>Extent to which the estimated weights are influenced by linear dependencies between the indicators.</td>
<td>Variance Inflation Factor (VIF) &lt; 5</td>
</tr>
</tbody>
</table>

Table 5-17 summarizes the quality criteria for assessing the formative measurement of the six IT-Infrastructure constructs:

Table 5-17: Weights, VIF and p-values of the formative measurement

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>VIF</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITSM</td>
<td>0.25</td>
<td>1.41</td>
<td>(p&lt; 0.01)</td>
</tr>
<tr>
<td>Net</td>
<td>0.28</td>
<td>2.29</td>
<td>(p&lt; 0.01)</td>
</tr>
<tr>
<td>HW</td>
<td>0.25</td>
<td>1.41</td>
<td>(p&lt; 0.01)</td>
</tr>
<tr>
<td>SW</td>
<td>0.20</td>
<td>1.33</td>
<td>(p&lt; 0.01)</td>
</tr>
<tr>
<td>DB</td>
<td>0.23</td>
<td>1.35</td>
<td>(p&lt; 0.01)</td>
</tr>
<tr>
<td>MGMT</td>
<td>0.28</td>
<td>2.18</td>
<td>(p&lt; 0.01)</td>
</tr>
</tbody>
</table>

Table 5-17 clearly demonstrates that both quality criteria display excellent values for the formative measurement. While all constructs cover almost the same weights indicating that neither one of the constructs has a greater influence on the IT-Infrastructure construct, all weights are highly statistically significant on a 0.001 level. Despite the existing correlation between the constructs all first order constructs have a VIF values significantly below the critical value of 5.

\(^{102}\) Multicollinearity means that a variable can be explained by one or several other variables, since there are linear dependencies (Bortz and Schuster, 2010)

\(^{103}\) The VIF is a measure of the degree of multicollinearity (O’Brien, 2007, p. 673)
5.4.3 Assessment of the Structural Model

Since all latent constructs could show reliable and valid results for the quality criteria, the requirements are met for analyzing the dependencies within the structural model of the underlying SEM. Since the underlying thesis utilizes a PLS approach for its causal model, no global fit indices can be used to assess the overall structural model. Instead the coefficient of determination for the endogenous variable ($R^2$)\(^{104}\), path coefficients ($\beta$-values) and the associated statistical significance (p-value)\(^{105}\), effect sizes ($f^2$)\(^{106}\), standard errors (SE) as well as the predictive relevance, known as the Stone-Geisser criterion ($Q^2$)\(^{107}\), are used for the underlying assessment (Chin, 2010) (see table 5-18).

---

**Figure 5-8: Results of the main effect model (n=120)**

---

\(^{104}\) $R^2$ of an endogenous variable arises from the regression estimates and delineates the share of explained variance of the latent variable (Götz, 2004). According to Schloederer et al. (2009) there are following values for assessing its quality:

- $0.19 \leq R^2 \leq 0.33$ (weak)
- $0.33 \leq R^2 \leq 0.67$ (medium)
- $R^2 \geq 0.67$ (substantial)

\(^{105}\) $\beta$-values or path-coefficients of a structural model can be considered as counterparts of the regression coefficients of a regression analysis and show the extent to which an exogenous variable influences an endogenous variable. The significance of a path relation enables to assess the reliability of the path relationship. According to Lohmüller (1989) path-coefficients should be greater than $0.10$.

\(^{106}\) $f^2$ or effect sizes shows the extent to which $R^2$ of an endogenous variable changes if the underlying exogenous variable is not considered. $f^2$ have following quality range (Ringle, 2004):

- $f^2 < 0.15$ (low impact)
- $0.15 \leq f^2 \leq 0.35$ (medium impact)
- $f^2 > 0.35$ (high impact)

\(^{107}\) $Q^2$ is an additional criterion besides $R^2$ to evaluate the predictive validity of a model. It shows how well the empirical data can be reconstructed with the model and the PLS parameters (Akter, 2011). In accordance with the effect sizes, $Q^2$ feature the same values for assessing its quality:

- $Q^2 < 0.15$ (low predictive relevance)
- $0.15 \leq Q^2 \leq 0.35$ (medium predictive relevance)
- $Q^2 > 0.35$ (high predictive relevance)
Main Effects

Figure 5-8 illustrates the path coefficients and corresponding statistical significance levels for the main model based on a data set of 120 IT-Infrastructure consultants and 7 supervisors. In accordance with the measurement models (see Ch. 5.4.2), the calculation of the statistical significance uses the bootstrapping method and standardized values (Nevitt and Hancock, 2001). Table 5-18 shows all relevant values of the structural model:

<table>
<thead>
<tr>
<th>Construct</th>
<th>β-value</th>
<th>p-value</th>
<th>SE</th>
<th>f²</th>
<th>R²</th>
<th>Q²</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITI Competence (ITIC) → Job</td>
<td>0.512</td>
<td>&lt; 0.01</td>
<td>0.043</td>
<td>0.303</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0.497</td>
<td>&lt; 0.053</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Intercultural Competence (IC) → Job</td>
<td>0.01</td>
<td>0.323</td>
<td>-</td>
<td>-</td>
<td>0.733</td>
<td>0.730</td>
</tr>
</tbody>
</table>

All values indicate a high quality of the structural model. The coefficient of determination for the endogenous variable job performance (Job) \( R^2 = 0.733 \) reveals a substantial value. Thus, the observed results of the data analysis can validate that the underlying model is excellently suited for explaining approximately 73.3% of the variance of IT-Infrastructure consultants’ job performance (Draper and Smith, 1998). The latter is additionally confirmed by the predictive relevance of the endogenous job performance construct which exhibits a high predictive value of \( Q^2 = 0.730 \). In order to calculate the \( Q^2 \) value, the Blindfolding procedure is used, in which a given block of indicators was omitted in order to be predicted by the remaining estimated data (Chin, 1999). The effect sizes \( f^2 = 0.303 \) for the ITIC construct and \( f^2 = 0.323 \) for the IC construct also indicate that both constructs have a medium impact on the job performance construct and explain the endogenous variable to almost the same extent. Furthermore, a closer look at the results of the structural model highlights that both exogenous constructs feature VIF values below 5 indicating a low multicollinearity between them.

With respect to the relation between the exogenous and endogenous constructs, both path-coefficients and their corresponding statistical significances can further confirm the strength of the underlying structural model. While the path-coefficient between ITIC → Job is \( \beta = 0.512 \), the value between IC → Job is \( \beta = 0.497 \). By showing p-values even below the 0.01 level, both path-coefficients are highly significant and reliable.

Mediation

In accordance with the postulated hypothesis 4 it can be assumed that the IC construct not only directly influences the job performance of IT-Infrastructure consultants but also acts as a mediator between the ITIC construct and the Job Performance construct. According to BARON & KENNY’S (1986) and YAMAZAKI & KAYES (2004) experiences from foreign assignments facilitate overall success which lead to the high path coefficient between IC and Job Performance.

By using two different models, one can effectively test the significance of a mediating effect (Baron, 1986). The first model focuses on the direct effect between ITIC construct on Job Performance. The second model integrates IC as a media-
tor in which the ITIC construct points at the IC construct and the latter points at Job Performance.

**Model 1 Effect without the mediator**

\[
\begin{align*}
\text{ITI Competence (ITIC)} & \quad \beta = 0.591^{***} \\
& \quad \Rightarrow \text{Job Performance (JP)}
\end{align*}
\]

**Model 2 Effect without mediator**

\[
\begin{align*}
\text{Intercultural Competence (IC)} & \quad \beta = 0.497^{***} \\
& \quad \Rightarrow \text{ITI Competence (ITIC)} \\
& \quad \beta = 0.14^{**} \\
& \quad \Rightarrow \text{Job Performance (JP)} \\
& \quad \beta = 0.512^{***}
\end{align*}
\]

*** p<0.01 (two-tailed t-test)  
** p<0.05 (two-tailed t-test)  
* p<0.01 (two-tailed t-test)

Figure 5-9: Mediation effect significance analysis

Figure 5-9 clearly shows the existing mediation effect. By including the mediation variable IC the effect of the ITIC construct decreases from 0.591 to 0.512. Since this relation still remains highly significant at a 0.01 significance level, one can confirm a partial mediation effect by the Intercultural Competence construct. While the indirect effect has a value of \( \beta = 0.14 \times 0.497 = 0.07 \), the direct effect has accordingly a total value of \( \hat{\beta} = 0.07 + 0.512 = 0.58 \). This can be understood as an increase of ITIC by one unit will lead to an increase of JP by 0.58 units. This means that the total effect of ITIC on JP is attributed to IC by 12% and by 88% to the direct effect of ITIC. Moreover, despite the fact that the effect of ITIC on Job Performance only decreases to a comparatively small extent (0.079), a significant mediation effect at a 0.01 level can be confirmed as all three mediation criteria are met.

**Moderation**

The estimation of the interaction moderation effect constitutes a substantial and highly revealing factor for this thesis. As delineated above, an increase of IC should change the relation between ITIC and Job Performance. Even though the multigroup analysis is considered a moderation effect as well, it is separately discussed since it requires a different data analysis approach.
Figure 5-10: Moderation effect of the IC construct

The estimation of the interaction effect a combination of the two stage and repeated indicator approach is used (see Ch.5.1.3). This is also referred to as the product-indicator approach by CHIN ET AL. (2003) (Chin et al., 2003). Figure 5-10 shows the interaction effect by the IC construct. It also exhibits the strength and statistical significance of the path relationship of the moderation effect. The estimation of the interaction effect clearly reveals that there is a significant influence at the 0,01 significance level of the IC construct on the relation between ITIC and Job Performance. In accordance to LOHMÜLLER (1989) the underlying interaction effect even shows a solid value above the 0,10 limit. Nevertheless, while both values can highly confirm the interaction effect, a closer look at the corresponding effect size cannot equally match these insights. By exhibiting a value of 0,11 only a rather low impact is performed by the interaction effect. However, Chin et al (2003) explicitly emphasized, “it is important to understand that a small $f^2$ does not necessarily imply an unimportant effect. Even a small interaction effect can be meaningful under extreme moderation conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account” (Chin et al., 2003, p. 211).

Table 5-19: Comparison between main effect model and interaction model

<table>
<thead>
<tr>
<th></th>
<th>Main Effect Model</th>
<th>Interaction Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITI Competence (ITIC) → Job</td>
<td>0,58***</td>
<td>0,51***</td>
</tr>
<tr>
<td>Intercultural Competence (IC) → Job</td>
<td>0,50***</td>
<td>0,51***</td>
</tr>
<tr>
<td>ITIC*IC → Job</td>
<td>-</td>
<td>0,25***</td>
</tr>
<tr>
<td>R² Job Performance</td>
<td>0,67</td>
<td>0,73</td>
</tr>
</tbody>
</table>

Table 5-19 shows a comparison of the main effects with and without the interaction effect and reveals that the interaction effect changes the main effect between ITIC and Job Performance as well as the coefficient of determination to a
non-negligible extent. Therefore, the estimation reveals that the interaction effect of the IC construct should be considered as a relevant influence factor of the underlying job performance model.

**Multigroup Analysis**

The results of the aforementioned analysis can be used to confirm or reject the predetermined hypothesis of the underlying thesis. However, the data of the causal analysis can be also used to gain explorative insights by means of PLS. The following paragraph therefore analyzes differences in the effects of the structural model by using multigroup analysis. Overall, multigroup analysis is categorized as a type of moderation in which a data set is divided along values of a categorical variable, the so-called moderator variable. A particular model is afterwards analyzed with each data set. Therefore, a multigroup analysis aims at estimating whether hypothesized relations within a model change due to the moderating variable. In the following the hypothesized differences of effects between the groups „Young“ and “Old”, „Master“ and “Bachelor” degree as well as „More Experience“ and “Less Experience” are estimated by means of an explorative approach. For group comparison within a PLS path model following requirements should be met (Eberl, 2006):

1. Acceptable values for the quality assessment of all measurement models that are part of the group comparison
2. Normal distribution of all considered variables
3. The variation of the measurement model should be as low as possible

Point (1) involves that each group needs to be assessed with respect to the quality criteria for the measurement models. The data in the CD-ROM of the appendix shows the loadings, AVE and CR for each group. The results reveal that only at a few occasions the limit values for the factor loadings are not met by the groups. However, as the quality criteria for AVE and CR were met, no indicators were removed. As a multigroup analysis usually utilizes a t-test for analyzing the statistical significance of the compared paths, a normal distribution is required. Point (2), however, contradicts the PLS character of not assuming any distribution. Therefore, the underlying study utilizes a slightly modified significance test, which doesn’t require a normal distribution. It calculates the t-values by using the path-coefficients $\beta_m$, the sample sizes $m$ and $n$ as well as standard errors $SE_{m,n}$ of the path-coefficients of both groups (Kock, 2014):

$$
\begin{align*}
    t &= \frac{\beta_m - \beta_n}{\sqrt{(m+n-2) \cdot SE_m^2 + (n-1)^2 \cdot SE_n^2} + \left( \frac{1}{m} + \frac{1}{n} \right)^2} \\
       &\approx \frac{\beta_m - \beta_n}{\sqrt{\frac{(m+n-2)}{m} \cdot SE_m^2 + \frac{(n-1)^2}{n} \cdot SE_n^2 + \left( \frac{1}{m} + \frac{1}{n} \right)^2}} 
\end{align*}
$$

While this test is only applied if both path-coefficients are significant, there is no need for testing the statistical significance anymore if one $\beta$-value is not significant (Lowry and Gaskin, 2014). Point (3) emphasizes that the loadings should not significantly differ across the groups. By that, it is assured that identical indicator values lead to the same construct values. A closer look at the measurement models of all groups revealed that no significant differences existed.
After the requirements for the group comparisons are met, it should be examined whether different age of the IT-Infrastructure consultants leads to significant differences in the given model. Based on the provided age by the IT-Infrastructure consultants, two separate groups are developed. While the first group “Young” consists of IT-Infrastructure consultants up to an age of 34 years, the second group “Old” consists of consultants above the age of 34. BUONO & POUFELT (2005) have shown the significance of this particular age limit for the Consulting industry (Buono and Poulfelt, 2005). Table 5-18 shows that there is a highly significant difference (0.41) at a 0.01 level between the influence of ITIC on Job Performance with younger IT-Infrastructure consultants compared with older age IT-Infrastructure consultants. This goes along with the general tendency that younger professionals are usually more required to utilize and proof their technical competences by rather implementing instead of delegating tasks (Deal, 2007).

Table 5-18: Comparison between „Young“ and “Old”

<table>
<thead>
<tr>
<th>Influence</th>
<th>Group M Path-Coefficient (β)</th>
<th>Group N Path-Coefficient (β)</th>
<th>Δ β</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITIC → Job</td>
<td>β = 0.92***</td>
<td>β = 0.51***</td>
<td>0.41</td>
<td>t = 3.75</td>
</tr>
<tr>
<td>IC → Job</td>
<td>β = 0.37***</td>
<td>β = -0.04 n.s.</td>
<td>0.44</td>
<td>t = 3.34</td>
</tr>
<tr>
<td>Interaction</td>
<td>β = 0.18***</td>
<td>β = 0.03 n.s.</td>
<td>0.15</td>
<td>t = 2.01</td>
</tr>
<tr>
<td>Moderated Interaction</td>
<td>β = 0.89***</td>
<td>β = 0.73***</td>
<td>0.18</td>
<td>t = 1.95</td>
</tr>
</tbody>
</table>

older: 34+, younger: ≤ 34; * = p  < 0.10; ** = p  < 0.05; *** = p  < 0.01; n.s. = not significant

It also shows that young IT-Infrastructure consultant’s IC has by far a stronger relation to Job Performance (0.37) compared with the group of older consultants. Displaying a difference in path-coefficient of 0.44 and a high statistical significance, it emphasizes again the importance of IC for nowadays generation of young professionals (Byram et al., 2001). Moreover, while these young professionals exhibited a significant interaction effect of both main exogenous variables, the group of older professional could not even display a mentionable effect at all. Nevertheless, it could be confirmed that there is a significant difference between both groups with respect to the interaction effect. Surprisingly, the influence of IC on the Job Performance of older IT-Infrastructure consultants had even a negative relation (-0.04) which however, was very minor and not significant at all. Finally the group analysis could show that the mediation effect by the IC construct was not significantly different between both groups even though it revealed a value of 1.95 which is close to the 0.05 level. To conclude based on the group comparison it can be reasoned that age has a clear influence on the relation of ITIC-Job Performance and IC-Job Performance.

By looking at the outcome and differences between the path-coefficients, it becomes clear that there is no statistically significant difference between both levels of education, Bachelor and Master degree (see table 5-19).
It appears that IC have a higher influence on higher educated IT-Infrastructure consultant by displaying a significant β-value of 0.39 compared with a not significant β-value of 0.08 for the group of Bachelor consultants. The influence of IC on Job Performance not only shows the most striking difference within this group but also the only relation which was close to statistical significance at a 0.05 level. This different strength of influence could possibly indicate that the level of education is also related to the level of exposure of IT-Infrastructure consultants to an international project setting. In accordance with survey insights in the field of education, this could suggest that the more IT-Infrastructure consultants are educated the more intercultural competent they are (Deardorff, 2004). This assumption is also confirmed by the higher influence (0.80) of the mediation effect of the IC within the group of higher educated consultants. However, it should be also carefully taken into account since no statistical significance could be confirmed. Therefore, the underlying group comparison could show that intercultural competence appears to have a stronger but not statistically significant influence.

The last group comparison examines if the time abroad has an influence on the causal relations of the underlying job performance model. Again, two relevant groups were composed (see table 5-20).
In accordance with survey insights, staying at least one year abroad appears to be a threshold for comprehensively getting acquainted with a particular host culture (Salisbury et al., 2013). Therefore, the first group is composed of 57 IT-Infrastructure consultants who spent less than a year abroad while the second group contains 63 IT-Infrastructure consultants who spent at least a year abroad. Table 5-20 discloses that surprisingly no statistical differences can be observed between both groups. However, as expected from the beginning the more internationally experienced group of IT-Infrastructure consultants indeed displays a higher influence of IC on Job Performance (∆β= 0,27). Additionally, even though the difference of the difference of the mediation effect was not significant at all, the mediation effect by the IC is overall higher with the more experienced group of IT-Infrastructure consultants (0,81).

5.4.4 Summary

The underlying statistical analysis could comprehensively show that all hypotheses were confirmed. Therefore, table 5-21 shows the results of testing the main hypothesis. Furthermore, the multigroup analysis could approve additional new hypothesis as well. The check symbol in table 5-21 show that each of the hypothesis could be confirmed.

Table 5-21: Results of the hypothesis testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Cause-Effect Relationship</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Intercultural Competence will be positively related to job performance.</td>
<td>✓</td>
</tr>
<tr>
<td>H2</td>
<td>IT-Infrastructure Competence will be positively related to job performance</td>
<td>✓</td>
</tr>
<tr>
<td>H3</td>
<td>Intercultural Competence will moderate the relationship between IT-Infrastructure Competence and Job Performance such that the IT-Infrastructure Competence – Job Performance path will be stronger when Intercultural Competence increases</td>
<td>✓</td>
</tr>
<tr>
<td>H4</td>
<td>Intercultural Competence will mediate the relationship between IT-Infrastructure Competence and Job Performance.</td>
<td>✓</td>
</tr>
<tr>
<td>H5</td>
<td>Age of IT-Infrastructure consultants has an influence on the relations within the given job performance model</td>
<td>✓</td>
</tr>
<tr>
<td>H6</td>
<td>Level of education of IT-Infrastructure consultants has an influence on the relations within the given job performance model</td>
<td>✓</td>
</tr>
<tr>
<td>H7</td>
<td>Time spent abroad of IT-Infrastructure consultants has an influence on the relations within the given job performance model</td>
<td>✓</td>
</tr>
</tbody>
</table>
Overall, Job Performance can be explained to 73.3% ($R^2 = 0.733$) by IT-Infrastructure and intercultural competence. Both exogenous constructs exhibit highly significant and almost equally strong influences on Job Performance. Each of these constructs is measured as second order constructs. The IC construct is operationalized as a type 1 construct and is represented by the dimensions Intercultural Sensitivity Index Individualism, Intercultural Sensitivity Index Collectivism, Openness, Flexibility, Personal Self-Awareness, Home Cultural Awareness, Foreign Language Competence and Nonverbal Communication Competence.

On the other hand, the ITIC construct is measured as a type 2 construct formed by the dimensions IT-Servicemanagement, IT-Networks, Hardware, Software, Data Management, Management. In addition to the main effects of the structural model, the analysis can also prove that IC partially mediates the influence of ITIC on Job Performance. Following BARON & KENNEDY’S (1986), a comparison of both, mediation and moderation effect, could show high β-values and highly significant results at a 0.01 level. Moreover, the importance of the IC construct can be further approved by the interaction moderation effect. The latter demonstrates that an increase in IC changes the relation between ITIC and job performance to a highly significant degree as well. As a consequence, IC and ITIC not only separately influence Job Performance but also interactively impact the endogenous variable.

Finally, the explorative multigroup analysis with respect to age, level of education and time abroad allowed for additional hypothesis and implications. It can be confirmed that age has a significant impact on the given model. While some of the differences between the path-coefficients within the groups are not significant, it can be exhibited that IC continuously proved to be a high-level influence factor for all groups of concern. Indeed, despite not confirming significant values the group of higher educated and more internationally experienced IT-Infrastructure consultants appeared to display higher β-values and corresponding differences between the path-coefficients of the IC relations.
Chapter 6

Summary and Outlook

After the previous chapters 3 to 5 have thoroughly delineated the Literature Review as well as the empirical studies, following chapter summarizes and critically discusses how the underlying research question have been addressed within this thesis. While chapter 6 comprehensively depicts how each research question was addressed in the course of each chapter, chapter 6.2 critically deals with the existing limitations of this thesis by showing the limitations of the quantitative and qualitative studies in particular. Chapter 6.3 discusses in detail the theoretical and practical implications of this thesis and by that, clearly emphasizes how research, education and business can benefit from the results of this thesis. Finally, chapter 6.4 provides first ideas on future research opportunities.

6.1 Main Research Questions

The underlying thesis aimed at answering the main research questions that were introduced in the previous chapters. In this context, this thesis conceptualized a job performance model, which examines the influences of technical or task-related competences and intercultural competences on the job performance of IT-Infrastructure consultants. In the following each research questions is addressed.

Research Question 1: What are the underlying structural dimensions that comprehensively represent intercultural competence?

The broad literature about intercultural competence and similar constructs cover many disciplines, which complexifies the task of communicating about related ideas in a systematic and consistently interpretable way. Based on the insights of a Literature Review, there can be four major issues identified within this stream of research (see Ch.3.1.1):

1. The more sophisticated the concept of intercultural competence became, the more it became confused with the definition of the term "competence."
2. The differentiation between affective, cognitive, and behavioral dimension has been oftentimes criticized.

3. There are overlapping of concepts and traits as well as an insufficient differentiation between of inter- and intracultural competence.

4. Due to the complex character of intercultural competence, no single instrument can be used for all purposes. There is no consensus on which instrument is most effective for testing intercultural competence (Perry and Southwell, 2011). Moreover, the scientific rigor of the instruments and the validity and reliability of these instruments is still a major concern (Almeida et al., 2012).

Conceptualizing, developing and assessing intercultural competence continues to be a critical challenge. Therefore, the comprehensive selection of the various, continuously adjusted and developed variables, that can compose intercultural competence, is a first step (Mertesacker, 2010). Following a stringent methodology (see Ch.3.1), the results by MERTESACKER (2010) could be confirmed. Following dimension could be identified: Intercultural Sensitivity Index (Individualism, Collectivism), Openness, Flexibility, Personal Self-Awareness, Home Culture Awareness, Foreign Language Competence and Nonverbal Communication Competence. Moreover, despite the fact that MERTESACKER (2010) could already identify and select the most contextually appropriate and empirically examined dimensions for the underlying research, the final results of her study have also shown some statistical weaknesses with respect to the particular measurement instruments. To improve the results, avoid any misinterpretations and enhance the understanding of the corresponding questionnaire items, the underlying thesis utilized a qualitative pre-test to discuss, accordingly adjust and even remove any potentially misleading items identified by the target group of IT-Infrastructure consultants. As a consequence, modified measurement instruments for the intercultural sensitivity, flexibility and openness were generated for the quantitative pre-test and main survey which revealed highly reliable and valid statistical outcomes.

**Research Question 2**: Which competence dimensions exist in the field of IT-Infrastructure?

By means of a comprehensive and methodologically sound Literature Review the most relevant ITI competence domains and their definition were identified (see Ch.3.2.1). Even though there are a large number of articles, conference proceedings and book chapters on ITI, especially on its performance capability and importance for organizations, there is no current publication that synthesizes the various views, terminologies, frameworks and models to eventually provide a requirement categorization which shows what are the necessary requirement areas for the development and maintenance of an effective ITI. The underlying Literature Review revealed that competences with respect to ITI have been consistently linked to research on the constructs of ITI capability and ITI flexibility throughout the past decades. Indeed, both concepts share a common research base and same goals. It became clear that there are numerous publications in the two main domains based on qualitative and quantitative research methodologies. The former mostly dealt with case studies around
certain frameworks and services as well as issues around identification and patterns of ITI services in different organizations of various sizes, organizational forms and industries. The latter especially provided empirical models that examined the influence of the ITI flexibility construct, developed by BYRD & TURNER (2000), on various dependent variables in different context. After analyzing 197 highly relevant papers, only those publications were taken into considerations that show different domains which are relevant for an ITI. Following categories could be identified: Networks, Application Functionality, Platform, Business, Data Management, Architecture & Standards, IT-Servicemanagement and Security & Risks.

Research Question 3: How can you consolidate competences in the field of IT-Infrastrucure?

These eight categories were validated and extended by means of a qualitative interview study to gain an up-to-date picture of the competence domains of an IT-Infrastructure consultant (see Ch.4.1.1). As a consequence, five expert interviews were conducted and subsequently analyzed by using the qualitative content analysis after MAYRING (2010) (see Ch.4.1.2). The latter lead to a consolidation of the results of the Literature Review and showed that today’s IT-Infrastructure consultants ultimately agree on six main competence categories which appropriately cover all necessary technical competences: IT-Servicemanagement, IT-Networks, Hardware, Software, Database and Management.

Research Question 4: Which requirements have to be met by today’s IT-Infrastructure consultants?

Since there is no commonly agreed set of competences for each of the identified dimensions to display a detailed technical profile in this field, a comprehensive job profile analysis was conducted as well to identify the competences of an ITI-Infrastructure consultant (see Ch.4.4). 250 different job profiles have been thoroughly collected, systematically analyzed and the identified requirements have been assigned to the six ITI dimensions. As 3414 codes could be assigned to the requirements section, following enumeration shows only the most important requirements for IT-Infrastructure consultants:

1. Project management knowledge
2. Know-how in dealing with network protocols
3. Hardware design experiences
4. Experience in dealing with client development processes
5. Experience in dealing with MS Server

Research Question 5: How can an IT-Infrastructure competence construct be operationalized?
Second order constructs are considered to be useful for several reasons especially for reducing complexity and representing phenomena as realistic as possible. Literature distinguishes between four types of second order constructs based on the relationship between first order latent variables and their indicators and between the second order latent variables and the first order latent variables (see Ch.5.1.3). Based on the qualitative interviews and job profile analysis, the ITIC construct was composed of the above mentioned six main competence dimensions. While these dimensions shape the ITIC construct, the corresponding indicators were derived from the task-related activities of the job profile analysis to reflect each dimension. Therefore, the underlying thesis used a type 2 operationalization for the ITIC construct. Following MOORE & BENRASAT (1991) and SHARMA (2010), a three-step approach was utilized for thoroughly developing a corresponding scale (see Ch.5.2.2). Finally, 18 questionnaire items could be confirmed in the final step. However, in order to ensure a holistic measurement of competence constructs, each of the 18 items was additionally matched with an epistemic counterpart to measure on both the heuristic as well as epistemic level. Moreover, a supplementary holistic competence item for each of the competence dimensions was developed and added to the questionnaire to allow for statistical insights in case of weak statistical measurement results for the new constructs.

**Research Question 6:** Which dimensions have an impact on the job performance of IT-Infrastructure consultants?

Overall, both exogenous second order constructs, ITIC and IC, have a highly significant influence on the Job Performance of IT-Infrastructure consultants by explaining 73.3% of the variance (see Ch.5.4). While the path-coefficient of the ITIC -> Job performance relation was 0.512, the IC -> Job Performance relation showed a value of 0.497, thus, displaying a slightly smaller effect of the Intercultural Competence on the endogenous variable. A closer look at the forming dimensions of the ITIC construct showed that among the six competence dimensions each one displayed almost the same relevance. However, Management and IT-Networks exhibited a weight value of 0.28 showing their slightly higher relevance for the ITIC construct and its influence on the job performance. With respect to the IC construct, each of the eight dimensions represents to a high degree the intercultural competence construct. Besides the Personal Self Awareness construct (0.79) all other constructs displayed factor loadings above 0.80. Displaying a value of 0.93, Foreign Language Competence showed the highest value among all dimensions and thus, exhibits that language competence extraordinary reflects intercultural competence as assumed by practitioners and already confirmed by researchers.

**Research Question 7:** Are there effects between intercultural and IT-Infrastructure competences?

Besides the main effects of the structural model, the underlying analysis could show that the given job performance model also contained an interaction moderation as well as a mediation effect. The interaction effect showed a path-coefficient of 0.254, which was highly significant. Even though the effect size of 0.11 was rather weak, a model comparison could show that the interaction effect
changes the path relation between the IC and Job Performance to a non-deniable extent. An increase in IC of an IT-Infrastructure consultants changes the relation between ITIC and Job Performance. Moreover, IC could be confirmed as a partially and statistically significant mediator between ITIC and Job Performance. Even though the mediation effect is rather low by decreasing the direct relation between ITIC and Job Performance by 0.079, it was highly significant at a 0.01 level.

6.2 Limitations of the Studies

This chapter describes the limitations of the research design of the quantitative and qualitative research designs, which allows for a better integration of the contribution. While the limitations can be overall categorized into content-related and methodological limitations, these insights can build the initial point for future research studies. One particular content-related limitation is the fact that the underlying study focused on IT-Infrastructure consultants as its research subject. Even though the author could depict the importance of this group of professionals as a main IT profession, there are many other professional branches even in the IT-Consulting domain, which could show different insights with respect to the influence and effects of intercultural competence and technical competences on job performance. Consequently, the results of the underlying studies only reveal substantial insights for a limited group of professionals. Additionally, the underlying study examined not the entire causal relationship of a job performance model. While technical competences and intercultural competences are obviously highly important and direct influencing factors for job performance in any international IT related work setting, preceding phenomena such as cognitive ability, emotional intelligence or trait related factors were not included at all. Indeed, there are a high number of studies, which have clearly demonstrated positive relations between these fundamental phenomena in both laboratory and field settings. Therefore, the underlying study cannot show how these factors are related to or affect both underlying constructs. The last content related limitation refers to the fact that all surveys represent cross-sectional studies, which only display the influence of ITIC and IC at a particular point in time. Due to the fast changing character of IT related professions and the steadily increasing impact of internationalization processes on work settings, the underlying studies need to be repeated and compared. By that, ongoing changes and the dynamic processes behind can be comprehensively examined. The following chapters separately discuss the methodological limitations for the qualitative studies (Literature Review, interviews and job profile analysis) and the quantitative study.

6.2.1 Quantitative Survey

Overall, first major methodological limitation of the quantitative study arose due to the linear understanding of the given job performance model. The underlying thesis assumed a linear relation between the competences and the job performance of IT-Infrastructure consultants. However, this assumption does not al-
low for explaining non-linear relationships in which high competences just lead to performing the tasks at hand but not the overall job performance or in which low competences don't necessarily lead to low job performances. On one side the underlying theoretical base of the survey, which utilized the classic learning theory (Thorndike, 1930), also causes this limitation. On the other side the utilization of a variance based analysis approach like PLS only allows for linear relations and interaction effects (Albers and Hildebrandt, 2006). The latter also involves other methodological limitations, which are oftentimes critically discussed (see Ch.5.1.2). Another methodological limitation refers to the IC construct and its success evaluation by the IT-Infrastructure consultants' performance. While the underlying thesis comprehensively delineated the reasoning for selecting Job Performance as a suitable and relevant success variable, one need to keep in mind that literature in the field of intercultural competence emphasizes effectiveness and appropriateness as the main success measure for intercultural competences (see Ch.3.3.2). Consequently, the utilization of Job Performance as a main success variable can be still questioned. One possible solution could be the development of a generic performance measure, which explicitly considers both constructs. Another alternative could be a comparison of studies, which use one of the success measures. With respect to the IC construct, the eight competence dimensions only represent an extract of this particular and very complex phenomenon. In a first major step, the underlying thesis utilized intercultural competence dimensions based on a selection methodology by MERTESACKER (2010) to increase statistical rigour and minimize subjective influences. Yet, due to limitations of the implemented statistical approach within this study only those dimension could be selected that fit into the underlying research setting. Indeed, literature offers plenty of other high-level, yet fee-based variables of intercultural competence, which could provide different and even more detailed insights. Moreover, since the underlying survey aimed at examining an intercultural competence construct, which covers the three main structural dimensions, results were the same if the underlying dimensions were exchanged. For instance, the cognitive dimension is exchanged by the intercultural knowledge; the affective dimension by the intercultural motivation and the behavioral dimension by ambiguity tolerance.

A last limitation with respect to the quantitative study refers to the external validity and generalization of the study results. Overall, one can only hardly make any statements about the characteristics of the population of IT-Infrastructure consultants. This makes it difficult to develop any estimation about the representativeness of the underlying sample at all. The selection of professionals for the underlying study was conducted based on a random sample. Looking at the demographics of the IT-Infrastructure consultants it appears that the sample shows many similarities with respect to the population of IT-Consultants. However, the comparatively small sample size of 120 interviewees, which performs well with PLS cannot enable the transferability of the results to the population of IT-Infrastructure consultants. Moreover, while the vast majority of the survey participants were of German heritage, some of them were born and raised in other countries. Even though it only represents a small number of people, cultural differences within the sample could have influenced the results of the SEM as well.
6.2.2 Qualitative Survey

Overall, the idea of quality criteria has its origins in the measurement and test theory of psychology. While the quantitative research paradigm has access to highly established criteria (see Ch.5.4), qualitative research had to overcome its critics about its openness towards the research subject. The latter enables its access to different research insights compared with quantitative research on one side but also some methodological limitations on the other side. According to Steinke (1999) the utilization of quality criteria in qualitative research mainly depends on the epistemological position of the researcher. There are three main positions in the domain of qualitative research (Steinke, 1999). The first constructivist position rejects the utilization of quality criteria at all due to the individuality of any perception. The second position develops particular quality criteria for qualitative research settings. These attempts, however, have proven to be not convincingly successful due to the rather general and non-specific definition.

The third and most prominent position attempts to transfer the classic quality criteria of the quantitative research (validity, reliability and objectivity) by taken the particular epistemological and methodological perspective of qualitative research into account (Wrona, 2006). Internal validity is achieved by generating a realistic data collection situation for the research subjects on one hand (Voßberg, 1983) and intersubjective traceability on the other hand. The latter involves that all conclusions are based on the data, which enables third parties to comprehend the results (Wrona, 2006). The underlying study transcribed all interviews and utilized invivo codes, which are closely related to the spoken words of the interviewee.

Moreover, the utilization of communicative validation by the respondents could further increase the internal validity as well. External validity represents another important criterion, which is related to representativity and cannot be reached within any qualitative research design. Overall, the more the data resembles the population the stronger its representativeness. For that reason, the underlying interviews used theoretical sampling approach, which was systematically planned by the author (Glaser and Strauss, 2005). Each of the five respondents was IT-Infrastructure consultants of top-tier IT-Infrastructure consultancies in Germany, which operate on an international level. By using a minimal contrasting strategy, expert interviews were conducted until a theoretical saturation was reached. However, one needs to keep in mind that a different sample could have led to different results. For instance, consultants of smaller consultancies could show a different competence level than employees from larger consultancies. Moreover, as only German consultants were surveyed, cultural differences were not considered either.

According to Kirk & Miller (1986), within qualitative research settings procedural reliability is considered the most relevant one (Kirk and Miller, 1986).

\footnote{Communicative validation involves an examination of the transcripts and its interpretation by the respondents themselves (Wrona, 2006, p. 205)}
Procedural reliability refers to the degree to which a researcher makes his research approach comprehensible, hence intersubjectively traceable. A thorough documentation and transparency of the research process is of crucial meaning for achieving intersubjective traceability. The interviewer himself causes most of the errors in qualitative research settings.

Another potential error sources that can influence an interview process and the quality of the data are known as perception effects. This involves in particular primacy- and recency-effects, which comprise the phenomenon that usually the first or the last perceived information has an influence on the answer and the behaviour of a respondent. Framing effect represents another relevant error which involves the manipulation of an answer by the presentation of the question. The underlying qualitative study attempted to minimize perception effect by asking easy-to-understand questions in a structured way based on the interview guide. The following chapter shows the contribution of the present thesis and critically discusses the results.

6.3 Discussion

Main objective of the underlying studies were to provide an understanding about the importance of intercultural competences in the field of IT-Infrastructure consultants which on one side not only represents a highly relevant profession for the IT-Consulting industry and hence, for the domain of Business and Information Systems but also require a high level of technical competences. In this context, the underlying studies focussed on the development of multidimensional competence constructs for both, the intercultural and IT-Infrastructure, and its influence on the job performance of IT-Infrastructure consultants.

While the ITI Literature Review could provide eight competence dimensions, which eventually shape an IT-Infrastructure of any organization, the expert interviews could systematically consolidate and modify the ITIC dimensions to derive the final and mutually agreed 6 IT-Infrastructure dimensions. Extra value was added to the qualitative interviews since each expert clearly discussed specific technical requirements for each of the dimensions, which could be afterwards easily translated to corresponding competences. One of the most frequently emphasized competences was virtualization and its corresponding techniques and applications. The act of creating an emulated version of one of the IT-Infrastructure dimension IT-Networks, Hardware or Software was highlighted to be pivotal for IT-Infrastructure consultants for reducing costs at the client’s organization and increase efficiency and agility. Nowadays, most prominent topics like Big Data and Green IT were also mentioned as highly important challenges and tasks, which have to be addressed by today’s IT-Infrastructure consultants especially at large scale organizations and project settings. Even though the underlying expert studies were focussing on technical competences, the majority of the experts continuously stated the particular relevance of social skills and related phenomena such as empathy and sensitivity, which represent a door-opener and facilitator for the day-to-day work with clients. This was particularly noteworthy as it once again supports the importance of intercultural com-
petence by confirming the constituting dimension Intercultural Sensitivity, Openness and Flexibility.

The results of the job profile analysis could confirm the results of the expert interviews in the first place. However, main purpose of it was to identify the de-facto technical job requirements and task-related activities and to eventually derive job specific competences for developing an IT-Infrastructure competence construct. Following TODD ET AL (1995) a web based job profile analysis was conducted by using 250 job profiles over a period of six months. Looking at the results of the analysis, the job profile analysis could clearly show the high importance of business and management tasks for this profession. The top task-related activity (planning and execution of project management activities) and requirement (project management knowledge) show a management focus.

While the latter is not a surprising result, the analysis could clearly show the high technical diversity and complexity of the ITI consultant profession. Indeed, the top-ten task-related activities and hence, the matching competences can be assigned to five of the six competence dimensions (Management, Software, Hardware, IT-Networks, IT-Servicemanagement) which already indicates the high fit of the dimensions. Even though the results of the requirement analysis and task analysis show a high match, the former also reveals the importance of other skills such as ability to build a team or English proficiency from the employer perspective. Especially the explicitly demanded English skills provided a first hint on the international work setting and the likely intercultural encounter within this profession.

The highly significant results of the SEM could confirm what has been hypothesized in the first place and indicated by the qualitative studies by exhibiting highly significant relations at a 0,01 level in the structural model. While the influence of the IT-Infrastructure Competence (ITIC) showed a path-coefficient of $\beta=0,512^{***}$, the influence of IC ($\beta=0,497^{***}$) could clearly illustrate the impact and almost equally importance of this phenomenon for the Job Performance of IT-Infrastructure consultants. A closer look at the results of the second order intercultural competence (IC) construct could show, that Foreign Language Competence (FLC) had the highest loading ($\lambda=0,93^{***}$) among the dimensions. IC appears to be a multi-faceted phenomenon, which is mainly reflected by its communication competence. These insights confirm the results of the job profile analysis in which English proficiency was among the highly demanded requirements. Additionally, it could also validate the work of multiple researchers in the field of Intercultural Communication Competence (ICC), which has also often been referred to as the Rainbow Model (Spitzberg and Cupach, 1984). This model was based on various theories like social identity theory, identity management theory or even systems theory and focuses particularly on the necessary fundamentals, which are required for competent communication across borders. Research scholars like GILES (1979) or MOL ET AL. (2005) have proven that there is a highly positive relation between ICC and host language fluency (Giles and St.Clair, 1979: Mol et al., 2005). Based on their research results, both researchers have emphasized the importance of foreign language competences for successful work in an intercultural work setting. However, FLC relies on several other interdependent phenomena like the contextually suitable application of knowledge, skills, motivation that lead to effective results. Nonverbal Communication Competence (NVC) has therefore proven to be and equally rele-
vant construct and facilitator of FLC (Thomas and Hagemann, 2003). The results of the underlying study could only partially confirm these results as the NVC construct displayed lower, yet still high, factor loadings ($\lambda = 0.86^{**}$) compared with FLC. Moreover, both intercultural sensitivity constructs, Intercultural Sensitivity Individualism ($\lambda = 0.84^{***}$) and Intercultural Sensitivity Collectivism ($\lambda = 0.86^{***}$), have shown to be solid representatives for the IC construct by displaying high scores, which acknowledge the work of Spreitzer et al. (1997) and Mendenhall et al. (2002), who had proven that intercultural sensitivity is a predictor for intercultural potential and a measure for the capacity to perceive cultural differences (Spreitzer et al., 1997; Mendenhall et al., 2002). Based on the results of the job profile analysis, the ability to build a team has confirmed to be among the most important requirements for the profession as an IT-Infrastructure consultant ($n = 71$) hence, the underlying results can be understood as a further validation of this indication. Indeed, in the past Black & Stephens (1989) have already emphasized in their studies that intercultural sensitivity is a mandatory requirement for any team-based interaction in particular in an international setting (Black and Stephens, 1989). With respect to the second order ITIC construct it could be shown that Management ($\gamma = 0.28$) and Network ($\gamma = 0.28$) displayed the greatest weights in forming the associated phenomenon. This appears to contradict the results of the job profile analysis in which Software ($n = 23$) and Hardware ($n = 14$) tasks have proven to be the most relevant competence dimensions. Based on the insights of the expert interviews, Software competences could be determined as the dimension, which was associated with the most frequently mentioned competences required by an IT-Infrastructure consultant. As a matter of fact, Software has even featured the lowest weight ($\gamma = 0.20$) among all dimensions. One possible answer to this could be that most software solution can be generally assigned to or merge into one of the remaining IT-Infrastructure dimensions. Another interesting result was the high weight of IT-Service management (ITSM) dimension ($\gamma = 0.25$). Even though the job profile analysis could clearly show that ITSM contained the least amount of relevant tasks ($n = 6$) of all job profiles, the results of the main survey could prove its high relevance for building the ITIC construct and its high constituting relevance.

The results of the main survey could not only show the high significance and influence of the IC on the Job Performance of IT-Infrastructure consultants but also its highly significant interaction moderation effect ($\beta = 0.25^{**}$) on the Job Performance construct. Despite its rather low effect size ($\eta = 0.11$) a comparison of the main effect model and the interaction model revealed its impact and thus, its considerable relevance for the underlying model. Therefore, the underlying interaction effect could clearly show that the exogenous variable, ITIC, is significantly dependent on the level of IC. Both constructs should not be independently analyzed but rather be assessed in combination with each other. Moreover, as anticipated by former studies like Yamazaki & Kayes (2004) the main study could confirm the partial mediation effect of IC on Job Performance. Indeed, the underlying analysis of the direct and indirect effect could show that 12% of the total effect of ITIC on Job Performance is based on the influence of IC on Job Performance. Again, this shows the highly complex and overall influences of the intercultural competence on the Job Performance of IT-Infrastructure consultants.
The multigroup analysis could also reveal that age has a significant influence on the relation between both of the exogenous constructs, ITIC and IC, and Job Performance. These insights could be of great theoretical and practical interest. One explanation for the high differences between the ITIC and Job Performance path-coefficients of both groups is that the “younger” professionals (<34 years) need to rely more on technical competences than the “older” ones (> 34 years) as the latter usually possess a higher seniority within their organization and are oftentimes not as much concerned with operating tasks due to their rather management related task focus (Deal, 2007). Interestingly, the group of “older” professionals showed no influence of the IC (β=0.04 ns) on the Job Performance whereas the group of “younger” IT-Infrastructure consultants could clearly exhibit a highly significant influence (β=0.37***). Based on the Literature Review this result could not be confirmed by any other research study in the field of intercultural competences. One possible explanation could be that due to the vast increase of international project work, particularly within the last five years, the younger generation were generally more exposed to intercultural project settings from the very first than the more experienced professionals (Stetten et al., 2012a). Another explanation could be that today’s professionals are already more exposed to and educated for intercultural project settings during their academic education than the older generation. While the latter could be proven by a comprehensive study in the past (Hiller and Wozniak, 2009), it could eventually lead to an increased influence of intercultural competences on the overall professional performance as well.

Furthermore, the results of the multigroup analysis could further highlight that education has no significant moderating effect on the job performances of IT-Infrastructure consultants. Despite the fact that several research scholars have suggested the relevance of academic education for the performance of professionals, no clear indication could be shown for the underlying study as no statistical differences between both analysed groups could be detected (Hunter, 1986; Bergman et al., 2008). On one side it could be shown that ITIC had a high influence on Job Performance for both groups, professionals with a Master or higher degree (β=0.55*** and professionals with a degree not higher than a Bachelor degree (β=0.52***). On the other side, however, while the group of “higher educated” professionals showed a statistically significant and high β-value (β=0.33***), the group of “less educated” IT-Infrastructure consultants IC did only exhibit a very low and not even significant influence (β=0.06 n.s.) on Job Performance. There are some potential explanations for this phenomenon. One explanation could be that due to the less exposure of intercultural training during their academic education this group could simply not develop an appropriate level of intercultural competences (Graf and Mertesacker, 2009). While in this case a direct relationship between level of training and intercultural competences is hypothesized, one need to take into account that not every respondent of this study was exposed to the same experiences either at the academic or professional level. Moreover, due to the lack of studies particularly investigating this relation and the multitude of other confirmed factors that could either mediate or moderate it to a great extent, this assumption appears to be of comparatively low influence. A second explanation mainly relates this issue to the age of this particular group of IT-Infrastructure consultants. In fact, while the more educated group had an average age of 35 years the other group showed an average
age of 29 years. Consequently, one could assume that the low path-coefficient score was mainly based on the obvious age difference between both groups.

With respect to the time spent abroad, the explorative multigroup analysis compared the group of IT-Infrastructure consultants that spent less than one year abroad with those who spent on average at least a year abroad. While both periods are considered to be crucial for the development of intercultural competencies, no significant difference could be shown between these groups. Based on the overall findings of Salisbury et al. (2013) who could exhibit the effect of time on the level of intercultural competences of college students, one could also hypothesize that there is a significant difference between the influences of IC on Job Performance of both groups of IT-Infrastructure consultants. Even though the results could confirm a high and significant path-coefficient ($\beta = 0.37^{***}$) for the “more experienced” group of professionals compared with a lower and even not significant path-coefficient ($\beta = 0.10$ n.s.) for the “less experienced” group of professionals, the t-test could prove that there is in fact no statistically significant difference between both groups. The same could be confirmed for mediation and interaction effect of IC. The most obvious explanation is that in a professional setting the extent to which intercultural competences have an impact on job performance is mainly dependent on other moderation or mediation factors such as age, work settings or project goals (Wiseman et al., 1989; Gertsen, 1990). Moreover, even though the time spent abroad can be a first indicator for the level of intercultural competences, research has already shown that intercultural competence is influenced, acquired and developed largely by an individual’s inherent attitudes, skills or existing knowledge (Gertsen, 1990).

To conclude, the results of the studies can generate theoretical as well as practical implications, which are discussed in the following paragraphs.

6.3.1 Theoretical Implications

By analyzing the field of IT-Infrastructure Consulting and Intercultural Competence the underlying thesis can provide new theoretical implications which are emphasized in the following:

Because the IS domain is widely considered to be an applied discipline, most of its related professions are characterized by IS-related or technical competences for performing on-the-job tasks (Iivari et al., 2004). However, due to increasing cross-cultural work experiences driven by internationalization of today’s organization and globalization of IS development processes, effective job performance of today’s IS professionals requires more than “IS specific knowledge and skills and domain fundamentals” but also “foundational knowledge and skills” such as communication and social skills in an intercultural work setting (Topi et al., 2010a). Even though previous research has analysed the influence of professional trainings and the results obtained, no distinctive study could be identified that comprehensively examines the influence of on-the-job task competences with intercultural competences on the job performance of IS professionals in general and IT-Infrastructure consultants in particular. One possible reason for that was that there was a mismatch between the characterizing features of intercultural competence an IT-Infrastructure competence and their measurements. In order to overcome this mismatch two Literature Reviews were conducted in this thesis which were supported by different methodologically sound.
approaches. With respect to intercultural competence this thesis could adjust the results of MERTESACKER’S (2010) and successfully test in a professional setting a comprehensive second order model of IC that to not only meets the requirements of this multi-faceted phenomenon on a contextual but also on a statistical level. Moreover, in accordance with the development of the IC measurement, specific dimensions of competences of IT-Infrastructure consultants were identified and their definitions as well as nomological classification were elaborated for the first time. Since the existing research could only provide a first understanding of the competence dimensions of ITIC, an in-depth qualitative study with IT-Infrastructure experts could be conducted which lead to a consistent development of a competence categorization system and could finally fill an existing theoretical gap in this field.

Another important theoretical contribution refers to the fact that the underlying thesis used for the first time a comprehensive job profile analysis of IT-Infrastructure consultants for systematically analyzing this domain on one side and thereby identifying highly relevant competences from an organizational perspective, which could be assigned to the ITIC dimensions. In contrast to the existing operationalization of the IC dimensions, the underlying study incorporated for the first time a holistic competence understanding for the operationalization of the ITIC dimensions, which differentiates between epistemic and heuristic competences. By using a commonly approved card-sorting approach the first second order measurement instrument for ITIC could be developed and validated.

Especially the statistical analysis could provide an important theoretical contribution by showing excellent psychometric properties and tremendous levels of convergent, discriminant, and nomological validity. Seventy-three percent of respondents’ job performance based on the two exogenous second order constructs could be explained in the model. Thus, the research has demonstrated with strong empirical evidence the role and importance of having IC competent IT-Infrastructure consultants, a commonly offered prescription of today’s IT workforce that to date was based on a limited set of research work and could be shown the first time with statistically significant results.

While from an intercultural perspective a solid measurement instrument for IC could be composed based on existing and free of charge scales, from an IS perspective a first competence categorization system and inherent competences could be developed which can be both used for future studies. As discussed above, the proven and statistically significant interaction effect could clearly show for the first time that the degree of influence of ITIC is dependent on the level of IC. By that, it could be shown that even an isolated consideration of each construct and its dimensions is not sufficient, as there is a clear interdependence of both constructs, which need to be taken into account in any future intercultural research setting within a professional setting.

Finally, from a generic research perspective this thesis provides a highly effective theoretical framework for examining on-the job task competences in the international IS domain. For the first time in the IS research domain, highly relevant on-the job task competences have been identified and systematically clustered as well as subsequently examined by means of a sequential mixed-methods approach. By utilizing various research methods, a methodological guideline for future, methodologically sound competence research could be de-
6.3.2 Practical Implications

The underlying thesis and its studies could deliver comprehensive results in the field of IC, ITIC and Job Performance of IT-Infrastructure consultants which represents one of the most demanded and popular profession in the IS domain (BDU, 2013). Therefore, the outcomes can have important practical implications for HR and curriculum development in the IS domain. Without a doubt, HR is commonly agreed to be the most important resource for organizations (Becker and Gerhard, 1996). Research and practice attach the factors of organisational competitiveness to the abilities, skills and competencies of human resources (Kamoche, 1996). Therefore, today's organizations are required to carefully assess the competencies of their professionals and need to adopt “a holistic approach to competency assessment as it applies to real jobs in the work place” (Rajadhyaksha, 2005, p. 50). The development of the ITI competence categorization and its inherent competences can be used for recruiting IT-Infrastructure personnel. Based on the inductive-deductive analysis approach of the studies, HR recruitment has now a detailed understanding of which competences are necessary for today's IT-Infrastructure consultants. Moreover, despite the nearly same relevance the results of the quantitative study could show that Management and IT-Networks competences have a higher degree of relevance for ITIC than the other task-related competence dimensions. Thus, a greater emphasis should be put on those two dimensions. The second and probably most intriguing finding of this thesis from an HR perspective is that the job profile analysis revealed that apparently organizations seem to underestimate the relevance of IC for the job performance. Even though one could identify “social skills” as a potential dimension to a certain extent, the analysis also revealed that this has rather been a minor concern. However, the quantitative study could clearly confirm that it is the combination of both, IC and ITIC, that provides the link to performance. This research shows that recruiters need to revise their current recruiting approach on IT-Infrastructure consultants to a more prominent mindset on intercultural competences. An IT-Infrastructure consultant must be cognizant of, and respond to the demands of the international work setting by showing sensitivity with respect to the respective culture of his counterpart, awareness of his own culture and reputation and of his verbal and non-verbal communication skills to name a few areas affected. As such, the IT-Infrastructure consultant must possess a set of skills that closely matches the needs of the intercultural encounter in this regard. The suggested combination of IC dimensions needs to be taken into account in the recruitment process of professionals. This research suggests that recruitment based on technical skills is inefficient. While on one side many employers agree that intercultural competences is an important part of a professional’s core qualifications, the minority of them have a concrete understanding of what intercultural competence should be consist of and how it might be identified. This indistinctness is oftentimes confirmed when employers attempt to examine their employees’ intercultural competences as one of many competences in assessment centres (Busch, 2009, p. 433). Indeed, many organizations fail to define what really constitutes intercul-
tural competence. Consequently, the underlying results of the Literature Review and its quantitative analysis can be used to provide organizations with an understanding of this phenomenon, which can be used to further elaborate on testing these identified dimensions.

From an academic or rather a curriculum development perspective the underlying thesis could provide valuable insights as well. In fact despite the Bologna Process and the continuous adjustment of the curricula at European universities (BMBF, 2014), the rapid pace of change characterizing the IS domain requires a constant re-evaluation and proper adjustments according to the job market. The detailed analysis of research literature, interviews and job profile analysis showed that there is a profound change in technology and industry practices such as “emergence of a new architectural paradigm, widespread use of IT control and infrastructure frameworks such as ITIL and COBIT” or the implementation of virtualization technologies (Topi et al., 2010b). Therefore, the underlying results can be used to modify existing IS curricula through a very cautious specification of the learning outcomes and the competences to be acquired for entering workforce. With respect to the IC domain the results could confirm the relevance of IC for even highly technical work settings and the need for universities to develop strategies to sensitize their students at an intercultural level and motivate them to develop IC. Therefore, the universities must offer proper training programmes, which require the institutional anchorage of the programme and, especially a clear concept of what has to be trained. Thus, the underlying results can provide valuable insights on which competence dimensions and corresponding competences should be developed within potential training programmes. Moreover, according to many top-level managers of various organizations, the chances of a student’s employability increase the higher the level of competence in key qualifications. Organizations unanimously agree that intercultural competence represents an added value. Nevertheless, these managers also argue that if intercultural competence can be acquired by interacting with people from different cultural backgrounds a mandatory semester abroad or teaching an IC class should be sufficient (Busch, 2009, p. 432). The results of the quantitative study revealed on one hand, that there is no statistically significant difference between professionals, who spent more than one year abroad and professionals, who spent less than that. Hence, the time spent abroad cannot be considered as a valid indicator. On the other hand, due to the significance and high scores of the interaction effect of IC on the relation of ITIC and Job Performance, an isolated teaching of both competence domains is probably not as effective as an integrated approach, which effectively combines both domains in the manner of a real-life working scenario.

First the IC dimensions should be used to help today’s IS students to understand what IC consists of and the complexity behind. However, what students need to learn to succeed in an intercultural work setting and developing the necessary skill set are different sides of a coin. It therefore requires an effective teaching process and supportive learning settings. As the underlying thesis does not aim at developing a corresponding solution, the author can only provide important hints, which can be used for a deeper elaboration on teaching intercultural competences. Designing effective learning processes for developing intercultural competences in today’s IS workforce needs to develop a set of experiences that engage students in learning intercultural IS competences both in the home
country and abroad. As indicated before, the interaction effects have clearly shown that there is a need to combine the teaching of both, intercultural and IT-Infrastructure competences. Even though the multigroup analysis has shown that the time abroad has no significant impact on the performance, there is no substitute for spending time abroad. Hence, today's IS curricula need to offer study-abroad experiences for students which allow students to employ cultural models and reflective techniques to learn about themselves and their self-awareness, their home culture and to understand others. In this context several studies have confirmed (Javidan et al., 2010; Randolph, 2011), that the multicultural environment should be combined with a real-world professional setting in which students are required to deliver written reports with specific deadlines and requirements which have to be presented to a committee. Students need to be aware of the consequences of different cultural preferences, which should be explored in specific workplace and organizational settings to acquire an understanding on how any task related processes, interactions, and practices are implemented differently by professionals with other cultural backgrounds and how to deal with this. From the author's point of view White & Griffith (1998) have already developed three guidelines for international business education which should be utilized for the development of the competences in the IS domain in a first step (White and Griffith, 1998):

First, students need to apply theory with real-world professional problems. This is particularly relevant due to the changing technical environment. Secondly, students need to live in and work with new cultural settings, which should be coupled with language training. Third, students need to be aware of all aspects that are relevant for today's organizations. In fact, “social, political, government, philosophical, and development issues” should be taken into account for the development of any learning opportunity to prepare students for the complex issues they have to deal with at today's organizations.

6.4 Future Research

Based on the results of the studies and the corresponding limitations further research opportunities arise. To reach a deeper understanding the underlying research could be associated with a longitudinal study over a certain time period which allows for identifying tendencies and developments to address one of the major limitations of the underlying thesis. Indeed, due to the fast changing IS environment constant modifications of the competences for the different competence domains are to be expected. In order to reach a deeper understanding of the influence of intercultural competences in the IS domain which could further help to develop a higher degree of generalization, one should extend the underlying research questions to other relevant IS professions like database administrator, computer system analyst or software developer (Joseph et al., 2012). As the underlying thesis provides a unique framework for examining task-related and intercultural competences of IS professionals, future research projects can simply adapt the presented mixed-methods approach. Moreover, since the underlying study only focused on IT-Infrastructure consultants in Germany and hence, collected all data and conducted the studies in Germany, a comparison of the results between differ-
ent countries and cultures appears to be relevant and could contribute to a more comprehensive understanding of the underlying research effort. In order to make a first step towards and internationalization and change of today’s IS curricula, the results of the quantitative study can be used for a subsequent qualitative study. One possible approach could be the utilization of a Delphi study, which is a comprehensive structured and interactive survey method for forecasting, prioritization and concept development (Okoli and Pawlowski, 2004). A Delphi study can generally comprise 2 or 3 phases and requires a group of relevant experts to interview (Dalkey, 1969). For the Delphi study the results of the underlying thesis could be used as a valid competence base to commonly agree on the competences needed in the future in the IS domain and identify additional core competences that need to be addressed as well. Moreover, in a next step the Delphi study can be used to develop a first concept for a new IS curriculum. Therefore, a highly relevant expert panel consisting of a large panel of international experts need to participate. A possible composition could include 25% teachers, 25% researchers, 25% managers and 25% policy makers. However, in order to enhance the chances of success, this would require further quantitative results, which analyzed other relevant IS professions as well.

Another future research opportunity refers to the extension of the causal model in several ways. In a first step this could contain the identification of antecedents of the exogenous variable ITIC. The author strongly believes that factors such as professional background or job history (e.g., job rotation) are promising variables to study as well. Secondly, other moderating factors that influence the job performance of IT-Infrastructure consultants, such as different industry foci of the consulting company, could be added to the model. Future research should also examine the applicability of the instrument to different-sized consulting companies as the underlying thesis mainly focused on large enterprises.

With respect to the second order IC construct, the underlying thesis used a combination of various measurement instruments, which have already been proven to be reliable and valid in other research contexts. However, as the operationalization of each instrument has shown, none of these first order constructs has used a holistic competence operationalization, which takes the epistemic and heuristic component of competence into account. Indeed, one can say that IC does currently not meet the requirement of a profound competence scale like the ITIC construct. Therefore, future research should work on developing an IC scale that investigates respondent’s competence on both competence levels.

Another interesting research opportunity involves further analysis with respect to competence deficiency or surplus of the IT-Infrastructure consultants. In the past, researchers have measured deficiency and surplus by linking a measure of proficiency of a competence with a measure of “usefulness” of that competence (Wade and Parent, 2001). Briefly, deficiency is widely described as the difference between the usefulness of a skill and an individual’s proficiency in this field (Nelson, 1991). For instance, from an IT-Infrastructure consultant’s perspective the ability to implement service management frameworks such as ITIL is crucial; hence, an IT-Infrastructure consultant with a low proficiency in ITIL shows a skill deficiency. With the same logic, a skill surplus can be defined as the difference between a professional’s proficiency in a skill and the usefulness of that
skill to successful job performance. Consequently, one can determine the greater the difference between usefulness and proficiency the higher the deficiency or surplus of the competences. When the consultant equally weights usefulness and proficiency of that skill, a “balance” occurs. By collecting these types of data, future research could examine the effect of deficiency and surplus of competences on performance. The results could have strong research and managerial implications.

The remarks above show that there are many potential research opportunities in this context, which are of high relevance for research and practice. The underlying results offer first starting points for future research in the field of competences, curriculum development or job performance research.
List of References


List of References


Brislin, R. (1981), Cross-Cultural Encounters: Face-to-Face Interaction, Allyn and Bacon, Boston [u.a.].


Cedefop (2012), Preventing Skill Obsolescence, Briefing Note, Cedefop, Thessaloniki.


Deardorff, D.K. (2004), The Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization at Institutions of Higher Education in the United States, North Carolina State University, Raleigh, NC.


Duffy, K. and Denison, B. (2008), Using ITIL to Improve IT Services Using ITIL to Improve IT Services, AMCIS 2008 Proceedings, Toronto.


Fowler, F. (2009), Survey Research Methods, Sage Publications.


Freudenberg IT (2013), IT Innovation Readiness Index 2013: Fertigender Mittelstand gut aufgestellt für Industrie 4.0, FIT Studie, Weinheim.


intercultural communication annual, 1st ed., Sage Publ, Thousand Oaks [u.a.], pp. 8–58.


ITIL (Ed.) (2011), ITIL® Glossary and Abbreviations.


Ladley, J. (2010), ““SOA Survey Results””, *Enterprise Data Journal*.


Neuliep, J., Hintz, S. AND McCroskey, J. (2005), “The Influence of Ethnocentrism in Organizational Contexts: Perceptions of Interviewee and Managerial At-


Patterson, P. (2006), *Effects of Study Abroad on Intercultural Sensitivity*, University of Missouri-Columbia.


Tani Fukuchi, N. AND Sakamoto, R. (2005), “Affective Dimensions of the Japanese Foreign Language Learner: Implications for Psychological Learner De-


Declaration of Academic Honesty

Hereby I affirm that I wrote the underlying thesis independently and that I did not use any literature source and aids other than quoted. All thoughts taken directly or indirectly from external sources are properly denoted as such.

Berlin, October 16, 2015

_____________________________
(Kyung-Hun Ha)
Appendix A

Literature Review
Intercultural Competence
In order to identify a comprehensive set of intercultural competence dimension, a literature analysis was performed according to WEBSTER AND WATSON (2002) by applying the process of BUHL ET AL. (2011). Due to the long history of this research field and the magnitude of publication, this thesis cannot analyze all relevant articles in detail. This Literature Review is based on a sample of research contributions published in accredited and well known journals and conference proceedings. The following databases were used to cover a wide field of different publications: EBSCOhost, EmeraldInsight, WileyInterScience, ScienceDirect and SpringerLink. Additionally, VHB JOUR QUAL and the Social Sciences Citation Index were considered as well to check on the quality of publications. However, one need to keep in mind that most of the publications in this field has not been published in A-ranked journals or conferences. Because of the matching research focus, proceedings of the Intercultural Horizons Conference, the International Conference of the Development and Assessment of Intercultural Competence, the Conference of the International Association of Cross-Cultural Competence and Management, and the International Conference on Intercultural Education were examined as well. The literature search was performed using the search fields "Title", "Abstract" and "Keywords" (see table A-1).

### Table A-1: Criteria of the literature analysis

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Shaping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Databases</td>
<td>EBSCOhost, EmeraldInsight, ScienceDirect, SpringerLink and WileyInterScience.</td>
</tr>
<tr>
<td>Supplementary Proceedings *</td>
<td>International Conference of the Development and Assessment of Intercultural Competence (ICC), Conference of the International Association of Cross-Cultural Competence and Management (IACCM), Intercultural Horizons Conference, Hawaii International Conference on Arts and Humanities, International Communication Association (ICA) Conferences</td>
</tr>
<tr>
<td>Search fields</td>
<td>Title OR Abstract OR Keywords**</td>
</tr>
<tr>
<td>Key phrases</td>
<td>See Table A-2</td>
</tr>
<tr>
<td>Search period</td>
<td>1.1.1990-30.6.2011</td>
</tr>
</tbody>
</table>

* If not included in other databases. ** If specifiable.

As this thesis examines the various dimensions of intercultural competence, a combination of search terms consisting of a first part „Interkulturelle Kompetenz“, „Multikulturelle Kompetenz“ or „Cross kulturelle Kompetenz“ and a second part „Skala“, „Messinstrument“ or „Operationalisierung“ and the Anglo-Saxon counterpart (see table A-2). Each search term was put into quotation marks, in order to search for the term as a whole and not for each word individually, hence limiting the search results to the essentials. Since the search field ‘keywords’ could not always be found among all considered databases, the search included searching within the ‘subject’ section of each database, whenever applicable.
Table A-2: List of used keyword combinations

<table>
<thead>
<tr>
<th>Keyword combination (German)</th>
<th>Keyword combination (English)</th>
</tr>
</thead>
<tbody>
<tr>
<td>„interkulturelle Kompetenz“ und „Skala“</td>
<td>„intercultural competence“ and „scale“</td>
</tr>
<tr>
<td>„cross-kulturelle (cross kulturelle) Kompetenz“ und „Skala“</td>
<td>„cross-cultural (cross cultural) competence“ and „scale“</td>
</tr>
<tr>
<td>„multikulturelle Kompetenz“ und „Skala“</td>
<td>„multicultural competence“ and „scale“</td>
</tr>
<tr>
<td>„interkulturelle Kompetenz“ und „Messinstrument“</td>
<td>„intercultural competence“ and „measurement“</td>
</tr>
<tr>
<td>„cross-kulturelle (cross kulturelle) Kompetenz“ und „Messinstrument“</td>
<td>„cross-cultural (cross cultural) competence“ and „measurement“</td>
</tr>
<tr>
<td>„multikulturelle Kompetenz“ und „Messinstrument“</td>
<td>„multicultural competence“ and „measurement“</td>
</tr>
<tr>
<td>„interkulturelle Kompetenz“ und „Operationalisierung“</td>
<td>„intercultural competence“ and „operationalization“</td>
</tr>
<tr>
<td>„cross-kulturelle (cross kulturelle) Kompetenz“ und „Operationalisierung“</td>
<td>„cross-cultural (cross cultural) competence“ and „operationalization“</td>
</tr>
<tr>
<td>„multikulturelle Kompetenz“ und „Operationalisierung“</td>
<td>„multicultural competence“ and „operationalization“</td>
</tr>
</tbody>
</table>

In order to sort out irrelevant articles the author has followed a step by step approach. Following PiCCOLI & IES (2005), the selection of articles identified by the keywords was conducted in three steps. At first, 3172 papers were identified based on the keywords. After reading title and abstract, the author decided whether an article provides an added value in terms of the measurement model and the defined research questions. To ensure a higher level of accuracy, the decisions were cross-checked by another researcher familiar with the research topic. If the second did not agree, publications were not further examined. Afterward, the selected publication were read and analyzed in detail in order to decide again if they provide an added value for the underlying analysis of measurement instruments. Table A-3 shows the results of the literature search with respect to the various databases (Buhl, 2011).

Table A-3: Outcomes of the databases

<table>
<thead>
<tr>
<th>Database</th>
<th>URL</th>
<th>Results (analyzed abstracts)</th>
<th>Analyzed articles (full text)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBSCOhost</td>
<td><a href="http://search.ebscohost.com">http://search.ebscohost.com</a></td>
<td>1621</td>
<td>131</td>
</tr>
<tr>
<td>EmeraldInsight</td>
<td><a href="http://www.emeraldinsight.com">http://www.emeraldinsight.com</a></td>
<td>51</td>
<td>7</td>
</tr>
<tr>
<td>ScienceDirect</td>
<td><a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a></td>
<td>314</td>
<td>27</td>
</tr>
<tr>
<td>SpringerLink</td>
<td><a href="http://www.springerlink.de">http://www.springerlink.de</a></td>
<td>849</td>
<td>69</td>
</tr>
<tr>
<td>WileyInterScience</td>
<td><a href="http://www3.interscience.wiley.com">http://www3.interscience.wiley.com</a></td>
<td>268</td>
<td>21</td>
</tr>
<tr>
<td>Conference</td>
<td><a href="http://cercll.arizona.edu">http://cercll.arizona.edu</a></td>
<td>69</td>
<td>9</td>
</tr>
<tr>
<td>Proceedings</td>
<td><a href="http://www.ticfie.com/interculturalhori">http://www.ticfie.com/interculturalhori</a> zons/</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.hichumanities.org/">http://www.hichumanities.org/</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.icahdq.org/">http://www.icahdq.org/</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The number of papers retained after analyzing the abstract was 418, of which 264 papers were found to be relevant for the final analysis of this thesis. Table A-4 illustrates the results after the last step of the article selection. A total of 264 highly relevant articles were selected for the present study.

Table A-4: Overview of the journals and conferences

<table>
<thead>
<tr>
<th>Journal</th>
<th>Final selected papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Journal of Intercultural Relations</td>
<td>63</td>
</tr>
<tr>
<td>Journal of International Business Studies</td>
<td>21</td>
</tr>
<tr>
<td>Language and Intercultural Communication</td>
<td>17</td>
</tr>
<tr>
<td>International Journal of Human Resource Management</td>
<td>14</td>
</tr>
<tr>
<td>Journal Of Cross-Cultural Psychology</td>
<td>11</td>
</tr>
<tr>
<td>International Journal of Cross Cultural Management</td>
<td>7</td>
</tr>
<tr>
<td>Journal of Managerial Psychology</td>
<td>6</td>
</tr>
<tr>
<td>Human Resource Management</td>
<td>5</td>
</tr>
<tr>
<td>Intercultural Communication Studies</td>
<td>5</td>
</tr>
<tr>
<td>Journal of Intercultural Communication Research</td>
<td>4</td>
</tr>
<tr>
<td>Journal of Applied Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Journal of Personality and Social Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Procedia - Social and Behavioral Sciences</td>
<td>4</td>
</tr>
<tr>
<td>Journal of Counseling Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Personnel Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Behavior Research and Therapy</td>
<td>3</td>
</tr>
<tr>
<td>Journal of European Industrial Training</td>
<td>3</td>
</tr>
<tr>
<td>Psychological Bulletin</td>
<td>3</td>
</tr>
<tr>
<td>The Academy of Management Journal</td>
<td>3</td>
</tr>
<tr>
<td>Journal of Intercultural Studies</td>
<td>3</td>
</tr>
<tr>
<td>Personology and Individual Differences</td>
<td>3</td>
</tr>
<tr>
<td>Journal of Business and Psychology</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Vocational Behavior</td>
<td>2</td>
</tr>
<tr>
<td>Journal of International Education in Business</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Management Development</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Studies in International Education</td>
<td>2</td>
</tr>
<tr>
<td>Human Communication</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Global Mobility: The Home of Expatriate Management Research</td>
<td>2</td>
</tr>
<tr>
<td>Personal</td>
<td>2</td>
</tr>
<tr>
<td>European Journal of Personality</td>
<td>2</td>
</tr>
<tr>
<td>Communication Research Report</td>
<td>2</td>
</tr>
<tr>
<td>Human Resource Development Review</td>
<td>2</td>
</tr>
<tr>
<td>Cross Cultural Management: An International Journal</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Applied Social Psychology</td>
<td>2</td>
</tr>
<tr>
<td>International Journal of Interdisciplinary Social Sciences</td>
<td>2</td>
</tr>
<tr>
<td>Education + Training Journal of Intellectual Capital</td>
<td>1</td>
</tr>
<tr>
<td>Personnel Review</td>
<td>1</td>
</tr>
<tr>
<td>Leadership &amp; Organization Development Journal</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Communication Management</td>
<td>1</td>
</tr>
<tr>
<td>Information and Management</td>
<td>1</td>
</tr>
<tr>
<td>Multicultural Education &amp; Technology Journal</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Leadership and Organizational Studies</td>
<td>1</td>
</tr>
<tr>
<td>Scandinavian Journal of Psychology</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Logistics</td>
<td>1</td>
</tr>
<tr>
<td>Journal</td>
<td>Final selected papers</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>European Management Journal</td>
<td>1</td>
</tr>
<tr>
<td>Career Development International</td>
<td>1</td>
</tr>
<tr>
<td>International Business Review</td>
<td>1</td>
</tr>
<tr>
<td>Human Resource Management Review</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Psychology</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Experimental Social Psychology</td>
<td>1</td>
</tr>
<tr>
<td>Academy of Management Review</td>
<td>1</td>
</tr>
<tr>
<td>Zeitschrift für Management</td>
<td>1</td>
</tr>
<tr>
<td>Zeitschrift für Betriebswirtschaft</td>
<td>1</td>
</tr>
<tr>
<td>Zeitschrift für Betriebswirtschaftliche Forschung</td>
<td>1</td>
</tr>
<tr>
<td>Project Management Journal</td>
<td>1</td>
</tr>
<tr>
<td>Applied Psychology</td>
<td>1</td>
</tr>
<tr>
<td>Human Communication Research</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Sociology and Social Policy</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Communication</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Logistics: Research and Applications</td>
<td>1</td>
</tr>
<tr>
<td>Review of Educational Research</td>
<td>1</td>
</tr>
<tr>
<td>Cross Cultural Orientation</td>
<td>1</td>
</tr>
<tr>
<td>Die Unternehmung</td>
<td>1</td>
</tr>
<tr>
<td>World Communication Journal</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Instructional Psychology</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Social Psychology</td>
<td>1</td>
</tr>
<tr>
<td>European Journal of Vocational Training</td>
<td>1</td>
</tr>
<tr>
<td>Consciousness and Cognition</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Community &amp; Applied Social Psychology</td>
<td>1</td>
</tr>
<tr>
<td>Group and Organization Studies</td>
<td>1</td>
</tr>
<tr>
<td>Communication Yearbook</td>
<td>1</td>
</tr>
<tr>
<td>Personality and Social Psychology Review</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sum of Journals:</strong></td>
<td><strong>255</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conference Proceedings</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Conference of the Development and Assessment of Intercultural Competence (ICC)</td>
</tr>
<tr>
<td>Conference of the International Association of Cross-Cultural Competence and Management (IACCM)</td>
</tr>
<tr>
<td>International Communication Association (ICA) Conferences</td>
</tr>
<tr>
<td>Intercultural Horizons Conference</td>
</tr>
<tr>
<td>Hawaii International Conference on Arts and Humanities</td>
</tr>
<tr>
<td><strong>Sum of Conference Proceedings:</strong></td>
</tr>
</tbody>
</table>
Appendix B

Intercultural Competence Scales (Selection)
<table>
<thead>
<tr>
<th>Dimension/Variable</th>
<th>Definition</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambiguity Tolerance</td>
<td>Ambiguity tolerance refers to the ability of an individual to tolerate</td>
<td>(Budner, 1962; Norton, 1975; Ruben, 1976; Ruben, 1979; Brislin, 1981;</td>
</tr>
<tr>
<td></td>
<td>information that is too complex, inadequate, or apparently contradictory</td>
<td>Nishida, 1985; Koester, 1988; Bennett, 1986; Black, 1989; Ronen, 1989;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1999; Thalbourne, 2000; Müller, 2001; Gudykunst, 2003; Gudykunst, 2005;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bors, 2010; Herman, 2010; Weisbrod, 2009; Stock, 2012; Slijkhuis, 2013)</td>
</tr>
<tr>
<td>Interpersonal Relationship</td>
<td>Interpersonal relationship refers to the ability of an individual to</td>
<td>(Byrnes, 1966; Sigman, 1980; Cushman, 1982; Abe, 1983; Dinges, 1983;</td>
</tr>
<tr>
<td></td>
<td>establish and maintain satisfactory interpersonal relations mainly build</td>
<td>McGuire, 1988; Dean, 1990; Cui, 1992; Krispin, 1992; Arthur, 1995;</td>
</tr>
<tr>
<td></td>
<td>Masgoret, 2006, p.321).</td>
<td>Ohbuchi, 2004; Gabel, 2005; Masgoret, 2006; Morreale, 2007; Trommsdorff,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007; Choudhury, 2012; Lustig, 2013; Tonkin, 2013)</td>
</tr>
<tr>
<td>Empathy</td>
<td>Empathy refers to the ability of an individual to relive the verbal and</td>
<td>(Cleveland, 1960; Lindgren, 1970; Ruben, 1976; Gudykunst, 1977; Wiemann,</td>
</tr>
<tr>
<td></td>
<td>non-verbal behavior of the interaction partner, to understand and to</td>
<td>1977; Ruben, 1979; Hwang, 1980; Brislin, 1981; Kealey, 1983; Nishida,1985;</td>
</tr>
<tr>
<td></td>
<td>neutral- ly interpret his reactions and feelings. (Hwang, 1980, p.73; Bell,</td>
<td>Bell, 1987; Koester, 1988; Imahori, 1989; Kealey, 1989; Hannigan, 1990;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Müller, 2004; Gabel, 2005; Deardorff, 2006; Leong, 2007; Calloway-Thomas,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010; Spitzberg, 2011; Stock, 2012; Barden, 2013; Freeth, 2013)</td>
</tr>
<tr>
<td>Outgoingness/Extraversion</td>
<td>Outgoingness/extraversion refers to individuals that are companionable,</td>
<td>(Gardner, 1962; Guthrie, 1967; Hawes, 1981; Brislin, 1981; Searle, 1990;</td>
</tr>
<tr>
<td></td>
<td>active, talkative, person-oriented, warm-hearted, optimistic, happy, and</td>
<td>Ward, 1993; Arthur, 1995; Parker, 1993; Jordan, 1998; Caligiuri, 2000;</td>
</tr>
<tr>
<td></td>
<td>susceptible for suggestions and excitement (Bozionelos, 2010; Harrison, 2012;</td>
<td>Norhayati, 2000; Chaisrakeo, 2004; Kosic, 2004; Mol, 2005; Shaffer, 2006;</td>
</tr>
<tr>
<td></td>
<td>p.227).</td>
<td>Lounsbury, 2009; Allan, 2010; Bozionelos, 2010; Bird, 2010; Harrison, 2012;</td>
</tr>
</tbody>
</table>
|                                   |                                                                           | Arman, 2013)
<table>
<thead>
<tr>
<th>Dimension/Variable</th>
<th>Definition</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercultural Self-Awareness</td>
<td>Intercultural self-awareness is referred to as the ability of an individual to reflect and understand knowledge, to understand one’s own orientation system and how it influences one’s own thinking and behavior, as well as to understand what consequences arise from the clash of one’s own and a foreign orientation system for the interactive and mutual comprehension (Thomas, 2003, p.141; Kupka, 2008, p.1773).</td>
<td>(Triandis, 1977; Long, 1986; Martin, 1986; Baril, 1994; Chen, 1996; Clément, 1996; Kealey, 1996; Byram, 1997; Hammer, 1998; Tucker, 1999; Bailey, 2000; Govern, 2001; Müller, 2001; Silvia, 2001; Gudykunst, 2003; Karim, 2003; Kim, 2003; Earley, 2004; Gudykunst, 2004; King, 2005; Arasaratnam, 2006; Deardorff, 2006; Spitzberg, 2006; Eisenchlas, 2007; Psalti, 2007; Kupka, 2008; Busch, 2009; Hiller, 2009; Şerban, 2013; Wu, 2013)</td>
</tr>
<tr>
<td>Dimension/Variable</td>
<td>Definition</td>
<td>Researchers</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dimension/Variable</td>
<td>Definition</td>
<td>Researchers</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Intercultural Communication</td>
<td>As stated above, intercultural competence is sometimes referred to intercultural communication competence. Therefore, following broad definition by KUPKA (2008) will be provided. Intercultural communication competence refers to &quot;impression management that allows members of different cultural systems to be aware of their cultural identity and cultural differences, and to interact effectively and appropriately with each other in diverse contexts by agreeing on the meaning of diverse symbol systems with the result of mutually satisfying relationships&quot; (Kupka, 2009, p.16).</td>
<td>(Harris, 1973; Benson, 1978; Hammer, 1978; Hawes, 1981; McCroskey, 1982; Dinges, 1983; Hecht, 1984; Hwang, 1985; Nishida, 1985; Parks, 1985; Hammer, 1987; Collier, 1988; Gallois, 1988; McGuire, 1988; Martin, 1989; Wiseman, 1989; Hannigan, 1990; Ting-Toomey, 1991; Gudykunst, 1992; Hecht 1992; Lustig, 1993; Luszczynska, 1993; Milhouse, 1993; Redmond, 1993; Martin, 1994; Martin, 1994; Hammer, 1996; Bradford, 1998; Guerrero, 1998; Ting-Toomey, 1998; Ting-Toomey, 1999; Lee, 2000; Redmond, 2000; Armstrong, 2001; Bush, 2001; Griffith, 2001; Gudykunst, 2002; Hajek, 2003; Lustig, 2003; Chaisrakeo, 2004; Gibson, 2005; Mol, 2005; Holmes, 2006; Shaffer, 2006; Stier, 2006; Arasaratnam, 2007; Hsu, 2007; Kupka, 2007; Koch, 2008; Kupka, 2008; Rickheit, 2008; Dilbeck, 2009; Keaten, 2009; Kupka, 2009; Arasaratnam, 2011; Hoskins, 2011; Yueqin, 2013)</td>
</tr>
<tr>
<td>Competence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Judgmentalism</td>
<td>Non judgmentalism refers to the characteristic of an individual of “holding no prejudices that will prevent one form listening sincerely to others during intercultural communication“ (Chen, 1996, p.363).</td>
<td>(Ruben, 1976; Gudykunst, 1977; Ruben, 1979; Buss, 1980; Martin, 1989; Cui, 1992; Chen, 1996; Roth, 2001; Leenen, 2002; Gudykunst, 2003; Deardorff, 2006; Hunter, 2006; Spitzberg, 2009; Dandy, 2010; Wongpakaran, 2012)</td>
</tr>
<tr>
<td>Dimension/Variable</td>
<td>Definition</td>
<td>Researchers</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Openness</td>
<td>Openness refers to an individual’s non-prejudiced attitude towards other individuals, a broad interest in things such as cultures, open-mindedness towards other opinions and suggestions as well as open-mindedness towards extraverted behavior (Arthur, 1995; van Oudenhoven, 2002).</td>
<td>(Gudykunst, 1977; Brislin, 1981; Hawes, 1981; Abe, 1983; Collier, 1988; Kealey, 1989; Martin, 1989; Nishida 1985; Hannigan, 1990; McEnery, 1990; Kets de Vries, 1991; Bhawuk, 1992; Cui, 1992; Thomas, 1993; Arthur, 1995; Byram, 1997; Jordan, 1998; Ting-Toomey, 1998; Kelley, 1999; Caligiuri, 2000; Caligiuri, 2000; Chen, 2000; McNally, 2000; Kühlmann, 2001; Mendenhall, 2001; Müller, 2001; van der Zee, 2000; van Oudenhoven, 2002; Ali, 2003, Lievens, 2003; Gelbrich, 2004; Tucker, 2004; van Hiel, 2004; van der Zee 2004; van der Zee, 2004; Hunter, 2006; Margaret, 2006; Osland, 2006; Shaffer, 2006; van Oudenhoven, 2007; Stone, 2006; Rajagopal, 2009; Groepel-Klein, 2010; Nguyen, 2010; Duff, 2012; Green, 2012; Thompson, 2012; Yakunina, 2012; Syed, 2013; Woo, 2013; van der Zee, 2013)</td>
</tr>
<tr>
<td>Patience</td>
<td>Patience refers to the general quality or ability of an individual to bear any kind of provocation, annoyance, and misunderstandings without complaint, loosing temper, or the like (Kealey, 1996; Tucker, 1999).</td>
<td>(Harris, 1977; Kealey, 1996; Tucker, 1999; Fantini, 2001; Anand, 2009; Trickett, 2011)</td>
</tr>
<tr>
<td>Respect</td>
<td>Respect refers to an individual's trait to value cultural diversity and hence, people from other culture (Deardorff, 2006).</td>
<td>(Haire, 1966; Ruben, 1976; Ruben, 1979; Hawes, 1981; Tung, 1981; Kealey, 1983; Nishida, 1985; Koester, 1988; Imahori, 1989; Martin, 1989; Ting-Toomey, 1999; Batelaan, 2001; Müller, 2001; Vulpe, 2001; Müller, 2004; Duronto, 2005; McCann, 2005; Lewis, 2006; Noble, 2007; Bodkin-Andrews, 2010; Chongruksa, 2011; Mackenzie, 2011)</td>
</tr>
<tr>
<td>Dimension/Variable</td>
<td>Definition</td>
<td>Researchers</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Role Flexibility</td>
<td>Role flexibility refers to the process of internal change. The individual’s cognitive, affective, and behavioral patterns are viewed to develop beyond their original, culturally conditioned psychological parameters (Kim, 1988, p.299).</td>
<td>(Brislin, 1983; Spitzberg, 1984; Kennedy, 1985; Kim, 1988; Imahori, 1989; Kim, 1991; Taylor, 1994; Watson, 2002; Helferich, 2003; Cassiday, 2005; Graf, 2005; Ergeneli, 2007; Frawley, 2009; van Woerkom, 2009; Tang, 2010; Nagata, 2011; Caputo, 2012; Rodriguez, 2012)</td>
</tr>
<tr>
<td>Self-Monitoring</td>
<td>Self-Monitoring refers to an individual’s motivation and ability to ensure socially appropriate or desired behavior at certain situations (Snyder, 1974).</td>
<td>(Snyder, 1974; Gudykunst, 1985; Hosch, 1986; Nowack, 1987; Gudykunst, 1989; Kealey, 1989; Trubisky, 1991; Gudykunst, 1992; Goodwin, 1994; Hamid, 1994; Harrison, 1996; Weierter, 1997; Caligiuri, 2000; Gangestad, 2000; Day, 2002; Graf, 2004; Kosic, 2006; Shivers-Blackwell, 2006; Spitzberg, 2006; Bachner-Melman, 2009; English, 2011)</td>
</tr>
</tbody>
</table>
Appendix C

Journals and Conferences of the ITI Literature Review
<table>
<thead>
<tr>
<th>Journal</th>
<th>Final selected papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Systems Research (ISR)</td>
<td>18</td>
</tr>
<tr>
<td>Journal of Management Information Systems (JMIS)</td>
<td>12</td>
</tr>
<tr>
<td>International Journal of Information Management (IJIM)</td>
<td>11</td>
</tr>
<tr>
<td>MIS Quarterly</td>
<td>9</td>
</tr>
<tr>
<td>Information and Management</td>
<td>6</td>
</tr>
<tr>
<td>Communications of the ACM</td>
<td>5</td>
</tr>
<tr>
<td>Business Process Management Journal (BPMJ)</td>
<td>4</td>
</tr>
<tr>
<td>Information Resources Management Journal</td>
<td>3</td>
</tr>
<tr>
<td>Communications of the AIS</td>
<td>3</td>
</tr>
<tr>
<td>Journal of the Association for Information Systems (JAIS)</td>
<td>3</td>
</tr>
<tr>
<td>IBM Journal of Research &amp; Development</td>
<td>3</td>
</tr>
<tr>
<td>IEEE Transactions on Engineering Management</td>
<td>3</td>
</tr>
<tr>
<td>Journal of Product Innovation Management</td>
<td>3</td>
</tr>
<tr>
<td>IT Professional</td>
<td>3</td>
</tr>
<tr>
<td>Bulletin of the American Society for Information Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td>Sloan Management Review</td>
<td>3</td>
</tr>
<tr>
<td>Behavior and Information Technology</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Strategic Information Systems (JSIS)</td>
<td>2</td>
</tr>
<tr>
<td>Transactions on Engineering Management</td>
<td>2</td>
</tr>
<tr>
<td>Journal of Information Systems</td>
<td>2</td>
</tr>
<tr>
<td>Organization Science</td>
<td>2</td>
</tr>
<tr>
<td>IBM Systems Journal</td>
<td>2</td>
</tr>
<tr>
<td>Journal of the Association for Information Systems</td>
<td>2</td>
</tr>
<tr>
<td>Decision Support Systems (DSS)</td>
<td>2</td>
</tr>
<tr>
<td>European Journal of Information Systems (EJIS)</td>
<td>2</td>
</tr>
<tr>
<td>Enterprise Information Systems</td>
<td>2</td>
</tr>
<tr>
<td>Omega</td>
<td>2</td>
</tr>
<tr>
<td>Information Week</td>
<td>1</td>
</tr>
<tr>
<td>Electronics and Communications in Japan</td>
<td>1</td>
</tr>
<tr>
<td>Communications of the ACM</td>
<td>1</td>
</tr>
<tr>
<td>Technovation</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Accounting Information Systems</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Business Logistics</td>
<td>1</td>
</tr>
<tr>
<td>Information Society</td>
<td>1</td>
</tr>
<tr>
<td>Journal of the Academy of Marketing Science (JAMS)</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Flexible Manufacturing Systems</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Information Technology (JIT)</td>
<td>1</td>
</tr>
<tr>
<td>Computers &amp; Security</td>
<td>1</td>
</tr>
<tr>
<td>Wirtschaftsinformatik</td>
<td>1</td>
</tr>
<tr>
<td>Decision Sciences</td>
<td>1</td>
</tr>
<tr>
<td>Tsinghua Science &amp; Technology</td>
<td>1</td>
</tr>
<tr>
<td>Information Technology &amp; People</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Parallel and Distributed Computing</td>
<td>1</td>
</tr>
<tr>
<td>Management Research News</td>
<td>1</td>
</tr>
<tr>
<td>Journal of the American Society for Information Science</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Information Technology &amp; Management</td>
<td>1</td>
</tr>
<tr>
<td>Development and Learning in Organization</td>
<td>1</td>
</tr>
</tbody>
</table>
### Journal

<table>
<thead>
<tr>
<th>Journal</th>
<th>Final selected papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers and Education</td>
<td>1</td>
</tr>
<tr>
<td>Personal and Ubiquitous Computing</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Engineering and Technology Management</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Business &amp; Management</td>
<td>1</td>
</tr>
<tr>
<td>IEEE Transactions on Smart Grid</td>
<td>1</td>
</tr>
<tr>
<td>Baylor Business Review</td>
<td>1</td>
</tr>
<tr>
<td>Stage by Stage</td>
<td>1</td>
</tr>
<tr>
<td>Asian Libraries</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Computers &amp; Technology</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Computer Information Systems</td>
<td>1</td>
</tr>
<tr>
<td>Technology in Society</td>
<td>1</td>
</tr>
<tr>
<td>Database for Advances in Information Systems</td>
<td>1</td>
</tr>
<tr>
<td>Computer and Information Science</td>
<td>1</td>
</tr>
<tr>
<td>Creativity and Innovation Management</td>
<td>1</td>
</tr>
<tr>
<td>Work Study</td>
<td>1</td>
</tr>
<tr>
<td>Management Decision</td>
<td>1</td>
</tr>
<tr>
<td>Journal of the Academy of Marketing Science</td>
<td>1</td>
</tr>
<tr>
<td>Applied Clinical Informatics</td>
<td>1</td>
</tr>
<tr>
<td>Pacific Asia Journal of the Association for Information Systems</td>
<td>1</td>
</tr>
<tr>
<td>Service Management and Engineering in Information Systems</td>
<td>1</td>
</tr>
<tr>
<td>Research</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Knowledge Management</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Systems and Information Technology</td>
<td>1</td>
</tr>
<tr>
<td>International Journal of Fundamental Psychology &amp; Social Sciences</td>
<td>1</td>
</tr>
<tr>
<td>Information Technology for Development</td>
<td>1</td>
</tr>
<tr>
<td>Quarterly Review of Economics &amp; Finance</td>
<td>1</td>
</tr>
</tbody>
</table>

**Sum of Journal Articles:** 159

### Conference Proceedings

<table>
<thead>
<tr>
<th>Conference Proceedings</th>
<th>Final selected papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Conference on Services Computing (SCC)</td>
<td>7</td>
</tr>
<tr>
<td>International Conference on Information Systems (ICIS)</td>
<td>6</td>
</tr>
<tr>
<td>Americas Conference on Information Systems (AMCIS)</td>
<td>4</td>
</tr>
<tr>
<td>International Conference on Computer and Electrical Engineering (ICCEE)</td>
<td>3</td>
</tr>
<tr>
<td>European Conference on Information Systems Conference on Information Systems (ECIS)</td>
<td>3</td>
</tr>
<tr>
<td>Hawaii International Conference on System Sciences (HICCS)</td>
<td>2</td>
</tr>
<tr>
<td>International Symposium on Integrated Network Management (IM)</td>
<td>2</td>
</tr>
<tr>
<td>International Conference on Computers, Networks, Systems, and Industrial Engineering (CNSI)</td>
<td>2</td>
</tr>
<tr>
<td>Pacific Asia Conference on Information Systems (PACIS)</td>
<td>1</td>
</tr>
<tr>
<td>International Symposium on High Performance Computer Architecture (HPCA)</td>
<td>1</td>
</tr>
<tr>
<td>International Symposium on Service-Oriented System Engineering (SOSE)</td>
<td>1</td>
</tr>
<tr>
<td>Conference Proceedings</td>
<td>Final selected papers</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Network Operations and Management Symposium (NOMS)</td>
<td>1</td>
</tr>
<tr>
<td>Australasian Conference (ACIS)</td>
<td>1</td>
</tr>
<tr>
<td>International Workshops on Enabling Technologies: Infrastructures for Collaborative Enterprises</td>
<td>1</td>
</tr>
<tr>
<td>American Society for Information Science and Technology Annual Meeting (ASIS &amp; T)</td>
<td>1</td>
</tr>
<tr>
<td>International Conference on Information Technology Interfaces (ITI)</td>
<td>1</td>
</tr>
<tr>
<td>International Conference on Coding and Computing</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sum of Conference Proceedings</strong></td>
<td><strong>38</strong></td>
</tr>
</tbody>
</table>
Appendix D

Literature Review of the ITI Competence Categories
<table>
<thead>
<tr>
<th>ITI Domains</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networks</td>
<td>McKay and Brockway, 1989; Karimi and Konsynski, 1991; Keen, 1991; Gibson, 1993; Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Lee et al., 1995; Brancheau and Wetherbe, 1996; Broadbent et al., 1997; Broadbent and Weil, 1997; Choi, 1998; Ciborra and Hanseth, 1998; Broadbent et al., 1999b; Broadbent et al., 1999a; Bharadwaj, 2000; Byrd and Turner, 2000, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Chatterjee et al., 2002; Bhatt, 2003; Born, 2003; Choi and Choi, 2002; Liu, 2002; Weill et al., 2002a; Chen, 2003; Chughtai et al., 2003; Dougherty and Stratopoulos, 2003; Tallon and Kreamer, 2003; Lewis and Byrd, 2003; Cordella, 2004; Hilhorst and Smits, 2004; Kumar, 2004; Gosain et al., 2005; Hilhorst et al., 2005; Ness, 2005; Ravichandran and Lertwongsatien, 2005; Ray et al., 2005; Baraldi and Nadin, 2006; Chanopas et al., 2006; King and Flor, 2008; Dai et al., 2007; Fink and Neumann, 2007; Karimi et al., 2007; Saraf et al., 2007; Byrd et al., 2008; Hilhorst et al., 2008; Paschke et al., 2008; Qi et al., 2008; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emad, 2010; Bush et al., 2010; Durmusoglu, 2010; Hicks et al., 2010; Prokosch et al., 2010; Jordi et al., 2011; Kim et al., 2011; Kim, 2011; Mithas et al., 2011; Ouf and Nasr, 2011; Pohorec and Zorman, 2011; Kim et al., 2012; Roberts and Grover, 2012; Ali, 2013; Pandey and Dutta, 2013; Wang et al., 2013</td>
</tr>
<tr>
<td>Application Functionality</td>
<td>McKay and Brockway, 1989; Keen, 1991; Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Broadbent et al., 1996; Best and May, 1997; Broadbent and Butler, 1997; Broadbent and Weil, 1997; Choi, 1998; Broadbent et al., 1999a; Bharadwaj, 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Datta, 2002a; Choi and Choi, 2002; Liu, 2002; Shaw, 2002; Weill et al., 2002a; Chen, 2003; Chung et al., 2003; Dehning and Stratopoulos, 2003; Mandal et al., 2003; Lewis and Byrd, 2003; Cordella, 2004; Hilhorst and Smits, 2004; Kumar, 2004; Bhatt and Troutt, 2005; Booth and Philip, 2005; Chughtai et al., 2005; Egyedi and Verwater-Lukszo, 2005; Gosain et al., 2005; Hilhorst et al., 2005; Hochstein et al., 2005; Ness, 2005; Ravichandran and Lertwongsatien, 2005; Ray et al., 2005; Baraldi and Nadin, 2006; Chanopas et al., 2006; King and Flor, 2008; Dai et al., 2007; Fink and Neumann, 2007; Karimi et al., 2007; Saraf et al., 2007; Byrd et al., 2008; Morrill et al., 2008; Paschke et al., 2008; Qi et al., 2008; El-Refaey, 2009; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emad, 2010; Davis and Golicic, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinenschmidt et al., 2010; Prokosch et al., 2010; Kim et al., 2011; Kim, 2011; Ouf and Nasr, 2011; Peng et al., 2011; Ghysari et al., 2012; Joachim et al., 2012; Joachim et al., 2013; Pandey and Dutta, 2013</td>
</tr>
<tr>
<td>Platform</td>
<td>McKay and Brockway, 1989; Karimi and Konsynski, 1991; Keen, 1991; Niederman et al., 1991; Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Evernden and Evernden, 1995; Lee et al., 1995; Brancheau and Wetherbe, 1996; Broadbent et al., 1996; Best and May, 1997; Broadbent and Butler, 1997; Broadbent and Weil, 1997; Choi, 1998; Ciborra and Hanseth, 1998; Broadbent et al., 1999b; Broadbent et al., 1999a; Bharadwaj, 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Chatterjee et al., 2002; Datta, 2002b; Bhatt, 2003; Born, 2003; Choi and Choi, 2002; Liu, 2002; Shaw, 2002; Weill et al., 2002a; Chen, 2003; Chung et al., 2003; Dehning and Stratopoulos, 2003; Mandal et al., 2003; Lewis and Byrd, 2003; Cordella, 2004; Hilhorst and Smits, 2004; Kumar, 2004; Bhatt and Troutt, 2005; Booth and Philip, 2005; Chung and Ford, 2005; Egyedi and Verwater-Lukszo, 2005; Gosain et al., 2005; Hilhorst et al., 2005; Hochstein et al., 2005; Ness, 2005; Ravichandran and Lertwongsatien, 2005; Ray et al., 2005; Baraldi and Nadin, 2006; Chanopas et al., 2006; King and Flor, 2008; Dai et al., 2007; Fink and Neumann, 2007; Karimi et al., 2007; Saraf et al., 2007; Byrd et al., 2008; Duffy and Denison, 2008; Hilhorst et al., 2008; Morrill et al., 2008; Paschke et al., 2008; Qi et al., 2008; El-Refaey, 2009; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emad, 2010; Davis and Golicic, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinenschmidt et al., 2010; Prokosch et al., 2010; Kim et al., 2011; Kim, 2011; Ouf and Nasr, 2011; Peng et al., 2011; Ghysari et al., 2012; Joachim et al., 2012; Joachim et al., 2013; Pandey and Dutta, 2013</td>
</tr>
<tr>
<td>ITI Domains</td>
<td>Sources</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>(Keen, 1991; Gibson, 1993; Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Lee et al., 1995; Branchaud and Wetherbe, 1996; Broadbent et al., 1996; Best and May, 1997; Broadbent and Butler, 1997; Broadbent and Weil, 1997; Choi, 1998; Ciborra and Hancox, 1998; Broadbent et al., 1999b; Carter, 1999; Deibel and Greenes, 1999; Bharadwaj, 2000; Byrd and Turner, 2000; Schwager et al., 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Choi and Choi, 2002; Dutta, 2002b, 2002a; Liu, 2002; Shaw, 2002; Chen, 2003; Chung et al., 2003; Dehning and Stratopoulos, 2003; Everdend and Everdend, 2003; Mandal et al., 2003; Tallon and Kreamer, 2003; Lewis and Byrd, 2003; Cordella, 2004; Kumar, 2004; Wade and Hulland, 2004; Bhatt, 2005; Chanopas et al., 2006; King and Flor, 2008; Dai et al., 2007; Fink and Neuman, 2007; Karimi et al., 2007; Peng, 2007; Byrd et al., 2008; Duffy and Denison, 2008; Hilhorst et al., 2008; Paschke et al., 2008; Qi et al., 2008; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bush et al., 2010; Davis and Golicic, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinschmidt et al., 2010; Prokosch et al., 2010; Bi et al., 2011; Kim et al., 2011; Wang et al., 2013)</td>
</tr>
<tr>
<td><strong>Data Management</strong></td>
<td>(McKay and Brockway, 1989; Keen, 1991; Gibson, 1993; Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Broadbent et al., 1996; Best and May, 1997; Broadbent and Butler, 1997; Broadbent and Weil, 1997; Broadbent et al., 1999b; Byrd and Turner, 2000; Schwager et al., 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Chatterjee et al., 2002; Bhatt, 2003; Born, 2002; Choi and Choi, 2002; Liu, 2002; Shaw, 2002; Weill et al., 2002a; Chen, 2003; Chung et al., 2003; Dehning and Stratopoulos, 2003; Mandal et al., 2003; Tallon and Kreamer, 2003; Lewis and Byrd, 2003; Bhatt and Troutt, 2005; Booth and Philip, 2005; Chung and Ford, 2005; Egyedi and Verwater-Lukszo, 2005; Gosain et al., 2005; Hilhorst et al., 2005; Hochstein et al., 2005; Ness, 2005; Chanopas et al., 2006; Dai et al., 2007; Karimi et al., 2007; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emdad, 2010; Davis and Golicic, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinschmidt et al., 2010; Bi et al., 2011; Guowei, 2011; Jorfi et al., 2011; Kim et al., 2011; Kim, 2011; Mithas et al., 2011; Kim et al., 2012; Roberts and Grover, 2012; Kumar and Stylianou, 2013; Wang et al., 2013)</td>
</tr>
<tr>
<td><strong>Architecture &amp; Standards</strong></td>
<td>(Keen, 1995; Duncan, 1995; Everdend and Everdend, 2003; Carter, 1999; Deibel and Greenes, 1999; Bharadwaj, 2000; Byrd and Turner, 2000; Schwager et al., 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Chatterjee et al., 2002; Dutta, 2002b; Weill et al., 2002a; Dehning and Stratopoulos, 2003; Lewis and Byrd, 2003; Cordella, 2004; Kumar, 2004; Wade and Hulland, 2004; Bhatt and Troutt, 2005; Booth and Philip, 2005; Hilhorst et al., 2005; Hochstein et al., 2005; Ness, 2005; Ravichandran and Lertwongsiton, 2005; Ray et al., 2005; Chanopas et al., 2006; King and Fung, 2008; Byrd et al., 2008; Duffy and Denison, 2008; Hilhorst et al., 2008; Morrill et al., 2008; Paschke et al., 2008; Qi et al., 2008; El-Refaey, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emdad, 2010; Bi et al., 2011; Ganesan and Sugumar, 2011; Mithas et al., 2011; Ouf and Nasr, 2011; Peng et al., 2011; Pohorec and Zorman, 2011; Kim et al., 2012; Roberts and Grover, 2012)</td>
</tr>
<tr>
<td><strong>IT-Service Management</strong></td>
<td>(McKay and Brockway, 1989; Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Everdend and Everdend, 2003; Lee et al., 1995; McKay and Brockway, 1989; Davenport and Linder, 1994; Duncan, 1995; Branchaud and Wetherbe, 1996; Broadbent et al., 1996; Best and May, 1997; Broadbent and Butler, 1997; Broadbent and Weil, 1997; Choi, 1998; Ciborra and Hancox, 1998; Broadbent et al., 1999b; Carter, 1999; Deibel and Greenes, 1999; Bharadwaj, 2000; Byrd and Turner, 2000; Schwager et al., 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Kayworth et al., 2001; Choi and Choi, 2002; Dutta, 2002b, 2002a; Liu, 2002; Shaw, 2002; Chen, 2003; Chung et al., 2003; Dehning and Stratopoulos, 2003; Mandal et al., 2003; Tallon and Kreamer, 2003; Lewis and Byrd, 2003; Bhatt and Troutt, 2005; Booth and Philip, 2005; Chung and Ford, 2005; Egyedi and Verwater-Lukszo, 2005; Gosain et al., 2005; Hilhorst et al., 2005; Hochstein et al., 2005; Ness, 2005; Chanopas et al., 2006; Dai et al., 2007; Karimi et al., 2007; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emdad, 2010; Davis and Golicic, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinschmidt et al., 2010; Bi et al., 2011; Guowei, 2011; Jorfi et al., 2011; Kim et al., 2011; Kim, 2011; Mithas et al., 2011; Kim et al., 2012; Roberts and Grover, 2012)</td>
</tr>
<tr>
<td>ITI Domains</td>
<td>Sources</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Brancheau and Wetherbe, 1996; Best and May, 1997; Broadbent and Butler, 1997; Broadbent and Weil, 1997; Byrd and Turner, 2000; Bhatt, 2003; Liu, 2002; Shaw, 2002; Weill et al., 2002a; Chen, 2003; Chung et al., 2003; Dehning and Stratopoulos, 2003; Mandal et al., 2003; Tallon and Kreamer, 2003; Lewis and Byrd, 2003; Hilhorst and Smits, 2004; Kumar, 2004; Wade and Hulland, 2004; Bhatt and Troutt, 2005; Booth and Philip, 2005; Egyedi and Verwater-Lukszo, 2005; Hilhorst et al., 2005; Hochstein et al., 2005; Ravichandran and Lertwongsatien, 2005; Ray et al., 2005; Baraldi and Nadin, 2006; Chang et al., 2006; Fink and Neumann, 2007; Karimi et al., 2007; Saraf et al., 2007; Byrd et al., 2008; Hilhorst et al., 2008; El-Refaey, 2009; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emdad, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinschmidt et al., 2010; Jorfi et al., 2011; Kim et al., 2011; Kim, 2011; Mithas et al., 2011; Peng et al., 2011; Gheysari et al., 2012; Pandey and Dutta, 2013; Wang et al., 2013)</td>
<td></td>
</tr>
</tbody>
</table>

| (Weill, 1993; Davenport and Linder, 1994; Duncan, 1995; Evernden and Evernden, 2003; Broadbent and Weil, 1997; Choi, 1998; Ciborra and Hanseth, 1998; Broadbent et al., 1999b; Broadbent et al., 1999a; Deibel and Greenes, 1999; Bharadwaj, 2000; Byrd and Turner, 2000; Schwager et al., 2000; Byrd and Turner, 2001; Bhatt and Stump, 2001; Chatterjee et al., 2002; Datta, 2002b, 2002a; Bhatt, 2003; Born, 2002; Choi and Choi, 2002; Liu, 2002; Shaw, 2002; Weill et al., 2002a; Mandal et al., 2003; Tallon and Kreamer, 2003; Lewis and Byrd, 2003; Cordella, 2004; Hilhorst and Smits, 2004; Kumar, 2004; Qi et al., 2008; El-Refaey, 2009; Fink and Neumann, 2009; Masrek and Kamaruzaman, 2009; Bhatt et al., 2010; Bhatt and Emdad, 2010; Bush et al., 2010; Davis and Golicic, 2010; Durmusoglu, 2010; Hicks et al., 2010; Kleinschmidt et al., 2010; Prokosch et al., 2010; Bi et al., 2011; Ganesan and Sugumaran, 2011; Guowei, 2011; Kim, 2011; Mithas et al., 2011; Ouf and Nasr, 2011; Peng et al., 2011; Roberts and Grover, 2012; Joachim et al., 2013) |
Appendix E

Factor Loadings and Construct Reliability
### Table 1: Intercultural Competence Construct

<table>
<thead>
<tr>
<th>Construct/Item</th>
<th>CR</th>
<th>ICSI Ind.</th>
<th>ICSI Col.</th>
<th>Open</th>
<th>Flex</th>
<th>PSA</th>
<th>HCA</th>
<th>FLC</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICSI Ind.</strong></td>
<td></td>
<td>0.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.1</td>
<td>0.89</td>
<td>0.71</td>
<td>0.55</td>
<td>0.62</td>
<td>0.65</td>
<td>0.67</td>
<td>0.64</td>
<td>0.64</td>
<td>0.58</td>
</tr>
<tr>
<td>ICSI Ind.2</td>
<td>0.81</td>
<td>0.72</td>
<td>0.46</td>
<td>0.61</td>
<td>0.53</td>
<td>0.60</td>
<td>0.53</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.3</td>
<td>0.82</td>
<td>0.68</td>
<td>0.55</td>
<td>0.60</td>
<td>0.59</td>
<td>0.60</td>
<td>0.58</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.4</td>
<td>0.86</td>
<td>0.74</td>
<td>0.50</td>
<td>0.60</td>
<td>0.68</td>
<td>0.63</td>
<td>0.65</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.5</td>
<td>0.82</td>
<td>0.66</td>
<td>0.47</td>
<td>0.53</td>
<td>0.57</td>
<td>0.56</td>
<td>0.59</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.6</td>
<td>0.82</td>
<td>0.75</td>
<td>0.50</td>
<td>0.62</td>
<td>0.52</td>
<td>0.59</td>
<td>0.57</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.7</td>
<td>0.83</td>
<td>0.70</td>
<td>0.52</td>
<td>0.57</td>
<td>0.56</td>
<td>0.59</td>
<td>0.64</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.8</td>
<td>0.83</td>
<td>0.66</td>
<td>0.60</td>
<td>0.50</td>
<td>0.62</td>
<td>0.56</td>
<td>0.64</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.9</td>
<td>0.87</td>
<td>0.70</td>
<td>0.58</td>
<td>0.60</td>
<td>0.63</td>
<td>0.65</td>
<td>0.68</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>ICSI Ind.10</td>
<td>0.79</td>
<td>0.63</td>
<td>0.48</td>
<td>0.48</td>
<td>0.50</td>
<td>0.56</td>
<td>0.57</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td><strong>ICSI Col.</strong></td>
<td></td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICSI Col.1</td>
<td>0.76</td>
<td>0.89</td>
<td>0.59</td>
<td>0.65</td>
<td>0.63</td>
<td>0.64</td>
<td>0.68</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.2</td>
<td>0.75</td>
<td>0.85</td>
<td>0.64</td>
<td>0.65</td>
<td>0.60</td>
<td>0.68</td>
<td>0.63</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.3</td>
<td>0.69</td>
<td>0.85</td>
<td>0.58</td>
<td>0.62</td>
<td>0.59</td>
<td>0.59</td>
<td>0.65</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.4</td>
<td>0.68</td>
<td>0.77</td>
<td>0.59</td>
<td>0.63</td>
<td>0.61</td>
<td>0.60</td>
<td>0.71</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.5</td>
<td>0.66</td>
<td>0.81</td>
<td>0.59</td>
<td>0.69</td>
<td>0.66</td>
<td>0.68</td>
<td>0.65</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.6</td>
<td>0.65</td>
<td>0.86</td>
<td>0.55</td>
<td>0.63</td>
<td>0.56</td>
<td>0.61</td>
<td>0.60</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.7</td>
<td>0.66</td>
<td>0.79</td>
<td>0.56</td>
<td>0.56</td>
<td>0.49</td>
<td>0.54</td>
<td>0.60</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.8</td>
<td>0.67</td>
<td>0.81</td>
<td>0.54</td>
<td>0.64</td>
<td>0.57</td>
<td>0.57</td>
<td>0.66</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.9</td>
<td>0.67</td>
<td>0.81</td>
<td>0.45</td>
<td>0.59</td>
<td>0.58</td>
<td>0.61</td>
<td>0.60</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>ICSI Col.10</td>
<td>0.70</td>
<td>0.82</td>
<td>0.59</td>
<td>0.61</td>
<td>0.55</td>
<td>0.64</td>
<td>0.66</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td><strong>Open</strong></td>
<td></td>
<td>0.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open1</td>
<td>0.57</td>
<td>0.62</td>
<td>0.89</td>
<td>0.58</td>
<td>0.58</td>
<td>0.55</td>
<td>0.71</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>Open2</td>
<td>0.42</td>
<td>0.54</td>
<td>0.76</td>
<td>0.48</td>
<td>0.44</td>
<td>0.47</td>
<td>0.52</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>Open3</td>
<td>0.58</td>
<td>0.62</td>
<td>0.89</td>
<td>0.54</td>
<td>0.55</td>
<td>0.56</td>
<td>0.64</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>Open4</td>
<td>0.52</td>
<td>0.53</td>
<td>0.83</td>
<td>0.51</td>
<td>0.51</td>
<td>0.49</td>
<td>0.58</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td><strong>Flex</strong></td>
<td></td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flex1</td>
<td>0.60</td>
<td>0.65</td>
<td>0.53</td>
<td>0.86</td>
<td>0.53</td>
<td>0.59</td>
<td>0.54</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Flex2</td>
<td>0.55</td>
<td>0.61</td>
<td>0.51</td>
<td>0.81</td>
<td>0.52</td>
<td>0.56</td>
<td>0.55</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Flex3</td>
<td>0.54</td>
<td>0.61</td>
<td>0.54</td>
<td>0.83</td>
<td>0.49</td>
<td>0.58</td>
<td>0.54</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Flex4</td>
<td>0.61</td>
<td>0.67</td>
<td>0.54</td>
<td>0.85</td>
<td>0.53</td>
<td>0.60</td>
<td>0.67</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>Construct/Item</td>
<td>CR</td>
<td>ICSI Ind.</td>
<td>ICSI Col.</td>
<td>Open</td>
<td>Flex</td>
<td>PSA</td>
<td>HCA</td>
<td>FLC</td>
<td>NC</td>
</tr>
<tr>
<td>---------------</td>
<td>----</td>
<td>----------</td>
<td>----------</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>PSA 0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.87</td>
<td>0.50</td>
<td>0.57</td>
<td>0.49</td>
</tr>
<tr>
<td>PSA1</td>
<td>0.60</td>
<td>0.58</td>
<td>0.50</td>
<td>0.54</td>
<td>0.50</td>
<td>0.54</td>
<td>0.87</td>
<td>0.50</td>
<td>0.57</td>
</tr>
<tr>
<td>PSA2</td>
<td>0.60</td>
<td>0.58</td>
<td>0.53</td>
<td>0.50</td>
<td>0.50</td>
<td>0.53</td>
<td>0.81</td>
<td>0.60</td>
<td>0.60</td>
</tr>
<tr>
<td>PSA3</td>
<td>0.60</td>
<td>0.64</td>
<td>0.53</td>
<td>0.55</td>
<td>0.55</td>
<td>0.53</td>
<td>0.83</td>
<td>0.53</td>
<td>0.58</td>
</tr>
<tr>
<td>PSA4</td>
<td>0.58</td>
<td>0.59</td>
<td>0.49</td>
<td>0.51</td>
<td>0.51</td>
<td>0.51</td>
<td>0.77</td>
<td>0.52</td>
<td>0.51</td>
</tr>
<tr>
<td>PSA5</td>
<td>0.53</td>
<td>0.49</td>
<td>0.45</td>
<td>0.45</td>
<td>0.45</td>
<td>0.73</td>
<td>0.42</td>
<td>0.33</td>
<td>0.34</td>
</tr>
<tr>
<td>PSA6</td>
<td>0.53</td>
<td>0.57</td>
<td>0.51</td>
<td>0.47</td>
<td>0.52</td>
<td>0.88</td>
<td>0.53</td>
<td>0.58</td>
<td>0.48</td>
</tr>
<tr>
<td>HCA 0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCA1</td>
<td>0.58</td>
<td>0.60</td>
<td>0.51</td>
<td>0.58</td>
<td>0.58</td>
<td>0.52</td>
<td>0.87</td>
<td>0.68</td>
<td>0.57</td>
</tr>
<tr>
<td>HCA2</td>
<td>0.58</td>
<td>0.60</td>
<td>0.51</td>
<td>0.58</td>
<td>0.58</td>
<td>0.52</td>
<td>0.87</td>
<td>0.68</td>
<td>0.57</td>
</tr>
<tr>
<td>HCA3</td>
<td>0.68</td>
<td>0.73</td>
<td>0.53</td>
<td>0.64</td>
<td>0.57</td>
<td>0.86</td>
<td>0.69</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>HCA4</td>
<td>0.61</td>
<td>0.63</td>
<td>0.55</td>
<td>0.60</td>
<td>0.54</td>
<td>0.83</td>
<td>0.63</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>HCA5</td>
<td>0.64</td>
<td>0.66</td>
<td>0.50</td>
<td>0.59</td>
<td>0.59</td>
<td>0.84</td>
<td>0.64</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>HCA6</td>
<td>0.62</td>
<td>0.65</td>
<td>0.55</td>
<td>0.62</td>
<td>0.54</td>
<td>0.88</td>
<td>0.65</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>HCA7</td>
<td>0.58</td>
<td>0.58</td>
<td>0.55</td>
<td>0.61</td>
<td>0.53</td>
<td>0.86</td>
<td>0.66</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>HCA8</td>
<td>0.60</td>
<td>0.59</td>
<td>0.50</td>
<td>0.53</td>
<td>0.47</td>
<td>0.85</td>
<td>0.62</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>HCA9</td>
<td>0.63</td>
<td>0.66</td>
<td>0.54</td>
<td>0.60</td>
<td>0.58</td>
<td>0.86</td>
<td>0.69</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>HCA10</td>
<td>0.58</td>
<td>0.60</td>
<td>0.51</td>
<td>0.58</td>
<td>0.52</td>
<td>0.87</td>
<td>0.68</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>FLC 0.99</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLC1</td>
<td>0.73</td>
<td>0.77</td>
<td>0.73</td>
<td>0.68</td>
<td>0.66</td>
<td>0.78</td>
<td>0.97</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>FLC2</td>
<td>0.67</td>
<td>0.74</td>
<td>0.68</td>
<td>0.66</td>
<td>0.62</td>
<td>0.74</td>
<td>0.95</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>FLC3</td>
<td>0.72</td>
<td>0.74</td>
<td>0.70</td>
<td>0.65</td>
<td>0.65</td>
<td>0.73</td>
<td>0.97</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>FLC4</td>
<td>0.72</td>
<td>0.76</td>
<td>0.68</td>
<td>0.66</td>
<td>0.62</td>
<td>0.74</td>
<td>0.97</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>FLC5</td>
<td>0.69</td>
<td>0.75</td>
<td>0.74</td>
<td>0.66</td>
<td>0.62</td>
<td>0.74</td>
<td>0.97</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>NC 0.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC1</td>
<td>0.70</td>
<td>0.73</td>
<td>0.63</td>
<td>0.63</td>
<td>0.56</td>
<td>0.62</td>
<td>0.76</td>
<td>0.96</td>
<td></td>
</tr>
<tr>
<td>NC2</td>
<td>0.66</td>
<td>0.71</td>
<td>0.59</td>
<td>0.59</td>
<td>0.54</td>
<td>0.60</td>
<td>0.74</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>NC3</td>
<td>0.64</td>
<td>0.70</td>
<td>0.62</td>
<td>0.60</td>
<td>0.49</td>
<td>0.58</td>
<td>0.73</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td>NC4</td>
<td>0.71</td>
<td>0.76</td>
<td>0.68</td>
<td>0.66</td>
<td>0.56</td>
<td>0.62</td>
<td>0.77</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>NC5</td>
<td>0.65</td>
<td>0.72</td>
<td>0.64</td>
<td>0.59</td>
<td>0.52</td>
<td>0.61</td>
<td>0.81</td>
<td>0.96</td>
<td></td>
</tr>
</tbody>
</table>
### Table 2 IT-Infrastructure Construct:

<table>
<thead>
<tr>
<th>Construct/Item</th>
<th>CR</th>
<th>ITSM</th>
<th>Net</th>
<th>HW</th>
<th>SW</th>
<th>DB</th>
<th>MGMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITSM</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITSM1</td>
<td>0.92</td>
<td>0.38</td>
<td>0.46</td>
<td>0.20</td>
<td>0.34</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>ITSM2</td>
<td>0.93</td>
<td>0.37</td>
<td>0.41</td>
<td>0.25</td>
<td>0.33</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>ITSM3</td>
<td>0.92</td>
<td>0.40</td>
<td>0.44</td>
<td>0.23</td>
<td>0.34</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>ITSM 4</td>
<td>0.91</td>
<td>0.31</td>
<td>0.39</td>
<td>0.12</td>
<td>0.29</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>ITSM5</td>
<td>0.91</td>
<td>0.34</td>
<td>0.39</td>
<td>0.13</td>
<td>0.32</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>ITSM6</td>
<td>0.94</td>
<td>0.30</td>
<td>0.36</td>
<td>0.11</td>
<td>0.27</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Net</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1</td>
<td>0.39</td>
<td>0.92</td>
<td>0.30</td>
<td>0.21</td>
<td>0.40</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>N2</td>
<td>0.38</td>
<td>0.92</td>
<td>0.32</td>
<td>0.14</td>
<td>0.35</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>N3</td>
<td>0.37</td>
<td>0.91</td>
<td>0.27</td>
<td>0.17</td>
<td>0.37</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>N4</td>
<td>0.29</td>
<td>0.92</td>
<td>0.23</td>
<td>0.06</td>
<td>0.18</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>N5</td>
<td>0.31</td>
<td>0.91</td>
<td>0.26</td>
<td>0.08</td>
<td>0.23</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>N6</td>
<td>0.32</td>
<td>0.92</td>
<td>0.22</td>
<td>0.06</td>
<td>0.23</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>HW</td>
<td>0.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>0.42</td>
<td>0.31</td>
<td>0.94</td>
<td>0.35</td>
<td>0.25</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>0.42</td>
<td>0.29</td>
<td>0.92</td>
<td>0.35</td>
<td>0.29</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>H3</td>
<td>0.45</td>
<td>0.28</td>
<td>0.94</td>
<td>0.34</td>
<td>0.24</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>H4</td>
<td>0.40</td>
<td>0.27</td>
<td>0.94</td>
<td>0.27</td>
<td>0.24</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>H5</td>
<td>0.38</td>
<td>0.25</td>
<td>0.93</td>
<td>0.32</td>
<td>0.20</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>H6</td>
<td>0.40</td>
<td>0.22</td>
<td>0.94</td>
<td>0.35</td>
<td>0.25</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>SW</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>0.19</td>
<td>0.08</td>
<td>0.34</td>
<td>0.92</td>
<td>0.39</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>0.11</td>
<td>0.13</td>
<td>0.29</td>
<td>0.90</td>
<td>0.37</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>0.17</td>
<td>0.17</td>
<td>0.40</td>
<td>0.94</td>
<td>0.37</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>S4</td>
<td>0.19</td>
<td>0.12</td>
<td>0.32</td>
<td>0.94</td>
<td>0.33</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>S5</td>
<td>0.18</td>
<td>0.11</td>
<td>0.28</td>
<td>0.92</td>
<td>0.32</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>S6</td>
<td>0.21</td>
<td>0.12</td>
<td>0.33</td>
<td>0.95</td>
<td>0.34</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>0.36</td>
<td>0.32</td>
<td>0.24</td>
<td>0.35</td>
<td>0.91</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>0.28</td>
<td>0.29</td>
<td>0.25</td>
<td>0.37</td>
<td>0.90</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>DB3</td>
<td>0.34</td>
<td>0.27</td>
<td>0.24</td>
<td>0.33</td>
<td>0.91</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Construct/Item</td>
<td>CR</td>
<td>ITSM</td>
<td>Net</td>
<td>HW</td>
<td>SW</td>
<td>DB</td>
<td>MGMT</td>
</tr>
<tr>
<td>---------------</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>DB4</td>
<td>0.30</td>
<td>0.30</td>
<td>0.23</td>
<td>0.34</td>
<td>0.91</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>DB5</td>
<td>0.28</td>
<td>0.30</td>
<td>0.22</td>
<td>0.34</td>
<td>0.89</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>DB6</td>
<td>0.30</td>
<td>0.26</td>
<td>0.24</td>
<td>0.34</td>
<td>0.92</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>MGMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>MGMT1</td>
<td>0.32</td>
<td>0.71</td>
<td>0.33</td>
<td>0.29</td>
<td>0.30</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>MGMT2</td>
<td>0.28</td>
<td>0.67</td>
<td>0.30</td>
<td>0.24</td>
<td>0.28</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>MGMT3</td>
<td>0.27</td>
<td>0.69</td>
<td>0.32</td>
<td>0.28</td>
<td>0.33</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>MGMT4</td>
<td>0.27</td>
<td>0.67</td>
<td>0.26</td>
<td>0.19</td>
<td>0.18</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>MGMT5</td>
<td>0.27</td>
<td>0.67</td>
<td>0.30</td>
<td>0.19</td>
<td>0.18</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>MGMT6</td>
<td>0.29</td>
<td>0.67</td>
<td>0.26</td>
<td>0.21</td>
<td>0.15</td>
<td>0.95</td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

Content of the CD-ROM

- Qualitative interviews
  - Transcripts of the interviews (Word file)
  - Analysis of the interviews (Excel file)
  - List of all codes (Excel file)

- Qualitative job profile analysis
  - List of all analyzed jobs (pdf file)
  - List of all relevant data and codes (Excel file)

- Questionnaire
  - Data security statement (Word file, pdf file)
  - Employees (Excel files, pdf files)
  - Supervisors (Excel file, pdf file)

- Quantitative Pre-Test
  - Anonymised data set (csv file)
  - Pre-Test analysis (SPSS files)

- Quantitative Main Study
  - Anonymised data set (Excel file)
  - Explorative Factor Analysis (SPSS file)
  - Measurement and Structural Models (WarpPLS project file)
  - WarpPLS-Reports for quality criteria (txt.file)
  - Multigroup Analysis (Excel file, WarpPLS project file, txt file)