

Natalia Mašlan

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the Efficacies of TQM in
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Under the Influence of Russian
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Preface

One of the central goals of business research is to examine the conditions under which companies can achieve their best possible results. Since companies are highly complex systems, both external and internal conditions play an equally important role. The quality management system of a company affects exactly the interface between the company's internal service provision and the company's external service sale: Its effectiveness determines the transaction costs and production costs of value creation, the customer satisfaction, and ultimately the sustainability of the underlying business model.

Quality management systems in companies have been around since the late 1940s. In 1950, the American scientist *W. Edwards Deming* published a well-known 14-point quality improvement program that became one of the main drivers of the quality movement. Since then, companies have been using different approaches and methods such as Total Quality Management to improve and optimize their quality management system. "Quality" in companies is a value that is assigned different significance for business success, depending on the company itself and the industry. This corresponds to the quality-related requirements and expectations that are set as benchmarks by people inside and outside the company. Therefore, a company in one specific industry will likely need a different quality management system than a company in another industry. An additional factor influencing the meaning of "quality" in companies is the respective country in which the company operates, and thus the cultural assessment of quality. National cultures differ, for example, in their willingness to accept risks, which is closely related to the safeguarding effect of quality management systems.

This is exactly where *Natalia Mašlan's* dissertation comes in: She wants to compare Russian and German quality management systems – their setup, mode of operation, effectiveness, and importance – and places this from the outset in the larger context of globalization, cultural diversity, and the cross-cultural convergence or divergence of management models. Methodologically, she pursues a research approach that integrates quality management and intercultural management in a quantitative-empirical study. The timing of the dissertation is before the *Zeitenwende* (turning point) marked by the Russian war of aggression against Ukraine in 2022, which will certainly represent a fundamental game-changer for the Russian economy.

With her work, *Natalia Mašlan* sets an important course in three ways: First, in her research-related and theoretical-conceptual foundations, she creates a substantial, up-to-date overview of the status of the impact evaluation of quality management systems. Second, she fulfills her claim to empirically carry out such an impact evaluation in a concrete cross-cultural application case in a methodologically convincing manner. Third, she derives design principles from this that will allow internationally active companies to deal with their transnational Total Quality Management in a more differentiated way.

The present dissertation by *Natalia Mašlan* thus makes a valuable contribution to empirically supported basic research with regard to the comparative evaluation of cultural impact in a future-relevant context of action. Her findings will have an effect on the design of quality management in companies. I wish *Natalia Mašlan's* dissertation a broad reception in the scientific community and a powerful impact in corporate practice.

Siegen, July 2023

Univ.-Prof. Dr. Volker Stein

Acknowledgement

Writing a dissertation is not only your longtime research—it is a whole segment of your life, with its ups and downs, and your surroundings partially determine the success of such a project. I am very fortunate to be surrounded by people who have supported me in this special part of my life, and I would like to express my heartfelt thanks to each and every one of these individuals.

First, I would like to express my heartfelt thanks to my doctoral advisor (Doktorvater), Univ.-Prof. Dr. Volker Stein, for his invaluable, tremendous support that has greatly influenced my personal and professional growth. After each discussion on the topic of my dissertation, I was filled with ideas of what I still needed to work on or what I needed to look at from a different perspective, but most importantly, I was filled with the belief that I should keep moving forward.

Furthermore, I would like to sincerely thank Univ.-Prof. Dr. Peter Letmathe, who played a significant role in my decision to start a Ph.D. and provided full and extensive support during the initial phase of my doctoral studies. I also extend my gratitude to my colleagues at the former chair of Univ.-Prof. Dr. Peter Letmathe at the University of Siegen, with whom I started my journey and who always accompanied me with advice, encouragement, and kind words.

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Finally, I would like to mention that without private support, this dissertation would not have come to fruition. Thanks to my husband Michal, my children Iven and Vera, my mom, my dad, and my friends, who always understood and accepted that I never had enough time to be with them as I dedicated it to my dissertation. One had to witness my son, who couldn't hold back words of joy that we could finally go to the cinema as he heard that I successfully passed the Ph.D.

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List of Abbreviations

AS	Assertiveness
AVOE	Added value per employee
CFOI	Cash flow by investment ratio
DOE	Debt to equity ratio
EU	European Union
EFQM	European Foundation for Quality Management
Et al.	Et alia meaning “and others”
FDI	Foreign direct investments
FMR	Financial and market results
FO	Future Orientation
GLOBE	Global Leadership Organizational Behavior Effectiveness Research
HO	Human Orientation
IC	Institutional Collectivism
I4.0	Industry 4.0
KMO	Kaiser-Meyer-Olkin
MBNQA	Malcolm Baldrige National Quality Award
Mil	Million
OE	Organizational effectiveness
OP	Operational manager
P	Practices
PD	Power Distance
QM	Quality Management
R&D	Research and development
ROA	Return on assets
ROS	Return on sales
SMCs	small and medium-sized companies
SOA	Sales revenue per total assets
TQM	Total Quality Management
U.S.	United States
UA	Uncertainty Avoidance
USA	United States of America
USSR	Union of Soviet Socialist Republics
V	Value
WOS	Working capital to sales ratio

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“[...] the single greatest barrier to business success is the one erected by culture.” (E.T. Hall/M.R. Hall)

1. Introduction

1.1. Research Questions

Every research process begins with the formulation of the research problem and the derivation of the research question (Kaya, 2007, p.49). The current study is no exception and starts with the introduction of the research problem background, bringing the reader to the derivation of research questions.

“A traveler across the desert wastes of the Sahara arrives at last at Timbuktu, where the first denizen he meets is wearing a Texaco baseball cap” (Toynbee, 2000, p.191). Such facts do not astonish anybody today and belong to our everyday life – the life we live in the globalization era.

Globalization provides new incredible opportunities for organizations but challenges them at the same time, demanding from them a highly competitive level to be able to survive and operate effectively. Such increasing competitive pressure leads to the sustainable and understandable need of organizations to develop and improve themselves by learning from the most promising management models implemented by competitors (Pudelko, 2004, p.140). One of the possible ways for organizations to stay highly competitive or even to outperform competitors is regarded to be an implementation of Total Quality Management (TQM) that is found to be critical in maintaining competitive advantages of organization (Kaynak, 2003, p.425; Sila, 2007, p.101; Zhang et al., 2012, p.12; Zhang and Xia, 2013, p.132; Lee and Park, 2016, p.310; Evans and Lindsay, 2019, pp.13–14; Shafiq et al., 2019, p.45).

TQM, the management method, focused on quality leading to business success, started its success story first in Japan in the 1940s and then moved to the USA in the early 1980s during the recovery and rebuilding of their economies after World War II. Due to the political, economic, and business climate of the 1980s, the United States was seen “as a model of good practice in all these fields” (Guest, 1990, p.377) and American management systems have been often automatically considered universally good and effective (Pudelko, 2004, p.143). The successful post-war development of the USA confirmed the effectiveness of TQM as a management tool (Al Zoubia et al., 2020, p.762). This accelerated the expansion of TQM across the borders of different countries. TQM is now a world-renowned management system that is even promoted through governmental programs and national quality competitions (Evans and Lindsay, 2019, pp.14–15).

But for scientists it is still questionable if and to what extent management practices are universally applicable on a global scale (Barmeyer et al, 2021, p.120). Globalization and the growing interdependence between countries does not lead to the alignment between cultures. On the contrary, it leads to new challenges caused by cultural differences (House et al., 2004, p.5). Even globalization process harmonizes some social, cultural, and economic aspects of organization in different countries, their cultural diversity remains present (Barmeyer et al., 2021,

p.1). That's why every cross-national benchmarking is tied together with the problem of convergence or divergence of management models (Pudelko, 2004 p.141).

The convergence hypothesis argues that the societies of the world are becoming more similar regarding industrial development and institutional patterns (Inkeles, 2019, p.24). Consequently, organizations can implement any management tools undermining the national culture's effect on workers' behavior. The divergence hypothesis, on the contrary, argues that national cultural values dominate the behavior of the workers, and it is not possible to change the "deep-rooted cultural forces" that "re-assert themselves in the way people actually behave and relate to each other" (Child and Kieser, 1979, p.253). This would imply that management tools created outside of their own cultural context cannot always prove themselves successful (Pudelko, 2004, p.143). The convergence versus divergence or culture-bound versus culture-free debate is a central question in intercultural management (Barmeyer et al., 2021, pp.1,11).

Indeed, even though scientific research results proving the efficacy of TQM prevail in the literature, researchers also report unsuccessful efforts at getting benefits from TQM implementation (Douglas and Judge, 2001, p.158; Kaynak, 2003, p.405; Sila, 2007, p.83; Corredor and Goñi, 2011, p. 836). Several scientists assume that one of the possible reasons for TQM failures can be that TQM is a culture-dependent management tool (Detert et al., 2000, p.850; Kujala and Lillrank, 2004, p.53; Sila, 2007, p.83, Sadikoglu and Olcay, 2014, p.1). Detert et al. call the cultural differences "key variables" explaining the success or failure of the improvement initiatives (Detert et al., 2000, p. 850). Kujala and Lillrank argue that without studying TQM as a cultural phenomenon, the framework of TQM is incomplete and cannot be promoted further (Kujala and Lillrank, 2004, p.53). Other scientists joined the call of Detert et al. and Kujala and Lillrank to explore TQM from the point of view of the scientific convergence divergence debate (Rungtusanathan et al., 2005, p.44; Flynn and Saladin, p. 2006, p.599; Sila, 2007, p.94; Kull and Wacker, 2010, p.235; Wu and Zhang, 2013, p. 287; Zhang and Wu, 2014, p.99; Sila and Walczak, 2017, p.367; Alofan et al., 2020, p.186).

Motivated by the existing literature gap and the calls of several authors for future research studies, the current dissertation should contribute to answering the question of national cultures' influence on the efficacy of TQM, providing scientific, theoretically driven empirical research.

The empirical data for the current study have been collected in German and Russian manufacturing organizations situated and operating in Germany and Russia, respectively. Only organizations with no foreign capital were allowed to take part in the research to avoid the additional influence of other cultures on this organization, as employees of multinational organizations "are incubated by the cultural mix" of their firms and "therefore are no longer to be considered as solely mono-cultural" (Barmeyer et al., 2020, p.524).

The choice of Germany and Russia as countries of comparison is not the decisive factor, but an example of how the cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically regardless of which countries it refers to, as the question of implementing business practices in another cultural context has a significant relevance for all multinational companies all over the world (Barmeyer et al., 2021, p.120).

Addressing all written above, the research questions of the current dissertation have been formulated:

- How effective will TQM be if implemented in German organizations with no foreign capital that are situated and operating in Germany?
- How effective will TQM be if implemented in Russian organizations with no foreign capital that are situated and operating in Russia?
- Does TQM in German and Russian organizations situated and operating in their respective countries have the same efficacy (support for the convergence hypothesis) or not (support for the divergence hypothesis)? If not, under the influence of German or Russian national cultures, will the efficacy of TQM be higher?

At the very beginning of the research, it is important to define exactly not only what is to be investigated but why it is of interest and to whom (Riesenhuber, 2007, p.5). The following section takes a reader through the detailed scientific and practical relevance of the current study.

1.2. Scientific and Practical Relevance

Meaningful research cannot pursue exclusively practical goals or exclusively theoretical goals and usually has practical and theoretical relevance (van der Velde and Anderson 2004, p.14). Theoretical relevance refers to the contribution to scientific progress, and practical relevance means a contribution to the solution of specific issues existing in praxis (Riesenhuber, 2007, p.5). The following subsections reveal the high scientific and practical relevance of the current study.

1.2.1. Scientific Relevance

The topic of the cross-cultural applicability and efficacy of TQM belongs to the scientific debate on the convergence versus divergence or culture-bound versus culture-free debate, which is referred to be a central scientific question in intercultural management (Barmeyer et al., 2021, pp.1,11). The topic of the efficacy of TQM depending on culture has been receiving great attention from researchers, but the results are still controversial (Deming, 1982; Detert et al., 2000; Sousa-Poza et al., 2001; Kujala and Lillrank, 2004; Zhao et al., 2004; Rungtusanatham et al., 2005; Flynn and Saladin, 2006; Jung et al., 2008; Vecchi and Brennan, 2009; Wehnert, 2009; Kull and Wacker, 2010; Wu and Zhang, 2013; Zhang and Wu, 2014; Sila and Walczak, 2017; Sila, 2018; Shafiq et al., 2019; Alofan et al., 2020). Scientists have been drawing attention to the research gaps, which should be filled with more evidence. In 2000, Detert et al. drew the attention of researchers to the need for multicultural theory-driven empirical research “to replace anecdotes, intuition and vague statements about the importance of culture with more formal theory and empirical evidence” about whether national culture is important for the success of TQM and how national cultures impact the efficacy of TQM (Detert et al., 2000, p.859). In 2004, Kujala and Lillrank underlined the lack of the theoretical basis for TQM as a “cultural phenomenon” and called scientists to investigate the ideal quality culture, which environmental conditions support this culture, and what

are the consequences of the mismatch of the ideal and real culture (Kujala and Lillrank, 2004, p.53). In the year 2005, Rungtusanathan et al. concluded that there is a need for “theory-driven empirical research that compares and contrasts TQM adoption across multiple countries” (Rungtusanathan et al., 2005, p.44). The authors also suggested investigating the adoption of TQM in developing countries, countries with centrally planned economies, and/or countries transforming from a planned economy to a market economy (Rungtusanathan et al., 2005, p.58). In 2006, Flynn and Saladin underlined an immense potential in future research about national culture and its effect on management practices (Flynn and Saladin, p. 2006, p.599). In 2007, Sila called for further research on the topic of national culture as a context factor that can play a role in TQM’s efficacy (Sila, 2007, p.94), suggesting testing his TQM-Performance model in cross-country studies “to shed more light on whether the convergence hypothesis also holds for the TQM practices and TQM-Performance relationships of companies operating across different country boundaries” (Sila, 2007, p.103). In 2009, Vecchi and Brennan drew attention to the fact that not enough effort has been devoted to evaluating the impact of national cultural dimensions on quality management and “whether the quality is, or should be, managed differently in different national cultures” (Vecchi and Brennan, 2009, pp.151–152). In 2010, Kull and Wacker suggested that the multiple facets of each cultural dimension, as well as other cultural reasons, should be further explored to better understand how quality management (QM) effectiveness changes across cultural boundaries (Kull and Wacker, 2010, p.235). In 2014, Zhang and Wu underlined the need for the theoretical base to explain the interaction between TQM practices and national culture, arguing that “understanding the local culture and adapting the QM practices that congruent with the culture would benefit the firms most” (Zhang and Wu, 2014, p. 99). In 2020, Alofan et al. called for research on how the interaction of national and organizational culture influenced the adaptation of management practices, in particular TQM (Alofan et al., 2020, p.186). The current study should provide more scientific evidence to the question if culture is a “key variable” that moderates the efficacy of TQM (Detert et al., 2000, p.850) and thus contribute to the convergence versus divergence or culture-bound versus culture-free debate.

Moreover, as the trend of business development and organizational interaction across country boundaries concerns almost all organizations all over the world (Barmeyer et al., 2021, p.13), the next question to be answered by the current research is how a cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically regardless of which countries it refers to.

In 2017, Sila and Walczak supported the statement of Laosirihongthong et al. (2013) that there was a need for more research to understand the efficacy of TQM in developing countries since quality development is at various stages in developed and developing countries (Sila and Walczak, 2017, p.367). Shafiq et al. have also recently stated there is only a little evidence of how TQM practices influence organizational performance in developing economics (Shafiq et al., 2019, p.32). Singh calls for TQM-related empirical studies to compare TQM issues between developed and developing countries (Singh, 2010, p.13). García-Fernández et al. conclude in their recent systematic analysis of quality-performance-related scientific literature that most studies have been conducted in the USA, Australia, Spain, and

Malaysia (García-Fernández et al., 2022, p.12). Indeed, research into whether national culture plays a role in QM and TQM efficacy has been conducted intensively in recent years, mainly in the USA, Western Europe, and Asia. Burkhard (2007, p.17) analyzes that the number of publications on the TQM approach in Germany has been declining since the late 1990s. Truly little (in Germany) to almost no (in Russia) empirical research has been done regarding how effective TQM is if implemented in German and Russian organizations. This lack of international scientific research of TQM in Russian organizations might be attributed to Russia's cultural complexity and difficulty in getting access to the sample in Russia because, considering history, people are suspicious about attempts to learn about their views and assessments (Grachev et al., 2012, p.810, Kobernyuk, 2014, p.473). Savin (2005, p.190), Grachev et al. (2012, p.810), and Anghel (2012, p.34) underlined the difficulty of accessing the data of Russian companies in detail. Schwengel described the data collection of organizations in Russia as a pioneering achievement and wrote in the foreword to the research of Anghel (2012) that once a sufficiently large corpus of similar studies has been formed, the methodological approach can be used better. The collection of empirical data in Russia has also been one of the challenges of the current dissertation.

Addressing all mentioned gaps, the current dissertation has a high scientific relevance as it is a scientific theory-driven empirical cross-countries research, which gives an answer to the question of the national cultures of Germany and Russia's influence on the efficacy of TQM and under the influence of German or Russian national cultures TQM is more effective, provides a "blueprint" of how a cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically regardless of which countries it refers to and contributes to the convergence versus divergence or culture-bound versus culture free debate, which is a central scientific question in intercultural management (Barmeyer et al., 2021, pp.1,11).

1.2.2. Practical Relevance

It is the duty of science not to conduct theoretical research but actively to work on solving concrete issues in practice (Bortz and Döring, 2002, p.344.)

The study offers great practical benefits for German, Russian, and German-Russian organizations, which are discussed in detail in 1.2.2.1, 1.2.2.2 and 1.2.2.3 accordingly. Ahead of the question of the practical relevance of the topic für German-Russian organizations, it is necessary to note that the core of the current research relates exactly to the period before 24.02.22 when Russia invaded Ukraine. The relevance of the analysis of TQM's efficacy in Russia, as well as the comparison between German and Russian organizations, is (at least), in retrospect, unrestricted.

1.2.2.1. Benefits for Organizations in Germany

The high-quality products that Germany brings to the market are the results of the quality principles embedded in the German national production system, which has been concentrated since the early stage of industrialization on the production of higher value-added goods (Anghel, 2012, p.179). Traditionally, the understanding of quality in Germany is related to the assuring product quality (Burkhard, 2007, p.3). The belief of German organizations that

the existence of quality assurance would be enough first did not support TQM development in Germany (Zink, 2000, p.1). The interest in TQM implementation in Germany appeared with the introduction of the EFQM Excellence Award in 1988 derived from MBNQA (Zink, 2000, p.3), which is nowadays a widespread guideline model for German organizations to implement TQM. In 1997, the German quality prize, the Ludwig Erhard Prize, was awarded for the first time, making Total Quality Management well known in Germany (Burkhard, 2007, p.5). The current stage of development of TQM is affected by Industry 4.0, the fourth industrial revolution, often known as Industry 4.0 (I4.0), first introduced in Germany in 2011 (Akhmatova et al., 2022, p.1516; Kashif and Satirenjit, 2022, p.1625). As “Industry 4.0 has been planned to act as an engine for further development of the global manufacturing industry, ensuring meeting individual customer requirements, optimizing decision-making, promoting smart technologies and adding new product capacities”, its philosophy complies with TQM ideas (Akhmatova et al., 2022, p.1516). TQM practices combined with I4.0 should help organizations to stay competitive by the global competition (Saha et al., 2022, p.506). Sader et al. argue that conventional quality management practices, such as TQM, will be extended in the coming future to Quality 4.0 (Sader et al., 2022, pp.1164,1181). Authors suggest that “Quality 4.0 has three major features such as automation of inspection for both products and processes, advanced analysis of Total Quality Management and Business Excellence, data and results, and the integration of these results in the production value chain” (Sader et al., 2022, p.1179). The topics of the interplay between I4.0, TQM, and organizational performance, as well as transformation of TQM into Quality 4.0, are relatively new for both scientists and practitioners and need to be investigated intensively by scientists.

Quality management has a long tradition in Germany which goes back in the 19th century. The world known label "Made in Germany" is nowadays related to the high quality but was intended as an insult being prescribed by the British Parliament in 1887 to identify poor quality goods from German industrial production for English consumers (Ewing, 2014, p.3). However, Germany has managed within a few decades to transform it to the seal of quality symbolizing of the highest quality of goods and services all over the world (Ewing, 2014, p.3). According to the study "Germany in the Eyes of the World 2015", German products are worldwide known for their "endurance, functionality and high quality" (GIZ, 2015, p.83). In 2017, Germany took the first place in the product categories quality and safety standards, and the second place in the product categories excellent design (after Italy), advanced technology (after Japan) and authenticity (after Switzerland) in the survey of around 43000 consumers in 52 countries about which countries around the globe have the best image as manufacturers and exporters (Made-in-country-index (MICI), 2017, pp.14–15). In 2019, average 61% of respondents in developed countries and 84% in average of respondents in emerging countries which took part in the survey Edelman Trust Barometer (2019) agreed that German products were well-engineered high-quality products and services, but the trust in the brand "Made in Germany" decreased compared to last year, especially in the developed countries (Edelman Trust Barometer, 2019, p.16).

These warning signals are disturbing for Germany as Germany belongs to the leading countries which benefit from the world globalization: “German companies have been export

oriented since at least the nineteenth century, but in the last decade, new technology has supercharged their ability to operate globally” (Ewing, 2014, p.77). Dieselgate, Deutsche Bank scandals and the lawsuits against Bayer and Monsanto may have played an important role in the decrease of trust to “Made in Germany”. Entrepreneurs in Germany are concerned about the image of “Made in Germany” appealing that Germany should not be too convinced of its own infallibility and must not lose sight of innovative strength (Higgins, Interview, 2022). As the quality seal “Made in Germany” has been being a successful trademark of German products on the global market (Burkhard, 2007, p.3) and therefore the competitive advantage of German organizations, the issue of the trust in the label “Made in Germany” and thus the issues of TQM and its impact on the competitiveness of German organizations is an up-to-date topic for all German managers. The results of the present study should shed more light on the question of whether and which benefits TQM implementation gives German organizations, giving managers new impulses in their decisions on increasing competitiveness of German organizations.

1.2.2.2. Benefits for Organizations in Russia

It is wrong to think that QM and TQM are completely new operating areas for Russian organizations. Production operations support, laddering of failures and statistical quality control, quality groups, and quality programs were implemented in the Soviet Union (Gorbunov, 2007, p. 215). The soviet system guaranteed the production of qualitative goods, the quality of which was confirmed through the State Committee for Standardization and Methodology (Gosstandard) when all requirements for goods were developed and fixed by the state (Yusupov, 2014, p.19). Until the early 1980s, the Soviet quality system kept pace with the times when quality meant meeting the standard (Maslov and Belokorovin, 2008, p.16). During the same period in Japan and later in the USA and other Western countries, the understanding grew that the policy “I sell what I can produce” needed to be changed to the policy “I produce what I can sell.” Quality of production received a new focus: satisfaction of consumer needs (Gorbunov, 2007, p.215). The “Perestroika” of the 1980s, the collapse of the Soviet Union in 1991, and the following radical change of economic principles set a new task for Russian management to reorganize all processes and systems of management in Russia (Gorbunov, 2007, p.214). Managers had to learn in a very short time how to rule enterprises, the success of which is determined by the consumer and not by the artificial plan created by the government. Russian organizations turned to the experience of the western countries and actively learned and adopted the TQM system, which had already established itself as a successful tool for business improvement (Gorbunov, 2007, p.214). The government of the Russian Federation established the Russian National Quality Award, modeled after EFQM, in 1996 In order in order to promote TQM in Russia (Khoo and Tan, 2002, p.263).

The catch, however, was that managers in the Western economies perceived the TQM principles such as customer orientation, continuous improvement, process approach, involvement and commitment of employees, and social responsibility as natural integral business principles because they came to the West as a result of a natural evolutionary process, whereas Russian managers faced them suddenly and often perceived them as artificial principles they had to follow in the hope to make organizations competitive Managers in Russia

understood that the old soviet philosophy had to be changed, but at the same time, not all organizations had structures allowing this change. For example, the Russian autocratic leadership style was “not supportive of the new quality management philosophy, which advocates encouraging employee participation and feedback for improving quality at all levels, as well as the use of employee empowerment strategies” (Khoo and Tan, 2002, p.264). The mentality of workers had to be changed also to a remarkably high extent: “For over 70 years, the Soviet system created a type of worker with a low level of interest in the quality of productive work, with no real participation in organization improvement, and psychologically indifferent to all innovations” (Radovilsky (1994, p. 49). Additionally, the immaturity of the consumer determines the price as a decisive factor at a goods’ choice, and, finally, the lack of knowledge of how and what has to be changed. All these factors have been barriers on the way of TQM to its success in Russia, disturbing the adequate perception of the TQM concept in Russia (Gorbunov, 2007, p.216). The pessimism and disbelief in TQM’s ability to bear real fruit for an enterprise, as well as the increasing belief that quality management systems are bureaucratic systems, the only benefit of which is the certificate, became the widespread attitudes to the TQM implementation in Russia (Gorbunov, 2007, p.216). The comparative analysis of the motivation of the Russian and European enterprises in implementing quality management systems reveals that European enterprises implemented quality management with the purpose to improve quality or to expand, and Russian organizations tried to implement it with the goal to receive a quality certificate because such a certificate can be a requirement for getting a state order or for entering foreign markets. In 2002, eleven years after the collapse of the USSR, Khoo and Tan described TQM in Russia as an infant compared to TQM development in other countries of the world but expressed a hope that TQM would play an increasingly important role after the Russian economic system grows as a market-regulated economy, and Russian organizations compete on the domestic and global market (Khoo and Tan, 2002, p.263). In 2007 Gorbunov confirmed the problems of the implementation of TQM in Russia and assumed that the next 8–10 years would be needed till Russian organizations will be prepared to implement TQM as a management tool to increase the competitiveness of the organization (Gorbunov, 2007, p.222). In 2014 Kobernyuk asserted that the barriers for TQM, which existed twenty years ago, decreased or evolutionarily disappeared, and Russian managers were eager to learn and adopt successful foreign management systems (Kobernyuk, 2014, p.472). “Russian organizations have undergone significant changes since the 1990s. A new generation of Russian managers has come to the fore in Russia, who are eager to learn and open to Western knowledge” (Koveshnikov et al., 2012, p.371).

Managers in Russia should be able to assess the benefits that the implementation of TQM would bring to their organization. The current analysis of the Russian, German-speaking, and English-speaking literature shows that there are still very few solid theory-driven empirical studies on the efficacy of TQM in Russia. The present study should give Russian managers theoretically and empirically proven answers to the question of whether TQM implementation in Russia can bring real fruit for their organizations and increase their competitiveness.

1.2.2.3. Benefits for German-Russian Organizations

Western multinational companies face challenges transferring management practices to their foreign subsidiaries due to misunderstandings and misalignment of management practices in other countries (Bausch et al., 2022, in press). The unsuccessful transfer can impact organizational performance of these companies (Barmeyer and Davoine, 2019, p.2). Very little is known about quality management practices within this cross-cultural context of Germany and Russia despite Russia's importance for German economics and the number of local subsidiaries established by German organizations in Russia.

Russia has been successfully developing from a state-regulated economy to a market economy, offering huge opportunities for the Western organizations which have been attracted to Russia because of its size and geographic potential, its reserves of oil and gas, its market size with almost 150 million potential consumers, the growing income of the population, relatively limited local competition, its advanced technologies, and highly skilled scientists (Elenkov, 1998, p.133; Alexashin and Blenkinsop, 2005, p.428; Anghel, 2012, p.1). German organizations have been actively expanding their business activities and foreign trade to and with the Russian Federation since the collapse of the USSR. Since 2017, Germany has occupied first place among EU countries and second place (after China) among all countries all over the world in terms of trade with the Russian Federation (Shchegoleva and Terenteva, 2021, pp.3–7). The close cooperation led to the formation of various forms of German-Russian joint ventures with headquarters in Germany. Intercultural management assumes that the success of joint ventures depends on the effective circulation of knowledge and ideas between headquarters and subsidiaries (Barmeyer et al., 2021, p.119). Although cultural aspects are regarded to be one of the most frequent reasons for the failure of management concepts, German firms still tend to reproduce their German management practices in Russia, reflecting their dependence on a national framework of institutional and corporate cultural arrangements (Anghel, 2012, p.1). Trompenaars and Hampden-Turner argue that enterprises tend to implement management tools in their overseas subsidiaries that they are successful in, but these tools can be unproductive in other cultures (Trompenaars and Hampden-Turner, 1997, p.5). Headquarters of joint ventures often try to adopt their business processes in the subsidiaries to achieve more transparency and coherence (Barmeyer et al., 2021, p.119). The comparison between the TQM's efficacy in Germany and Russia should have given the knowledge to German headquarters to forecast if TQM would pay if implemented in Russian subsidiaries.

1.3. Objective

The overall goals of the current dissertation are to shed more light on the debate on the universality of TQM, to provide a “blueprint” of how a cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically regardless of which countries it refers to, and, as the goal of every scientific work, to give clear answers to research questions (Kornmeier, 2007, pp.6–8).

The research questions to be answered in the current study have been formulated in 1.1:

- How effective will TQM be if implemented in German organizations with no foreign capital that are situated and operating in Germany?
- How effective will TQM be if implemented in Russian organizations with no foreign capital that are situated and operating in Russia?
- Does TQM in German and Russian organizations situated and operating in their respective countries have the same efficacy (support for the convergence hypothesis) or not (support for the divergence hypothesis)? If not, under the influence of German or Russian national cultures, will the efficacy of TQM be higher?

To reduce the complexity of the overall objective of the study, it was divided into the sub-goals, which are to be reached systematically:

- The first sub-goal is to define what TQM is and how it will be measured in the current study.
- The second sub-goal is to define what TQM efficacy is and how it will be measured in the current study.
- The third sub-goal is to compare German and Russian national cultures and relate the comparison to the TQM efficacy in these cultures theoretically.
- The fourth sub-goal is to derive hypotheses about the efficacy of TQM in Germany and in Russia and hypothesize the comparative results between the efficacy of TQM in Germany and in Russia.
- The fifth sub-goal is to conduct the empirical analysis of the derived hypotheses.
- The final goal is to analyze the empirical research results and formulate clear answers to the research questions.

1.4. Structure

The present dissertation is structured into five chapters. Each chapter builds on one another, guiding the reader’s comprehension through the study.

Chapter 1 formulates the three research questions (1.1) and explains the scientific and practical relevance (1.2) and goal setting (1.3), structure (1.4), and scientific classification (1.5) of the study.

Chapter 2 deals with the theoretical basics of the study, where all underlying terms of the field of investigation are defined. The first section of chapter (2.1) is devoted to the definition of what TQM is and which practices form the TQM system. In the second section of chapter

(2.2), the term culture is defined, and the cultural profiles of Russia and Germany are described. Section 2.2 ends up with a comparison of Russian and German national cultures. Sections 2.1 and 2.2 are integrated in Section 2.3, which addresses the efficacy of TQM. The section presents the analysis of the scientific literature about what TQM efficacy is and how it differs in dependence on the national cultures. Section 2.3.3 derives theoretical answers to the three research questions of the study, which will be modeled and empirically tested in Chapters 3 and 4.

Chapter 3 gives an overview of the framework of the study. For this purpose, a mental model is set up (Section 3.1). Then the hypotheses are derived (Section 3.2), and the methodology of the investigation is explained (Section 3.3).

Chapter 4 is devoted to the empirical validation of the theoretical model through statistical analysis. It starts with the sample description (Section 4.1), followed by the scale validation (Section 4.2) and the statistical analysis of hypotheses (Section 4.3), ending up with the consolidation of statistical results (Section 4.4).

Chapter 5 summarizes and evaluates the central findings of the work in Section 5.1, discusses limitations of the study in Section 5.2, as well as implications for the practice (Section 5.3), theory (Section 5.4), and future research (Section 5.5).

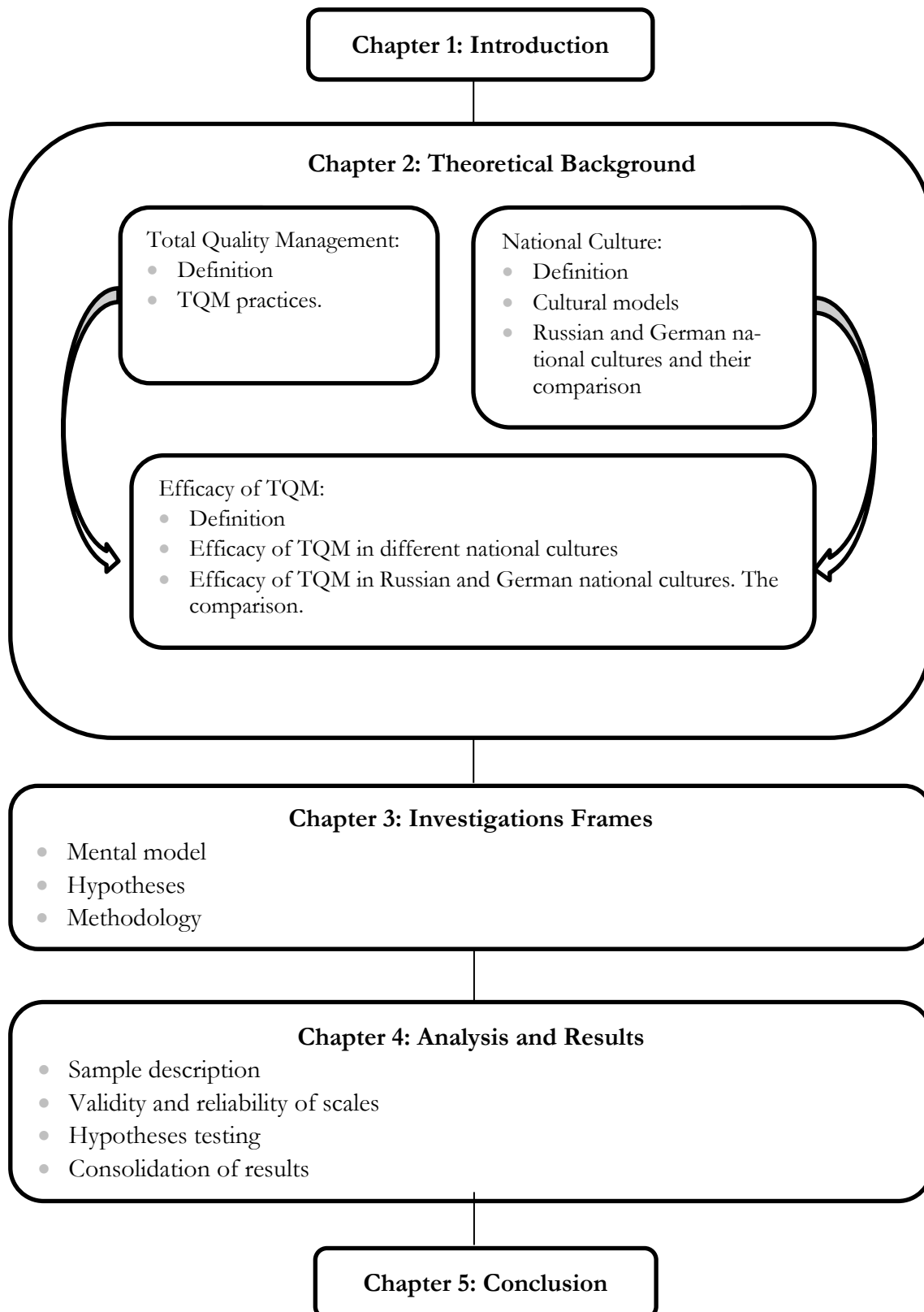


Figure 1: The Structure of the Current Study

1.5. Scientific Classification

The well-known expression “scientifically proven” means that the statement is well-founded and not even able to be doubted, implying that science is treated with profound respect in everyday life and, of course, in academia (Chalmers, 2007, p.1). However, how does something become “scientifically proven” and, accordingly, so respectable and reliable in the eyes of all people? The same two questions, “How does one distinguish science from pseudoscience?” and “How does science acquire new knowledge?” were the central concerns for *Karl Popper*, one of the 20th century’s most influential and significant philosophers of science (Maxwell, 2017, pp.8, 12).

Popper gives the answer to the first question that the theory should be referred to as scientific if it is empirically falsifiable because scientific theories cannot be verified, but they can only be falsified (Maxwell, 2017, pp.8,13). Science creates theories, which are then subjected to observational and experimental refutation. After the scientific theory is falsified empirically, a better new theory that gives more understanding of the world should be sought. The new theory should be refuted again empirically and thus needs to be replaced, giving science the possibility to acquire new knowledge. Such an approach rejects one of the broad reasoning approaches in science—the inductive scientific method—which starts from observations and experiments that are then developed to broader generalizations and theories through detecting patterns, formulating hypotheses to be explored, and finally making conclusions about the general laws and theories. As Popper asserts that evidence cannot verify these theories no matter how much evidence supports the theory, he concludes that science never progresses from the inductive scientific method (Riesenhuber, 2007, p.3; Maxwell, 2017, p.13). Deductive logic, conversely, means the narrowing down of general theories to specific hypotheses, which can be tested with specific data and used to make predictions and offer explanations (Chalmers, 2007, p.45). Popper underlines that in the deductive approach, the logical derivation of hypotheses is very important for this scientific method, as well as the fact that not the number of experiments that test the theory, but the rigor of the test is decisive for its empirical validity (Popper, 1966, p.5 quoted from Riesenhuber, 2007, p.3). Figure 2 reflects the induction and deduction scientific reasoning approaches.

The current dissertation is quantitative empirical research that uses the deductive scientific approach. The study arises from the global management debate on the universal validity of management practices in different national cultures (convergence—divergence hypotheses). The theory that underlies the current dissertation asserts that the TQM system does not have the same efficacy in different national cultures, referring to the divergence hypothesis, which asserts that national culture values dominate the behavior of the workers resulting in the fact that the same management practices cannot be similarly successful in all national cultures. The validity of this basic theoretical assumption is proven empirically in compliance with all scientific rules. For the empirical test, general propositions (hypotheses) are derived logically from the basic theoretical assumption with the help of already published results of other scientists. If the empirical check of hypotheses is positive, the conclusion will be considered verified and the system as proven. If the theoretically predicted processes are not proven empirically, both the hypothesis and the basic theoretical assumptions from which it is derived will be considered

falsified (Riesenhuber, 2007, p.2). After it is known if the hypotheses and the basic assumption are proven or refuted, the recommendations for operational managers, as well as the gaps for future research, will be formulated.

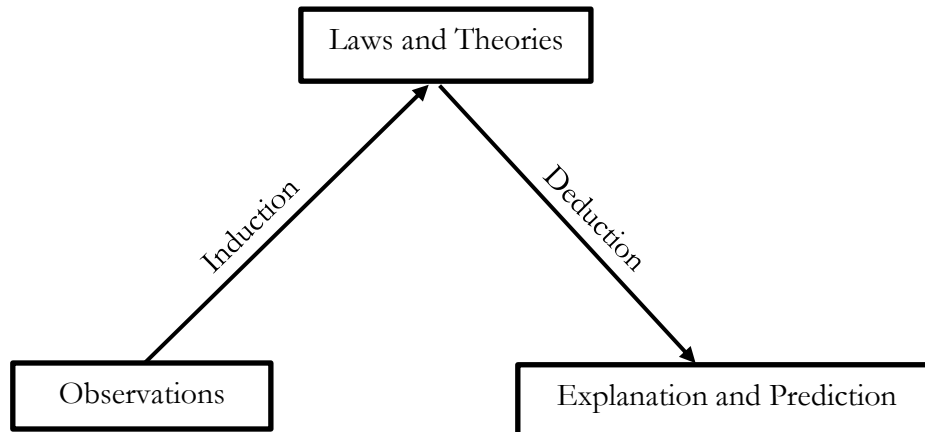


Figure 2: *Induction and Deduction Approaches* (Chalmers, 2007, p.46)

2. Theoretical Background

2.1. TQM

2.1.1. Definition of TQM

Definition of TQM has been formed gradually over time with the development of QM into TQM.

It is widely assumed that QM took its start in early 1920 by using the U.S. statistician *Walter Shewhart's* statistical theory for quality control (Yong and Wilkinson, 2010, p.248).

Deming, Juran, Crosby, and Feigenbaum developed it further in the 1940s in Japan through evolutionary phases such as inspection, quality control, quality assurances, and finally, TQM, which main goal was to satisfy external and internal customers through quality within all issues in an organization (Othman, 2020, p.698)

The post-World War II period was characterized by the shortage of civilian goods, which made the quantity and not the quality to objectives of the industry. *Dr. Josef Juran* and *Dr. W. Edwards Deming*, two U.S. consultants, educated Japanese top management to integrate quality aspects in the entire organization, developing the culture of continuous improvement. This process of quality ideas implementation in Japanese industry was a long-lasting, steady, and complicated process, but by the 1970s, the high-quality level of Japanese goods enabled Japanese organizations to penetrate the American and European markets creating the new quality expectations of the customers worldwide and taking the economic lead in the post-World War II era (Evans and Lindsay, 2019, p.13).

The awareness of quality grew steadily not only by customers but also by industry and government and was recognized to be a key to worldwide competitiveness (Evans and Lindsay, 2019, pp.13–14). In the early 1980s, the USA began to respond to TQM developing and extensively implementing it in their organizations (Saraph et al., 1989, p.810; Prajogo and Sohal, 2001, p.539). MBNQA was established by the act of congress and became a very influential instrument for quality awareness in the USA and abroad (Evans and Lindsay, 2019, pp.14–15).

Dr. W. Edwards Deming, who stood at the beginning of the development of TQM ideas and the person who probably most influenced the development of TQM, has never given a precise definition to quality (Evans, 2019, pp.51–52). In his lectures, he taught top management that “It will not suffice to have some brilliant successes here and there. ... In short, efforts toward the improvement of quality must be total. They must:

- Be COMPANY-WIDE.
- Be NATION-WIDE.
- Embrace EVERY ACTIVITY—procurement, instrumentation, manufacturing, consumer research, marketing, redesign” (Deming, 1982, p.103).

Deming generalized his experience in Japan into 14 points offering to organizations in the USA 14 Points of behavioral guidelines, the following of which would let firms “recapture the

competitive position once held by American industry” (Deming, 1982, p.13). *Walton* called these 14 points “the Deming management method” (Walton, 1986, pp.33–34). Here are these 14 points:

- 1.” Create constancy of purpose toward improvement of product and service, with the aim of becoming competitive and to stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of the price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership (see Point 12 and Ch.8). The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of an overhaul, as well as supervision of production workers.
8. Drive out fear so that everyone may work effectively for the company (see Ch. 3).
9. Break down barriers between departments. People in research, design, sales, and production must work as a team to foresee problems of production and in use that may be encountered with the product or service.
10. Eliminate slogans, exhortations, and targets for the workforce, asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the workforce.
- 11
 - a. Eliminate work standards (quotas) on the factory floor. Substitute leadership.
 - b. Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.
- 12
 - a. Remove barriers that rob the hourly worker of his right to pride in workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.
 - b. Remove barriers that rob people in management and in the engineering of their right to pride in workmanship. This means, inter alia, abolishment of the annual or merit rating and of management by objective (see Ch. 3).
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody’s job.” (Deming, 1982, pp.23–24)!

Anderson et al. stated that the Deming management method was not a scientific theory but a practical guideline on how to transform and improve the management and started the transformation of the Deming management method in the scientific TQM theory (Anderson et al., 1994, p.502). TQM theory of Anderson et al. underlying the Deming management method

concerned “the creation of an organizational system that fosters cooperation and learning for facilitating the implementation of process management practices, which, in turn, leads to continuous improvement of processes, products, and services, and to employee fulfillment, both of which are critical to customer satisfaction, and, ultimately, to firm survival” (Anderson et al., 1994, p. 473). This first attempt to formalize the Deming management method-based TQM theory found positive feedback and a broad acceptance by TQM researchers as well as by scholars outside of the TQM discipline (Rungtusanatham et al., 2005, p.46).

Since that time, they have conducted a lot of research on the further development of TQM theories, but there is no unanimous nominal definition of what TQM exactly is (Rungtusanatham et al., 2005, p.45; M. Shafiq et al., 2019, p.33).

But even researchers do not give a unique definition of TQM, and they broadly agree that TQM is a generic term for:

- “a set of management methods and tools focused on providing superior value to the customer through identification of customers expressed and latent needs, responsiveness to changing markets, as well as on improving the efficiency of the processes that produce the product or service” (York and Miree, 2004, p.291);
- “an integrated management philosophy aimed at continuously improving the performance of products, processes, and services to achieve and surpass customer expectations” (Bayazit and Karpak, 2007, p.80);
- “a systematic quality improvement approach for firm-wide management for the purpose of improving performance in terms of quality, productivity, customer satisfaction, and profitability” (Sadikoglu and Zehir 2010, p.13);
- “an approach to manage and continuously improve all the processes of an organization by involving everyone to achieve customers’ (both internal and external) satisfaction at the lowest cost” (Shafiq et al., 2019, p.33);
- The management method of an organization based on the cooperation of all its members, which focuses on quality and, through customer satisfaction, on long-term business success and benefits for the members of the organization and for society (Brügge-mann and Bremer, 2020, p.182).

Obviously, all TQM definitions are remarkably similar and support the appeal of *W. E. Deming* to the never-ending improvement of quality driven by the leadership of the top management, which leads companies to long-term competitive strength (Evans, 2019, pp.51–52).

2.1.2. TQM Practices

The TQM scholars universally agree that TQM should be captured, operationalized, and measured through its observable components called by some scientists “TQM critical factors” and by other scientists “TQM practices.”

As mentioned in 2.1.1, TQM is a further development of QM. The probably very first attempt to analyze and categorize the various sets of critical factors mentioned in QM literature was made by Saraph et al (1989, p.810).

Table 1 presents the eight critical factors of QM derived by *Saraph et al.* (1989, p.818):

Table 1: The Eight Critical Factors of QM (Saraph et al., 1989, p.818)

Critical Factors	Description
The role of management leadership and quality policy	Acceptance of quality responsibility by General Motors and department heads. Evaluation of top management on quality. Participation by top management in quality improvement efforts. Specificity of quality goals. The importance attached to quality in relation to cost and schedule. Comprehensive quality planning.
Role of the quality department	Visibility and autonomy of the quality department. The quality department's access to top management. Use of quality staff for consultation. Coordination between the quality department and other departments. Effectiveness of the quality department.
Training	Provision of statistical training, trade training, and quality-related training for all employees.
Paining Product/ service design	Thorough scrub-down process. Involvement of all affected departments in design reviews. Emphasis on producibility. Clarity of specifications. Emphasis on quality, not roll out schedule. Avoidance of frequent redesigns.
Supplier quality management	Fewer dependable suppliers. Reliance on supplier process control. Strong interdependence of supplier and customer. Purchasing policy emphasizing quality rather than price. Supplier quality control. Supplier assistance in product development.
Process management	Clarity of process ownership, boundaries, and steps. Less reliance on inspection. Use of statistical process control. Selective automation. Fool-proof process design. Preventative maintenance. Employee self-inspection. Automated test.
Quality data and reporting	Use of quality cost data. Feedback of quality data to employees and managers for problem-solving. Timely quality measurement. Evaluation of managers and employees based on quality performance. Availability of quality data.
Employee Relations	Implementation of employee involvement and quality circles. Open employee participation in quality decisions. Responsibility of employees for quality. Employee recognition for superior quality performance. Effectiveness of supervision in handling quality issues. Ongoing quality awareness of all employees.

The next crucial step in identifying the critical factors of TQM was made by Anderson et al. (1994). The authors derived the Deming management method-based TQM theory, having identified seven practices that captured, defined, and described TQM. As mentioned in 2.1.1, the Deming management method-based TQM theory of Anderson et al. found positive feedback and a broad acceptance by TQM researchers (Rungtusanatham et al., 2005, p.46). Table 2 represents the seven TQM practices and their description defined by Anderson et al. (1994, p.480).

Table 2: *Seven TQM Practices underlying the Deming Management Method (Anderson et al., 1994, p.480)*

Practice	Description
Visionary Leadership	The ability of management to establish, practice, and lead a long-term vision for the organization, driven by changing customer requirements, as opposed to an internal management control role. This is exemplified by clarifying vision, long-range orientation, coaching management style, participative change, employee empowerment, and planning and implementing organizational change.
Internal and External Cooperation	The propensity of the organization to engage in noncompetitive activities internally among employees and externally with respect to suppliers. This is exemplified by a firm-supplier partnership, single-supplier orientation, collaborative organization, teamwork, organization-wide involvement, systems view of the organization, trust, and elimination of fear.
Learning	The organizational capacity to recognize and nurture the development of its skills, abilities, and knowledge base. This is exemplified by companywide training, foundational knowledge, process knowledge, educational development, continuous self-improvement, and managerial learning.
Process Management	The set of methodological and behavioral practices emphasizing the management of the process, or means of actions, rather than results. This is exemplified by management of processes, prevention orientation, reduction of mass inspection, design quality, statistical process control, understanding of variation, elimination of numerical quotas, elimination of management by objectives, elimination of merit-rating reward systems, understanding motivation, total cost accounting, and stable employment.
Continuous Improvement	The propensity of the organization to pursue incremental and innovative improvements of its processes, products, and services. This is exemplified by continuous improvement.
Employee Fulfillment	The degree to which employees of an organization feel that the organization continually satisfies their needs. It is exemplified by job satisfaction, job commitment, and pride in workmanship.
Customer Satisfaction	The degree to which an organization's customers continually perceive that their needs are being met by the organization's products and services. This is exemplified by customer-driven focus.

The next major step in the identifying of TQM practices has been done by scientists who have intensively studied the MBNQA model on its suitability to catch and measure TQM in organizations. Sila and Ebrahimpour did an extensive analysis of seventy-six empirical studies of TQM and categorized the used practices under the MBNQA framework from 2002 (Sila and Ebrahimpour, 2003, p.235). Bou-Llusar et al. concluded that both MBNQA and EFQM are operational frameworks for TQM clearly reflecting its main premises (Bou-Llusar et al., 2009, p.1). Yong and Wilkinson argue that MBNQA is the most used guideline as it provides "the most comprehensive guidelines for TQM implementation," covering seven categories needed for TQM adoption (Yong and Wilkinson, 2010, p.253). And even Deming did not support the award because he saw a competition form to be not suitable to his view of quality,

all his 14 points are reflected within the criteria, and all criteria are accordingly in agreement with the Deming management method (Evans, 2019, p. 536).

Sila deepened the research of Sila and Ebrahimpour (2003) on TQM observable practice and added Supplier Management as a separate additional TQM practice because of the growing importance of supply chains all over the world (Sila, 2007, p.84). As seen in the Table 2, Saraph et al. (1989, p.818) formulated Supplier Quality Management also as a separate critical factor of QM. Sila concluded theoretically and proved empirically that the TQM construct could be measured by seven practices: Leadership, Strategic Planning, Customer Focus, Information and Analysis, Human Resource Management, Process Management, and Supplier Management (Sila, 2007, p.85).

Table 3 provides the description of the seven TQM practices and the supporting literature by Sila.

Table 3: TQM Practices and the Supporting Literature (Sila, 2007, p.85)

TQM Practices	Description	Supporting Literature
Leadership	Top management and supervisory commitment and Leadership; public responsibility and citizenship	Flynn et al. (1994), Powell (1995), Anderson et al. (1998), Wilson and Collier (2000), Sun and Cheng (2002)
Strategic Planning	Quality mission; goals and policy; development and deployment	Mohrman et al. (1995), Black and Porter (1996), Raghunathan et al. (1997), Dow et al. (1999), Solis et al. (2000), Sun and Cheng (2002)
Customer Focus	Customer and market knowledge; attention to Customer satisfaction; management of Customer relationships	Powell (1995), Ahire et al. (1996), Adam et al. (1997), Anderson et al. (1998), Solis et al. (2000), Sun and Cheng (2002)
Information and Analysis	Performance measurement and analysis; information management; use of information technology; quality tools; benchmarking	Powell (1995), Samson and Terziovski (1999), Anderson and Sohal (1999), Wilson and Collier (2000), Solis et al. (2000), Sun and Cheng (2002)
Human Resource Management	Employee involvement; employee empowerment; teamwork; rewards, recognition and performance appraisal; employee training	Flynn et al. (1994), Black and Porter (1996), Rao et al. (1997), Anderson and Sohal (1999), Samson and Terziovski (1999), Wilson and Collier (2000), Sun and Cheng (2002)
Process Management	Product and service design; process control; innovation and continuous improvement of processes; products and services	Saraph et al. (1989), Flynn et al. (1994), Powell (1995), Anderson et al. (1995), Samson and Terziovski (1999), Wilson and Collier (2000), Sun and Cheng (2002)
Supplier Management	Supplier quality; supplier involvement; products and services	Saraph et al. (1989), Powell (1995), Ahire et al. (1996), Rao et al. (1999), Solis et al. (2000), Curkovic et al. (2000), Sun and Cheng (2002)

By the time of conceptualizing my current research, Sila did the most extensive review of TQM constructs in the scientific literature. He validated the TQM construct of seven TQM practices, first theoretically and then empirically. Besides that, he suggested applying his instruments in cross-country studies “to shed more light on whether the convergence hypothesis also holds for the TQM practices and TQM—performance relationships of companies operating across different country boundaries” (Sila,2007, p.103). The author also used the same TQM construct in his recent investigation of changes in TQM’s effects on corporate social performance and financial performance over time (Sila, 2020, p.216). The current study uses the TQM construct of Sila (2007) to capture and measure TQM by seven TQM practices.

2.2. Russian and German National Cultures

2.2.1. Term “Culture”

Edward Burnett Tylor (1832–1917), who is widely considered being the founder of cultural anthropology as a scientific discipline, developed the essential definition of culture, which is still used by scholars: “Culture or Civilization, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by a man as a member of society” (Tylor, 1871, p.1).

Nowadays, more than 200 different definitions of culture exist (Rothlauf, 2014, p.26). Trifonovitch even asserts that “it is possible to uncover over 450 definitions of the word or concept of culture” (Trifonovitch, 1997, p.18). The 1952 published paper of Kroeber and Kluckhohn “Culture: A Critical Review of Concepts and Definitions” contributed significantly to the research on the definition of culture. The authors and their team gathered and analyzed three hundred works attempting to describe culture. Kroeber and Kluckhohn offered a classification composed of 164 definitions of contexts. The definition they offered is “Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievements of human groups, including their embodiment in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached; cultural systems may, on the one hand, be considered as products of action, on the other, as conditional elements of further action” (Kroeber and Kluckhohn, 1952, p 181, cited in Spencer-Oatey and Kádár, 2021, p.46).

Kluckhohn specifies his cultural concept by listing the following features (Kluckhohn, 1951, p.87, cited in Rothlauf, 2014, p.29):

- “Culture is learned.
- Culture is structured.
- Culture derives from the biological, environmental, psychological and historical components of human existence.
- Culture is divided into aspects.
- Culture is dynamic.
- Culture is variable.
- Culture exhibits regularities that permit its analysis by the methods of science.

- Culture is the instrument whereby the individual adjusts to his total setting, and gains the means for creative expression.”

Keller offers the following characteristics for defining the culture (Keller, 1982, p. 114, cited in Rothlauf, 2014, p.28):

- “Culture has been created by human beings.
- It is a product of collective social thinking and the acting of individual people.
- Culture is supra-individual and a social phenomenon outlasting the individual.
- Culture is learned and communicated with the help of symbols.
- Culture controls the behavior by means of norms, rules and codes of conduct.
- Culture strives for inner consistence and integration.
- Culture is an instrument for adapting to the environment.
- Culture is adaptively versatile in the long term.”

Luthans defines the term “culture” as (Luthans, 1997, p.96):

- “Learned. Culture is not inherited or biologically based; it is acquired by learning and experience.
- Shared. People as members of a group organization or society share culture; it is not specific to single individuals.
- Transgenerational. Culture is cumulative, passed down from one generation to the next.
- Symbolic. Culture is based on the human capacity to symbolize or use one thing to represent another.
- Patterned. Culture has structure and is integrated; a change in one part will bring changes to another.
- Adaptive. Culture is based on the human capacity to change or adapt, as opposed to the more genetically driven adaptive process of animals”.

Hofstede, one of the most famous contemporary cultural researchers, defines culture as “the collective programming of the mind that distinguishes the members of one group or category of people from another” (Hofstede, 1980, p.25; Hofstede, 2001, p.9).

Project GLOBE (The Global Leadership Organizational Behavior Effectiveness Research) defines culture as “shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations” (House and Javidan, 2004, p.15).

Schwartz, one of the leading social psychologists, views culture as “the rich complex of meanings, beliefs, practices, symbols, norms, and values prevalent among people in a society” (Schwartz, 2004, p.43).

Schein, world-famous for his model of organization culture, defines culture as “a pattern of basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and that, therefore, is taught to new members as the correct way to perceive, think, and feel in relation to those problems” (Schein, 1992, p.12).

Thus, there is a wide range of culture descriptions and concepts, but there is no unique definition or concept of what culture is. The diversity of all aspects of culture that must be combined in one term and different perspectives from which culture is being seen can lead to no unique universal scientific definition of it being found (Baumgart and Jänecke, 2005, p.19). All attempted explanations underlie one objective—to give a framework to the individual to be able to classify one’s own experience and behavioral patterns (Rothlauf, 2014, p.29), drawing attention to the essential elements of culture:

- “culture is associated with social groups;
- it is reflected in shared sets of objects (artifacts/products), behavioral patterns (practices/learned routines of interacting), and in cognition (networks of knowledge, beliefs, perspectives), some of which are more evident than others;
- it affects people’s expectations of behavior and frames their interpretations/ evaluations of behavior;
- it is acquired and/or constructed through interaction with others, and the most important way in which this acquisition happens is socialization” (Spencer-Oatey and Kádár, 2021, p.45).

The term culture can be referred to as national culture and organizational culture. The current study focuses further on the national culture.

2.2.2. Overview of National Culture Models

Scientists have been developing cultural models consisting of cultural dimensions to capture and characterize cultures and make them measurable and comparable with each other (Barmeyer et al., 2021, p.46). Cultural dimensions are constructs which reflect typical solutions and behavior of actors integrated into specific context and can serve as an orientation guide, but they do not determine behaviors absolutely and cannot be considered to be a reality (Barmeyer et al., 2021, p.49).

The most known and used national cultural models are (Rothlauf, 2012, p.37):

- Model of *Hall*
- Model of *Hofstede*
- Model of *Trompenaars*
- GLOBE Model
- Model of *Schwartz*

A short overview of these models is presented below.

Model of Hall

Edward Twitchell Hall, the American anthropologist and ethnologist, who is considered to be a founder of intercultural communication, used a qualitative approach to develop a profound comprehension of human coexistence and behavior (Barmeyer et al., 2021, p.47). The model of *Edward Twitchell Hall* offers four dimensions for defining and differentiating cultures (Hall and Hall, 1990, pp.3–31):

- Context
- Time
- Space
- Speed of Information.

Hall model helps to understand cultures better but is less helpful for the scientific analysis of cultural differences because, as mentioned above, it is built on a primarily qualitative and less scientific approach for the development of these four dimensions (Rothlauf, 2012, p.67; Rothlauf, 2014, p.32; Barmeyer et al., 2021, p.47).

The remaining four models meet the requirements of subsequent statistical analyses (Rothlauf, 2012, p.67).

Model of Hofstede

The *Hofstede's* value and belief theory made a significant contribution to the cultural research field as it was the first quantitative study to examine cultural differences (Barmeyer et al., 2021, p.47). 116000 employees of IBM in 72 countries were questioned about work-related values and attitudes in written form during the first survey (Barmeyer et al., 2021, p.47). Four dimensions of cultural values and beliefs have been derived from the initial study:

- Power Distance — “The extent to which less powerful members of institutions and organizations accept that power is distributed unequally” (Hofstede, 1980, p.419).
- Individualism — “the tendency of people to look after themselves and their immediate family only.” (Hofstede, 1980, p.419). Collectivism, on the contrary, is when people belong to in-groups (families, organizations, etc.) who look after them in exchange for loyalty (Hofstede, 1980, p. 419).
- Masculinity — “a situation in which the dominant values in society are success, money, and things” versus Femininity— “a situation in which the dominant values in society are caring for others and the quality of life” (Hofstede, 1980, pp. 420).
- Uncertainty Avoidance — “the extent to which people feel threatened by ambiguous situations” (Hofstede, 1980, p.418).

The fifth dimension was added in 1987 to the model:

- Long-term orientation stood “for the fostering of virtues oriented toward future rewards” (Hofstede et al., 2010, p.239).

The sixth and latest dimension followed in 2010:

- Indulgence stood “for a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun” (Hofstede et al., 2010, p.281).

Model of Trompenaars

15000 managers from different organizations situated in 55 countries were questioned by written interviews, answers from managers from 47 countries could be included in the study of *Fons Trompenaars*, a Dutch French organizational theorist, management trainer, and motivational speaker in the area of intercultural communication, and *Charles Hampden-Turner*, a recognized key business thinker. The seven cultural dimensions have been derived from the study as follows (Trompenaars and Hampden-Turner, 1997, pp.8–10, 29, 102, 120, 141):

- universalism versus particularism (rules versus relationships),
- communitarianism versus individualism (the group versus the individual),
- neutral versus emotional (the range of feelings expressed),
- diffuse versus specific (the range of involvement),
- achievement versus ascription (status achieved by doing versus being),
- attitudes to time (sequential versus synchronic),
- attitudes to the environment (internal versus external control).

GLOBE

The Global Leadership Organizational Behavior Effectiveness Research (GLOBE) is “the most extensive cultural investigation in terms of scope, depth, duration and sophistication that has been conducted in recent times” (Rothlauf, 2012, p.64). The ten-year research study (1887–1997), initiated by the US-American university professor *Robert J. House*, explores societal culture, organizational culture, and attributes of effective leadership based on survey results of about 17000 mid-level managers in more than 951 organizations of several branches from 62 societies throughout the world (House et al., 2004, p.3). The nine cultural dimensions of GLOBE, Power Distance, In-group Collectivism, Institutional Collectivism, Future Orientation, Assertiveness, Uncertainty Avoidance, Humane Orientation, Gender Egalitarianism, Performance Orientation are differentiated between practices (P) and values (V). Practice data is derived from “what is (or are),” whereas value data is the result of “what should be” survey questions and is measured with a 7-point scale ranging from 1, low agreement, to 7, strong agreement. Both P and V were measured for organizations and societies (House and Javidan, 2004, p.21).

GLOBE is regarded to be an extension of *Hofstede's* value and belief theory of culture as six from nine dimensions of GLOBE model have their origin in the studies of Hofstede (Power Distance, Collectivism (Institutional collectivism), Collectivism (In-group), Gender Egalitarianism, Assertiveness, Uncertainty Avoidance) and three additional dimensions were added within the GLOBE-Study: Future Orientation, Human Orientation and Performance Orientation (House and Javidan, 2004, p.13). GLOBE argues with *Hofstede*, who assumed that

societies are defined by values and organizations by practices, whereas GLOBE asserts that values and practices can both be present in societies and organizations (Blyszcz, 2016, p.66).

The nine cultural dimensions of GLOBE have been defined as follows (House and Javidan, 2004, pp.11–13):

- Power Distance is the degree to which members of an organization or society expect and agree that power should be stratified and concentrated at higher levels of an organization or government,
- In-group Collectivism is the degree to which a culture's people (should) take pride in and (should) feel loyalty toward their families, organizations, and employers,
- Institutional Collectivism is the degree to which organizational or societal institutional practices encourage and reward collective distribution of resources and collective action,
- Future Orientation is the degree to which individuals in organizations or societies engage in future-oriented behaviors such as planning, investing in the future, and delaying individual or collective gratification,
- Assertiveness is the degree to which individuals in organizations or societies are assertive, confrontational, and aggressive in a social relationship,
- Uncertainty Avoidance is the extent to which members of an organization or society strive to avoid uncertainty by relying on established social norms, rituals, and bureaucratic practices,
- Human Orientation is the degree to which individuals in organizations or societies encourage and reward an individual for being fair, altruistic, friendly, generous, caring, and kind to others,
- Gender Egalitarianism degree to which a culture's people (should) support gender equality,
- Performance Orientation degree to which a culture's people (should) encourage and reward people for performance.

Model of Schwartz

Shalom H. Schwartz, one of the leading social psychologists in Israel, surveyed the value preferences of individuals in 67 countries (Schwartz, 2004, p.48). He then analyzed the data and derived three bipolar cultural dimensions, which should give answers to three issues or social problems:

- Embeddedness vs. Intellectual and Affective Autonomy concern the issue “of the relation ... between the person and the group” (Schwartz, 2004, p.45),
- Egalitarianism vs. Hierarchy concerns the social problem “to guarantee responsible behavior that preserves the social fabric” (Schwartz, 2004, p.45),
- Harmony vs. Mastery concerns regulating the social problem “how people manage their relationship to the natural and social world” (Schwartz, 2004, p.46).

Figure 3 represents the comparison of the four cultural models which meet the requirements of subsequent statistical analyses.

Cultural Models

Hofstede 5 (+1) Dimensions	Trompenaars 7 Dimensions	GLOBE 9 Dimensions	Schwartz 3 Dimensions
<ul style="list-style-type: none"> • Power Distance • Collectivism vs. Individualism • Time Orientation • Uncertainty avoidance • Masculinity vs. Femininity • Indulgence 	<ul style="list-style-type: none"> • Equality vs. Hierarchy • Collectivism vs. Individualism • Achievement vs. Ascription • Internat vs. External orientation • Universalism vs. Particularism • Neutral vs. Affective • Sequential vs. Synchronic time 	<ul style="list-style-type: none"> • Power Distance • Societal Collectivism • InGroup Collectivism • Future Orientation • Uncertainty Avoidance • Gender Egalitarianism • Assertiveness • Performance Orientation • Human Orientation 	<ul style="list-style-type: none"> • Egalitarianism vs. Hierarchy • Embeddedness vs. Autonomy • Harmony vs. Mastery

Figure 3: Comparison of the Cultural Models (Rothlauf, 2014, p.55)

2.2.3. The Choice of the Model for the Comparison of Russian and Germany National Cultures

Literature analysis shows that researchers study the efficacy of QM and TQM practices in diverse cultures, often using Hofstede's national culture dimensions (Lagrosen, 2003; Flynn and Saladin, 2006; Wehnert, 2009; Zhang and Wu, 2014; Al Mubarak et al., 2017). Other authors, for example, Kull and Wacker (2010), investigate the effects of the national culture on QM through the prism of GLOBE cultural dimensions.

Choosing between the Hofstede and GLOBE model to apply in the current study, it is necessary to state that Hofstede's value and belief theory has been the first quantitative study to examine cultural differences contributing significantly to the cultural research field (Barmeyer et al., 2021, p.47) which has become "the overwhelmingly dominant metric of culture" in the scientific research, especially if country has been being used as the contextual variable (Yoo et al., 2011, p. 194). This made Hofstede "by far the most cited scholar in international business research and cross-cultural studies" (Taras et al., 2023, in press). In QM and TQM studies Hofstede's value and belief theory is also the most used model (Jung et al., 2008, p. 624; Kull and Wacker, 2010, p.223).

However, Hofstede’s measurement of culture at a country’s level is being criticized as the data has been collected from IBM employees who cannot be referred as a representative sample of the population as IBM has a strong corporate culture which involves certain recruitment practices and certain similarity on the employee (Rothlauf, 2012, p.48). The Hofstede’s approach is being discussed for focusing on cultural values on a country basis where many researchers suggest rather to study values at the individual level (Blut et al., 2022, p.350). Moreover, the increasing culture’s complexity due to globalization has been questioning the relevance of Hofstede’s cultural dimensions (Nakata, 2009, p.3) indicating that Hofstede’s approach needs to be updated (Blut et al., 2022, p.340). Wehnert investigated the efficacy of TQM in different national cultures using the Hofstede model and faced the problem that Hofstede’s cultural dimension Masculinity/Femininity might confound at least four cultural dimensions presented by GLOBE as Performance Orientation, Humane Orientation, Assertiveness, and Gender Egalitarianism (Wehnert, 2009, p.151). Wehnert called scientists for further research on TQM using GLOBE cultural dimensions (Wehnert, 2009, p.151). Finally, the current dissertation compares national cultures of particularly Germany and Russia, but Hofstede has not conducted a large-scale empirical study for Russia but has provided only estimated derived from national statistics, regional studies of culture, and archetypes found in literature and history (Naumov and Puffer, 2000, p.710). The GLOBE project, on the contrary, is one of the first attempts to collect empirical data on Russian culture by using international and reliable research methods (Grachev, 2009, p.10).

The current study will apply GLOBE model to conduct the comparison of German and Russian national cultures.

Table 4 presents the definition of the nine cultural dimensions of GLOBE as well as sample questionnaire items to make the understanding easier.

Table 4: Definition of the GLOBE Cultural Dimension (House and Javidan, 2004, pp.11–13) and Sample Questionnaire Items (Dorfman et al., 2012, p.516)

Cultural Dimension	Definition	Sample Questionnaire Items
Power Distance	The degree to which members of an organization or society expect and agree that power should be stratified and concentrated at higher levels of an organization or government	Followers are (should be) expected to obey their leaders without question
In-group Collectivism	The degree to which a culture’s people (should) take pride in and (should) feel loyalty toward their families, organizations, and employers	Employees feel (should feel) great loyalty toward this organization
Institutional Collectivism	The degree to which organizational or societal institutional practices encourage and reward collective distribution of resources and collective action	Leaders encourage (should encourage) group loyalty even if individual goals suffer

Cultural Dimension	Definition	Sample Questionnaire Items
Future Orientation	The degree to which individuals in organizations or societies engage in future-oriented behaviors such as planning, investing in the future, and delaying individual or collective gratification	More people live (should live) for the present rather than for the future (scored inversely)
Assertiveness	The degree to which individuals in organizations or societies are assertive, confrontational, and aggressive in social relationship	People are (should be) generally dominant in their relationships with each other
Uncertainty Avoidance	The extent to which members of an organization or society strive to avoid uncertainty by relying on established social norms, rituals, and bureaucratic practices	Most people lead (should lead) highly structured lives with few unexpected events
Humane Orientation	The degree to which individuals in organizations or societies encourage and reward individual for being fair, altruistic, friendly, generous, caring, and kind to others	People are generally (should be generally) very tolerant of mistakes
Gender Egalitarianism	The degree to which a culture's people (should) support gender equality	Boys are encouraged (should be encouraged) more than girls to attain a higher education (scored inversely)
Performance Orientation	The degree to which a culture's people (should) encourage and reward people for performance	Students are encouraged (should be encouraged) to strive for continuously improved performance

GLOBE gathered the main data in 1995–1998, with additional data collected from media analysis in 2001 (Grachev et al., 2012, p.809). Scientists assert that the results of GLOBE are relevant nowadays because cultural practices and values are stable or occur slowly over a long period of time in the range of 50 or more years (Brodbeck et al., 2012, p.1072). Many replication studies of Hofstede have empirically validated the stability of the culture; more than 20 years may have gone by between the time two studies were conducted (House et al., 2004, p.54). The doubts can arise about the GLOBE scores of Russia because Russia has been going a long way of economic and political transformation, which could cause convergence toward more Western-oriented cultural dimensions (Naumov and Petrovskaya, 2011, p.65). Naumov and Petrovskaya did an empirical investigation and confirmed that no notable change of cultural values in Russia occurred despite abundant visible changes in the Russian economy and behavior of people (Naumov and Petrovskaya, 2011, p.97). As for Germany, some of its cultural dimensions are so deeply rooted in history that it would require a very long time and effort to make any change in them (Brodbeck and Frese, 2012, p.192).

The next sections describe Russian and German national cultures using the data of the GLOBE project.

2.2.4. GLOBE Cultural Profile of Russia

Table 5 presents the descriptive statistics of 9 GLOBE cultural dimensions (practices and values) as well as the ranking of Russia among 61 societies. To make the analysis of the country profile and afterward the comparison between Russian and German cultures vividly, the method of Rohm (2010), who compares American and Arab national cultures, and Bluszcz et al. (2016), who followed Rohm (2010) in the method comparing national cultures of Germany and China, has been applied. The mean and standard deviation (STDEV) have been used to rate the deviation of the individual values rating them lower (L), significantly lower (L*), higher (H), and significantly higher (H*). Significantly higher (H*) or significantly lower (L*) applies if the value of the dimension score is more than one standard deviation above or below the mean. This method allows presenting the magnitude of separation and extent of the differences between both countries clearly (Rohm, 2010, p.4; Bluszcz et al., 2016, p.62).

Table 5: *The Descriptive Statistics for GLOBE Cultural Dimension Scores for Russia (House and Javidan, 2004, p. 31; Grachev et al., 2012, p.813)*

GLOBE Cultural Dimensions	Russia		Ranking among 61 societies		Min of 61 societal cultures		Max of 61 societal cultures		Mean of 61 societal cultures		STDEV		Deviation of the individual scores of Russia	
	P	V	P	V	P	V	P	V	P	V	P	V	P	V
Power Distance	5.52	2.62	14	40	3.89	2.04	5.80	3.65	5.17	2.75	0.41	0.35	H	L
In-group Collectivism	5.63	5.79	17	20	3.53	4.94	6.36	6.52	5.13	5.66	0.73	0.35	H	H
Institutional Collectivism	4.50	3.89	17	60	3.25	3.83	5.22	5.65	4.25	4.73	0.42	0.49	H	L*
Future Orientation	2.88	5.48	61	34	2.88	4.33	5.07	6.20	3.85	5.49	0.46	0.41	L*	L
Assertiveness	3.68	2.83	54	59	3.38	2.66	4.89	5.56	4.14	3.82	0.37	0.65	L*	L*
Uncertainty Avoidance	2.88	5.07	61	18	2.88	3.16	5.37	5.61	4.16	4.62	0.60	0.61	L*	H
Humane Orientation	3.94	5.59	37	18	3.18	4.49	5.23	6.09	4.09	5.42	0.47	0.25	L	H
Gender Egalitarianism	4.07	4.18	2	49	2.50	3.18	4.08	5.17	3.37	4.51	0.37	0.48	H*	L
Performance Orientation	3.39	5.54	59	55	3.20	4.92	4.94	6.58	4.10	5.94	0.41	0.34	L*	L*

Significantly higher (H) or significantly lower (L*) applies if the value of the dimension score is more than one standard deviation above or below the mean. Higher (H) and lower (L) apply if the value of the dimension score is less than one standard deviation above or below the mean.*

Power Distance

Russia ranks higher (H) as average at Power Distance practice. Scientists traditionally underline the autocratic leadership style in Russia (Bollinger, 1994; Ardichvili et al., 1998; Dickenson et al. 2000; Ardichvili and Gasparishvili, 2001; Hofstede 2001; Khoo und Tan, 2002; Michailova. 2002; Matveev und Milter, 2004). Respect for authority and the privileges of authority, strong centralization of power in the hands of the state, lack of democratic traditions are the characteristics not only of Soviet Russia but also of prerevolutionary Russia (Grachev, 2009, p. 6). But the value of Power Distance (how it should be) in Russia is lower (L) than average. The reason for this gap can be that the soviet era suppressed people very strongly by all means of control, modifying their behavior but not changing the value (Grachev et al., 2012, p. 815).

In-group Collectivism

Russia ranks higher (H) as average at In-group Collectivism practice and value. This dimension reflects the traditional belonging to the group of people, who lived together in an agrarian country for centuries on large open space and worked together to overcome natural obstacles. In the communistic era, this belonging to the collective was also supported by belonging to the Party (Grachev et al., 2012, p.814).

Institutional Collectivism

Russia ranks higher (H) as average at Institutional Collectivism practice, but significantly lower (L*) as average at its value. Scientists argue that this gap between practice and value is in line with a decline of traditional collectivistic values, which they attribute to the economic transformation of Russia, which pushes people towards higher levels of individualism (Grachev et al., 2012, p. 812; Grachev, 2009, p.5).

Future orientation

Russia ranks significantly lower (L*) as average at Future Orientation “as it is” (practice) with a rank of 61 from 61 countries. The non-stop changes in the political, legislation, and economic area after the collapse of the Soviet Union transformed Russia into a society with “limited Future orientation” (Baumgart and Jänecke, 2005, p.55; Grachev et al., 2012, p. 816). The tendency of value “how it should be” is towards the midrange level (rank 34) but still lower than the mean of all countries.

Assertiveness

Russia ranks significantly lower (L*) as average at both Assertiveness practice and value. Networks belonging to the family, structures, and collective obligations underlie low scores on assertive, confrontational, and aggressive behavior in social and business relationships (Grachev, 2009, p. 6).

Uncertainty Avoidance

Like by Future orientation, Russia ranks significantly lower (L*) as average at Uncertainty Avoidance “as it is” (practice) with a rank of 61 from 61 societies. Grachev interprets it as “uncertainty acceptance” and risk-taking style of managers in the Russian transitional economy (Grachev, 2009, p.7). But the value of Uncertainty Avoidance is higher (H), with a rank of 18 from 61 societies meaning the commitment of Russian management to order, security, and rules. The gap between behavior (practices) and values could arise from the situation that in the transitional time, managers adjusted to the difficult, inconstant situation demanding quick reactions and taking risks (Grachev, 2009, p.7).

Human Orientation

Russia ranks lower (L) as average at Human Orientation “how it is” and higher (H) at “how it should be.” The gap between lower practice and higher value can be explained through the unstable political and economic situation after the collapse of the Soviet Union when ethical norms and morality were not highly respected within society, and the lack of legislation indirectly supported unfairness (Grachev, 2009, p. 7).

Gender Egalitarianism

Russia ranks significantly higher (H*) as average at Gender Egalitarianism “as it is” (practice) with a rank of 2 from 61 countries. But the value score of Gender Egalitarianism “how it should be” is lower (L) as average. Historically, the roles of men and women in prerevolutionary Russia were clearly separated—this is reflected in the lower value of Gender Egalitarianism. As Stalin’s repressions and World War II severely decreased the male population in Russia, women had to take over traditional men’s activities. The Soviet Union supported the equality of men and women and strictly controlled that both sexes had equal access to education. This heritage of communistic time is reflected in Russia’s behavior score (practice) (Grachev, 2009, p. 5).

Performance Orientation

Russia ranks significantly lower (L*) as average at both Performance Orientation practice and value taking, accordingly, 59th and 55th rank among 61 societies. Grachev explains these very low ranking among GLOBE countries through historical trends: achievements of organizations, their managers, and workers were not recognized in the communistic era by monetary means but were rewarded only symbolically, which did not emphasize people to exceed the plans which they became from the state. After the communistic time, corruption and other immoral ways have been used by a lot of organizations to succeed (Grachev, 2009, p. 6). The small businesses which practice the Performance Orientation behavior are still underdeveloped (Grachev et al., 2012, p.816).

Figure 4 visualizes GLOBE cultural profiles of Russia, clearly showing the described gaps between practices and values.

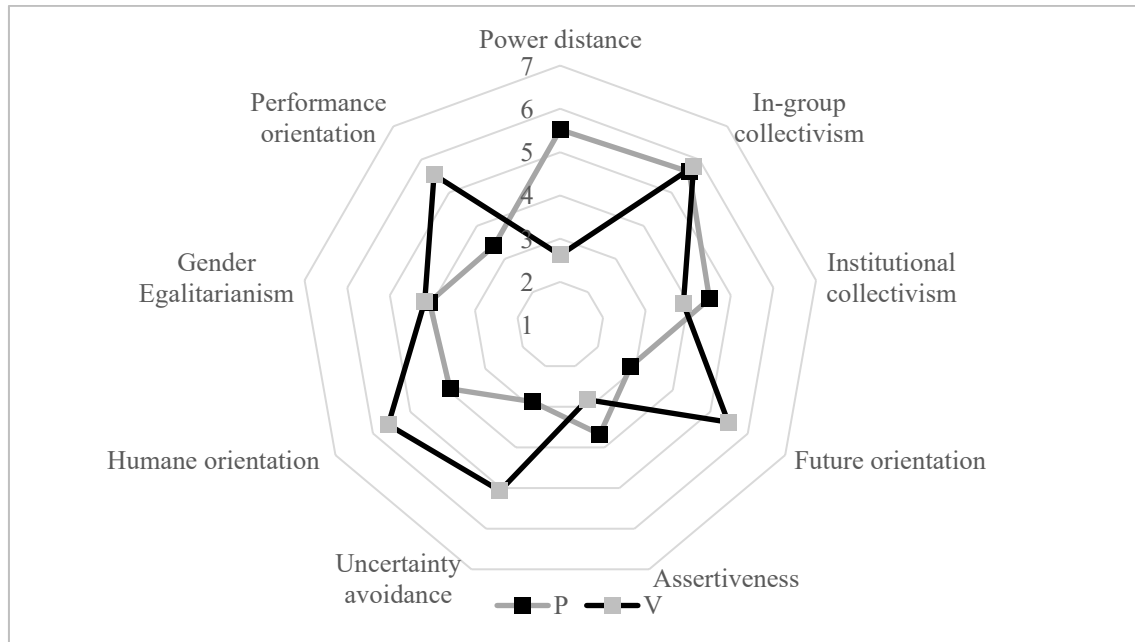


Figure 4: GLOBE Cultural Profile of Russia

Obviously, Russia has an extreme behavioral profile as among nine dimensions messed across 61 countries; it ranks with five dimensions extremely: at place 2 with Gender Egalitarianism, at place 54 with Assertiveness, at place 59 with Performance Orientation, at place 61 with Future Orientation and Uncertainty avoidance. These extremes can be explained through the transition society (Grachev et al., 2012, p. 818; Grachev, 2009, p.7). Moreover, Russia's cultural profile contains considerable gaps between the behavior and value scores on dimensions linked to the current economic and social transformation, such as Power Distance, Performance Orientation, Future Orientation, Uncertainty Avoidance, and Humane Orientation. (Grachev et al., 2012, p. 818; Grachev, 2009, p.7). Thus, not only deep-rooted historically developed cultural features as well as communistic era heritage but also the radical changes during the transitional period after the collapse of the Soviet Union play a significant role in forming cultural frameworks of contemporary Russia (Grachev et al., 2012, pp. 818, 829).

2.2.5. GLOBE Cultural Profile of Germany

Globe measures Germany as two societies: former West and former East. For the current research, the scores of Germany (former West) have been used because western Germany gives "the historical development and the industrial landscape in Germany" (Bluszcz et al, 2016, p.62) and because 80% of the German population live on former West Germany (Brodbeck and Frese, 2012, p.154) For the current research the country name Germany will be used for Germany (former West). To make the analysis of the country profile and afterward the comparison between Russian and German cultures vividly, the method of Rohm (2010), who compares American and Arab national cultures, and Bluszcz et al. (2016), who followed Rohm (2010) in the method of comparing national cultures of Germany and China, has been applied. The mean and standard deviation (STDEV) have been used to rate the

deviation of the individual values rating them lower (L), significantly lower (L*), higher (H), and significantly higher (H*). Significantly higher (H*) or significantly lower (L*) applies if the value of the dimension score is more than one standard deviation above or below the mean. This method allows presenting the magnitude of separation and extent of the differences between both countries clearly (Rohm, 2010, p.4; Bluszcz et al., 2016, p.62).

Table 6 presents the descriptive statistics of 9 GLOBE cultural dimensions (practices and values) as well as the ranking of Germany among 61 societies.

Table 6: *The Descriptive Statistics for GLOBE Cultural Dimension Scores for Germany (House et al., 2004, p.31; Brodbeck and Frese, 2012, p.162)*

	Germany (former West)		Rank among 61 societies		Min of 61 societal cultures		Max of 61 societal cultures		Mean of 61 societal cultures		STDEV		Deviation of the individual scores of Germany (former West)	
	P	V	P	V	P	V	P	V	P	V	P	V	P	V
GLOBE Cultural Dimensions														
Power Distance	5.25	2.54	29	44	3.89	2.04	5.80	3.65	5.17	2.75	0.41	0.35	H	L
In-group Collectivism	4.02	5.18	54	55	3.53	4.94	6.36	6.52	5.13	5.66	0.73	0.35	L*	L*
Institutional Collectivism	3.79	4.82	54	28	3.25	3.83	5.22	5.65	4.25	4.73	0.42	0.49	L*	H
Future Orientation	4.27	4.85	13	57	2.88	4.33	5.07	6.20	3.85	5.49	0.46	0.41	H	L*
Assertiveness	4.55	3.09	10	55	3.38	2.66	4.89	5.56	4.14	3.82	0.37	0.65	H*	L*
Uncertainty Avoidance	5.22	3.32	5	59	2.88	3.16	5.37	5.61	4.16	4.62	0.60	0.61	H*	L*
Humane Orientation	3.18	5.46	61	30	3.18	4.49	5.23	6.09	4.09	5.42	0.47	0.25	L*	H
Gender Egalitarianism	3.10	4.89	44	15	2.50	3.18	4.08	5.17	3.37	4.51	0.37	0.48	L	H
Performance Orientation	4.25	6.01	22	29	3.20	4.92	4.94	6.58	4.10	5.94	0.41	0.34	H	H

Power Distance

Germany ranks higher (H) than average at Power Distance practice with rank 29 among 61 countries, which is rooted in the history of Germany in which it was assumed that “the post-30-year-war importance of the local princes, the romantic notion of community, and the de

facto importance of the modern (Prussian) state all reinforced a strong state orientation with traditional power distance” (Brodbeck and Frese, 2012, p.159). However, the value score of Power Distance is lower (L) than average, with rank 44 among 61 societies, reflecting the wish of modern German society for a more egalitarian approach (Brodbeck and Frese, 2012, p.159).

In-group Collectivism

Germany ranks significantly lower (L*) than average both at In-group Collectivism practice and value taking 54th and 55th place accordingly among 61 countries which is very typical for the highly developed Western societies reflecting that the individual self-esteem is higher than group loyalty (Brodbeck and Frese, 2012, p.164).

Institutional Collectivism

Like In-group Collectivism, Germany ranks significantly lower (L*) than average at Institutional collectivism practice, taking the rank fifty-four among 61 societies. The very low scores of both In-group Collectivism and Institutional collectivism are typical for the highly developed Western societies, in this case reflecting those individuals are encouraged through individual achievements and rewards rather than collective achievements and reward distribution for the group (Brodbeck and Frese, 2012, p.164). The higher rank of the value (rank 28) reflects in case Germany the ideal of a “Gemeinschaft” and the social welfare state, the roots of which go the pioneering social welfare laws from the end of the 19th century followed by the development of the social system taking care of people (Brodbeck and Frese, 2012, pp.164–165).

Future Orientation

Germany ranks higher (H) than average at Future Orientation “as it is” (practice) but significantly lower (L*) than average with a rank of 57 from 61 countries at Future Orientation “how it should” (value). The history of Germany with many uncertainties and divisions supported the ideal of the high Future Orientation. The trend to the significantly lower Future Orientation may reflect the wish of middle managers to reduce investments in the future, benefiting from them now (Brodbeck and Frese, 2007, p.164).

Assertiveness

Germany ranks significantly higher (H*) than average at Assertiveness practice and significantly lower (L*) than average at Assertiveness value. Germans are traditionally open to debates, confrontation, and aggressive or assertive behavior by interpersonal interaction at work. But the strong declining trend of value reflects a powerful desire for less confrontation and more non-assertive interpersonal communication (Brodbeck and Frese, 2012, p.162).

Uncertainty Avoidance

Germany ranks significantly higher (H*) than average at Uncertainty Avoidance “as it is” (practice), taking rank five from 61 countries, whereas its Uncertainty Avoidance value “how it should be” is significantly lower (L*) than average, taking rank fifty-nine among 61 countries. Brodbeck and Frese refer to a very high Uncertainty Avoidance practice to the history, where Germany had to deal with a lot of uncertainty and was trying to reduce it through formalization, structures, and secure processes, which aim to reduce stress when facing uncertainty (Brodbeck and Frese, 2012, p.162). The strong inclining trend of the value is one of the examples of the divergence when people desire to substitute historically developed behavior and get rid of a lot of rules and regulations (Brodbeck and Frese, 2012, p.163).

Human Orientation

Germany takes the last 61st place at Human Orientation practice and ranks higher (H) than average, taking place in the middle (30) by the Human Orientation value. The extremely lower score level on Human Orientation can mean that the personal interaction in German companies is based on the objectives, task orientation, straightforward and confrontational, which is fully in line with a very high level of Assertiveness (Brodbeck and Frese, 2012, p.165). The low score level of Human Orientation does not contradict the social welfare where the state takes care of people more than in other countries—it only makes the Human Orientation at the interpersonal level less important (Brodbeck and Frese, 2012, p.165). The slight incline in the value of Human Orientation is in line with a powerful desire for unassertive and “kind” behavior at the interpersonal level, referred to as the declining Assertiveness value.

Gender Egalitarianism

Germany ranks lower (L) than average at Gender Egalitarianism “as it is” (practice) and higher (H) than average as “how it should be” (value). The magnitude between “as it is” and “how it should be” is larger as the global trend, which means that women will probably experience a social advance. Another evidence for it is that eight years after the GLOBE data was collected, a woman became Bundeskanzlerin (premier) (Brodbeck and Frese, 2012, p. 165).

Performance Orientation

Germany ranks higher (H) than average but not significantly higher (H*) as it can be expected from the German society at both Performance Orientation practice and value.

Figure 5 visualizes GLOBE cultural profiles of Germany, clearly showing the described gaps between practices and values.

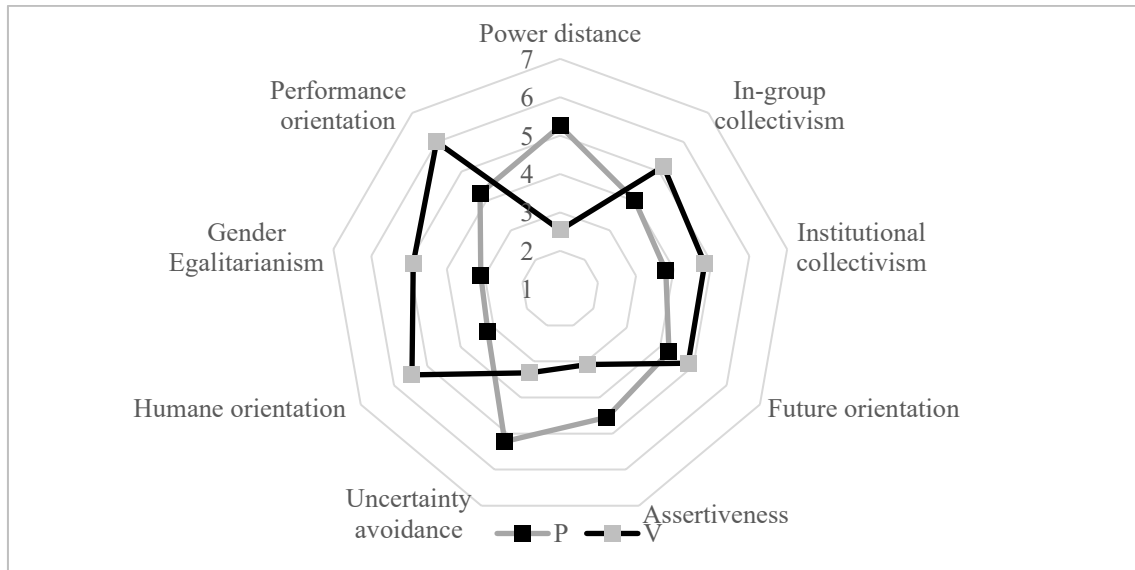


Figure 5: GLOBE Cultural Profile of Germany

2.2.6. Comparison of Russian and German National Cultures

The focus of the current subsection is the comparison of Russian and German national cultures based on GLOBE cultural dimensions, which should later support the analysis of the cultural rationality of TQM.

Table 7 presents the comparison results of 9 GLOBE cultural dimensions (practices and values) between Russia and Germany (former West).

Table 7: The Descriptive Statistics for GLOBE Cultural Dimension Scores for Russia and Germany (Based on House et al. (2004, p. 31), Brodbeck and Frese (2007, p. 162), Grachev et al., (2007, p.813))

GLOBE	Russia		Germany (former West)		Mean of 61 societal cultures		STDEV		Deviation of the individual scores of Russia		Deviation of the individual scores of Germany (former West)	
	P	V	P	V	P	V	P	V	P	V	P	V
Cultural Dimensions												
Power distance	5.52	2.62	5.25	2.54	5.17	2.75	0.41	0.35	H	L	H	L
In-group Collectivism	5.63	5.79	4.02	5.18	5.13	5.66	0.73	0.35	H	H	L*	L*
Institutional Collectivism	4.50	3.89	3.79	4.82	4.25	4.73	0.42	0.49	H	L*	L*	H
Future Orientation	2.88	5.48	4.27	4.85	3.85	5.49	0.46	0.41	L*	L	H	L*

GLOBE	Russia		Germany (former West)		Mean of 61 societal cultures		STDEV		Deviation of the individual scores of Russia		Deviation of the individual scores of Germany (former West)	
Assertiveness	3.68	2.83	4.55	3.09	4.14	3.82	0.37	0.65	L*	L*	H*	L*
Uncertainty Avoidance	2.88	5.07	5.22	3.32	4.16	4.62	0.60	0.61	L*	H	H*	L*
Humane Orientation	3.94	5.59	3.18	5.46	4.09	5.42	0.47	0.25	L	H	L*	H
Gender Egalitarianism	4.07	4.18	3.10	4.89	3.37	4.51	0.37	0.48	H*	L	L	H
Performance Orientation	3.39	5.54	4.25	6.01	4.10	5.94	0.41	0.34	L*	L*	H	H

Significantly higher (H) or significantly lower (L*) applies if the value of the dimension score is more than one standard deviation above or below the mean. Higher (H) and lower (L) applies if the value of the dimension score is less than one standard deviation above or below the mean.*

By practices (“how it is”), Russia ranks significantly higher in Gender Egalitarianism (P) and significantly lower in Future Orientation (P), Assertiveness (P), and Uncertainty Avoidance (P). In comparison, Germany ranks significantly higher in Assertiveness (P) and Uncertainty Avoidance (P) and significantly lower in Institutional Collectivism (P), In-group Collectivism (P), and Human Orientation (P). The most dramatic differences by practices, measured with significantly opposite dimension scores each, between Russian and German can be found in Assertiveness (P) and Uncertainty Avoidance (P). Strong commonalities can be found in Power Distance (P).

By values (“how it should be”), Russia and Germany do not rank significantly higher at any dimension (V). Russia ranks significantly lower in Institutional Collectivism (V), Assertiveness (V), and Performance Orientation (V). In contrast, Germany ranks significantly lower in Uncertainty Avoidance (V), Future Orientation (V), Assertiveness (V), and In-group Collectivism (V). No dramatic differences by values, measured with significantly opposite dimension scores each, between Russian and German cultures can be found. Strong commonalities can be seen in Power Distance (V), Assertiveness (V), and Human Orientation (V).

Figures 6 and 7 represent vividly the comparison of practices (Figure 6) and values (Figure 7) of GLOBE national culture dimensions collected for Russia and Germany (former West).

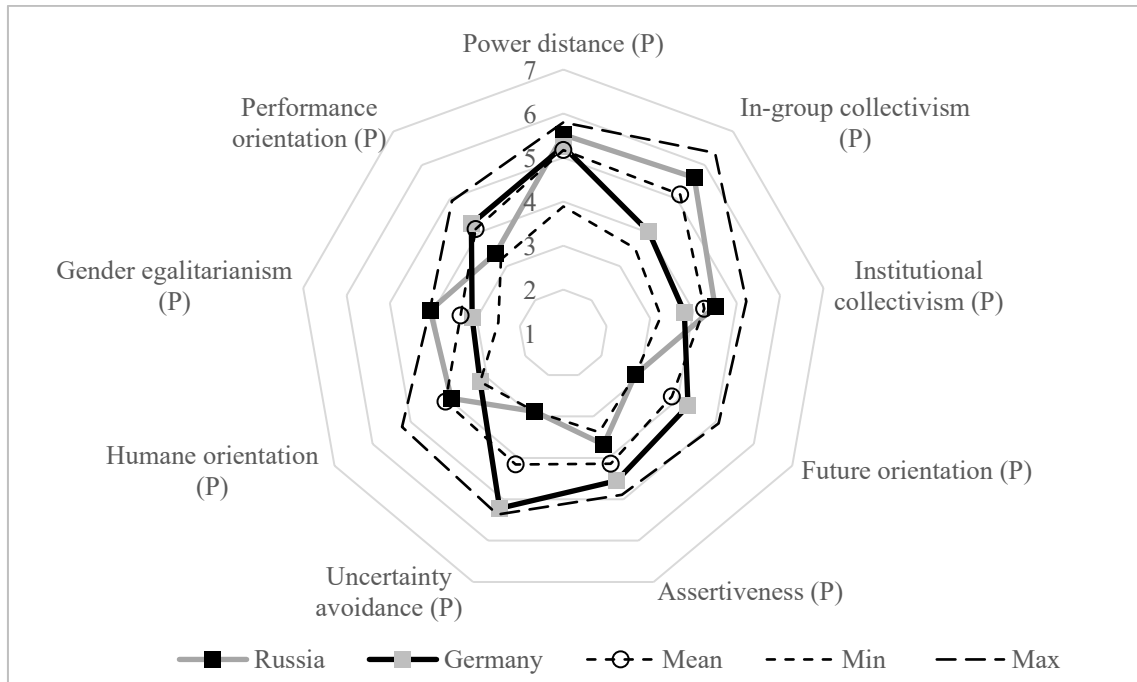


Figure 6: Globe Cultural Dimensions (Practices): Comparison of Russia and Germany (former West)

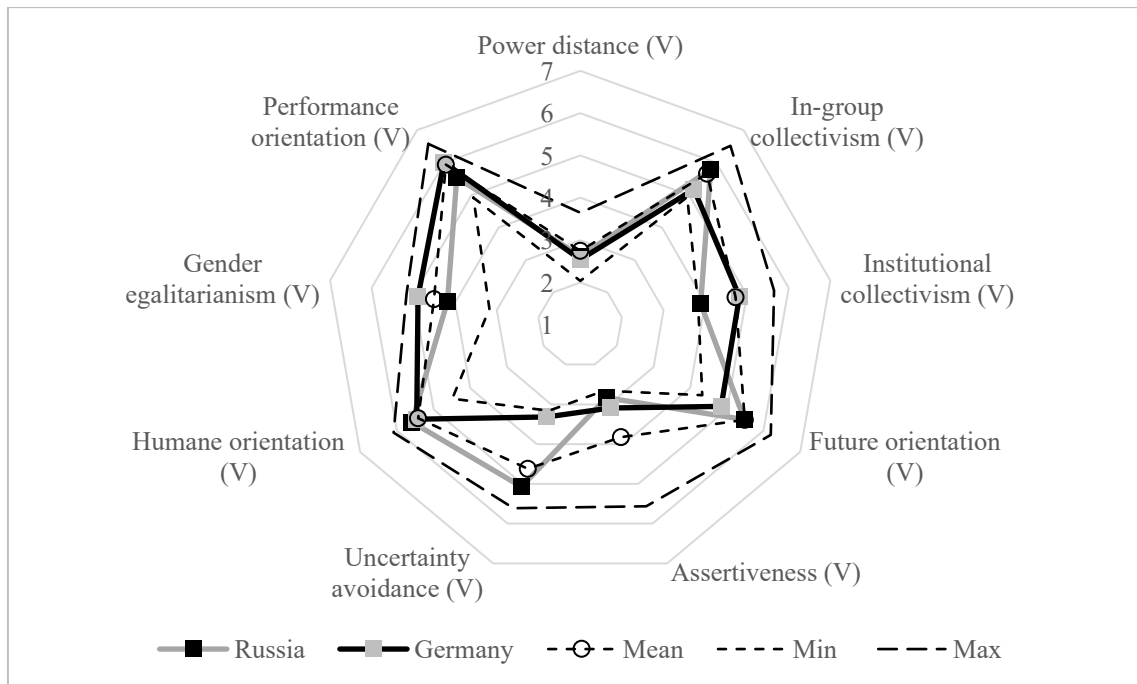


Figure 7: Globe Cultural Dimensions (Values): Comparison of Russia and Germany (former West)

2.3. Efficacy of TQM in Russian and German National Cultures

2.3.1. Capturing the Term “Efficacy of TQM”

Crosby, a guru of TQM, stated that “every penny you don’t spend on doing things wrong, over, or instead of, becomes half a penny right on the bottom line” (Crosby, 1979). *Deming*, probably the most famous TQM developer and guru, published his chain reaction theory, where he argued that top management of organizations emphasizes and takes the overriding responsibility for quality improvement, which results in doing things right from the first time with fewer mistakes, and that’s why less reworking, less time-wasting, fewer delays, better use of materials and less scrap. This, in turn, leads to cost reduction and productivity improvement. With better quality and lower prices, organizations increase sales and accordingly the market share, which would support the long- time profitable stay in business, providing more and more jobs, thus serving the community (Evans, 2019, p.52). Nowadays, EFQM, the in Europe widespread framework for implementing TQM, also promises performance gains for organizations after implementing EFQM. Logically, organizations, which implement TQM, have an expectation of benefits from it, such as improved quality, productivity, customer satisfaction, and financial performance (Zhang and Xia, 2013, p.120). The efficacy of TQM is defined in the current research as the performance benefits which organizations get after the successful TQM implementation.

It is widely recognized that it is difficult to measure the TQM performance outcomes (Taylor and Wright, 2003, p.98). A number of researchers have been studied which organizational performance measures do change after the TQM implementation and how TQM efficacy can be captured and measured: Schroeder et al. categorized topics of all quality-related articles that appeared in the first 50 issues of the Production and Operations Management journal and stated that more articles on quality and performance topics than on any other quality-related category appeared in the journal (Schroeder et al., 2005, p.473). There is still no unanimous conclusion about through which performance indicators exactly the efficacy of TQM should be defined and, accordingly, measured.

First, a wide range of performance criteria of organizations can be found in the scientific literature related to the efficacy of TQM (Kaynak, 2003, p.406; Shafiq et al., 2019, p.32). Besides the variance of organizational performance measures used in TQM-related studies, the scientific studies deliver a broad spectrum of results about the influence of TQM and of separate TQM practices on different organizational performance measures (Shafiq et al., 2019, p.32).

Easton and Jarrell (1998) confirm the positive effect of TQM on corporate financial performance (net income to sales and to assets, operating income to sales and to assets, sales to assets, net income and operating income per employee, total inventory to sales and to costs of goods sold, cumulative daily stock returns). Forza and Flippini (1998) empirically prove the positive relationship of TQM with two dimensions of competitive performance: quality conformance and customer satisfaction. Ahire and O’Shaughnessy (1998) prove that the higher the top management commitment is, the higher the quality of products. Samson and Terziovski (1999) conclude that so-called “soft” TQM practices as Leadership, Management

of people, and Customer focus are the strongest significant predictors of operational performance construct consisting of product quality, customer satisfaction, employee morale, productivity, and delivery performance. Das et al. (2000) research the influence of quality-connected practices on customer satisfaction and on financial performance (market share, ROA, and market share growth) and prove that quality practices are positively correlated with customer satisfaction which is positively correlated with financial performance. Wilson and Collier (2000) research the linkages in the MBNQA model and conclude that Leadership is the most important driver of system performance and influences overall performance through the whole quality management system. Customer focus and satisfaction results, as well as the financial results of the organization, are positively influenced by the implemented practices of the MBNQA model. Process management and Information and Analysis are the practices that have significant and positive direct effects on financial performance. Douglas and Judge (2001) prove that TQM practices have a positive influence on the financial performance consisting of growth in earnings, growth in revenue, changes in market share, return on assets, long-run level of profitability, and on the industry expert rating of performance. Hendricks and Singhal, 2001 provide empirical evidence that TQM implementation has a positive effect on financial performance (operating income, total sales, total assets, return on sales, and return on assets). Kaynak (2003) investigates the relationships between the effects of quality management practices on operating, financial, and market performance. The model of Kaynak (2003) supports a positive impact of QM on inventory management performance consisting of purchase material turnover, total inventory turnover, and on quality performance consisting of product quality, productivity, cost of scrap and rework as a % of sales, delivery lead-time of purchased materials, delivery lead-time of finished products/services to customer. Financial and market performance consisting of return on investment, sales growth, profit growth, market share, market share growth is positively influenced by quality performance. Prajogo and Sohal (2006) explore the co-alignment between TQM and technology/research and development (R&D) management in predicting quality and innovation performance and prove that TQM has a significant impact on quality performance but shows no significant relationship against innovation performance. York and Miree (2004) conclude that “a clear-cut answer to the research question “Is TQM linked to financial performance?” may not be possible” because they empirically showed that TQM-managed and Baldrige Award winner organizations had a better financial performance (sales, market share, and profits) not only after but also before the award (2004, p.309). The authors suggest exploring the causal link between TQM and financial performance further. Sanchez- Rodriguez and Martinez- Lorente (2004) explore quality management practices in the purchasing function and the relationships of these practices with a firm purchasing’s operational performance POP (quality of materials purchased, on-time delivery, and actual versus targeted cost and an indicator referred to materials inventory performance), internal customer satisfaction or service quality (reliability, assurance, responsiveness, empathy, tangibles) and business performance (ROA, ROS, production costs, market share). The authors proved that six quality management practices in purchasing constructs are significantly and positively correlated with POP. Five of the management practices are significantly and positively correlated with internal customer satisfaction. And three quality management practices, Management

commitment, Cross-Functional coordination, Personnel management, are significantly correlated with business performance. Sila measures performance in four business results areas, including human resources results (Employee turnover rate; employee absenteeism; the number of employee suggestions received; employee job performance); customer results (customer retention; reliability and timely delivery of products and services; personalized service; value for the money spent); organizational effectiveness (cost, quality, productivity, cycle times, number of errors or defects, supplier performance); financial and market results (market share, profit, return on total assets (ROA), overall competitive position, the number of successful new product and service introductions) (2007, p.85). Sila proves empirically that TQM has a direct positive influence on human resource results, customer results, and organizational effectiveness. Organizational effectiveness has, at the same time, an additional positive influence on customer results and human resources results on organizational effectiveness and customer results. Financial and market results are indirectly influenced by TQM positively through customer results and organizational effectiveness. On the contrary, Macinati (2008) concludes that there is a lack of a significant statistical relationship between financial performance and quality management, indicating that quality management practices are not significantly correlated with financial results. Sadikoglu and Zehir (2010) prove that TQM practices are significantly and positively correlated with employee performance (level of employee satisfaction, level of absenteeism, employee morale), innovation performance (the number of new products/services), and firm performance (reducing customer complaints, level of customer satisfaction, products/services quality to meet or exceed customer's demands, delivery lead-time of purchased materials and delivery lead-time of finished products/services to customer). Corredor and Goni (2011) consider several measures of performance that capture the different performance levels of organizations: profitability (ROA, CFOI, ROS), productivity (AVOE, SOA, DOE), the ability to raise long-term capital resources (SOA, DOE) and the firm's investment in its future (WOS). The results of the study imply that TQM implementation does not always lead to better performance and only pioneer TQM adopters experience performance gains. Zhang and Xia (2013) examine the impact of TQM on sales performance (net sales, sales-per employee, sales-per-dollar of asset), cost (cost-per-dollar sales, which is the total annual cost of goods sold plus general and administrative (G&A), and sales expenses divided by annual sales) and profitability (operating income before depreciation, operating income per employee, operating margin, and ROA) and proved that organizations which implemented TQM effectively (award winners) have much better results as their competitors. Sadikoglu and Olcay (2014) prove the positive impact of TQM on operational performance (quality of products/services, reliability of products/services, delivery to customers), inventory management performance (purchase material turnover total inventory turnover), employee performance (employees' organizational commitment, employees' job performance, employees' absenteeism, employees' morale, employees' turnover rate), innovation performance (the number of successful new product/service, the use of latest technological innovations, the technological competitiveness, the speed of new product development. the number of new products that are first-to-market), social responsibility (protection of environment, noise levels, pollution levels, positive impact on society, involvement in the community), customer results (customer satisfaction, customer

retention, customer complaints), and market and financial performance (ROA, market share, profits growth, sales growth). Whereas TQM as an overall construct has a significant positive influence on all performance measures, TQM practices affect different performance measures or have no relationship to other performance measures. Arshad and Su (2015) consider triangulation of TQM practices, service innovation and service quality within the context of financial service firms and empirically proved that TQM implementation had stronger positive effect on service quality than on service innovation. Ngambi and Nkemkiafu (2015) investigate the influence of TQM on customer satisfaction, corporate social responsibility, cost reduction, and employee satisfaction and find a significant relationship between TQM practices and corporate social responsibility, cost reduction, and employee satisfaction. However, they did not find a significant effect of TQM on customer satisfaction. Lee and Park (2016) analyze the data collected from 443 multinational firms from 13 countries and argue that operational performance can be improved through implementation of quality management practices. Panuwatwanich and Nguyen (2017) define organizational performance as a non-financial performance measure captured as the quality of work, external customer satisfaction, safety, market share (by other scientists, market share belongs to financial and market performance measure), the effectiveness of planning, labor efficiency, rate of successful tenders or quality contractor selected, competency in human resource management, risk control, manager's competency, and prove that TQM positively and significantly correlates with the organizational performance of Vietnamese construction firms. The construct of performance of Shafiq et al. (2019) comprises both financial (size of sales, profit level) and non-financial measures (customer complaints, problems in the technical processes, defects in products, resources utilization, gases emission). The findings of this study support the statement that TQM has a strong positive causal effect on both financial and non-financial business results. The findings of Khan et al. (2020) prove a positive relationship between TQM and operational performance of hotels in the context of developing countries. Pham (2020) finds out that TQM influences organizational efficiency such as satisfaction of customers and reduction of rework positively and in a short period of time whereas the improvement in financial performance takes time. Sila (2020) develops a model of the relationship of TQM, corporate social performance, and financial and market performance, measuring financial and market performance as mean of market share, profit, return on total assets, overall competitive position, and the number of successful new product or service introductions. The model was tested over time. The empirical results confirm direct positive effects of TQM on the financial and market performance over time. Augustyn et al. (2021) conclude that implementation of the interconnected practices of TQM (top management leadership; employee management; customer focus; supplier management; process management; quality data and reporting) in five-star hotels in Egypt improves their financial performance (average total revenue for the last three years, revenue per room and employee productivity). Finally, García-Fernández et al. (2022) conduct the extensive systematic literature analysis of the relationships between quality management, innovation and performance and conclude that quality management practices improve operational performance (customer, employee satisfaction and product quality) and financial performance (for instance, market share). "Quality management practices may also have a positive, indirect impact on

financial performance through operational performance, that is, product errors and quality costs must be reduced first, so that as a consequence sales and market share may be increased” (García-Fernández et al., 2022, p.16).

Table 8 consolidates significant positive and non-significant relationships between TQM and different organizational performance measures.

Table 8: *The Influence of TQM on Non-financial, Financial, and Mixed Performance Measures in the TQM-Performance Related Literature*

Study	Empirically Proved Influence of TQM or TQM practices on			
	Non-financial Performance Measures		Financial and Market Performance Measures	
	Positive	No Influence	Positive (Direct and Indirect)	No Influence
Ahire and O’Shaughnessy (1998)	Product quality			
Easton and Jarrell (1998)			Financial performance (net income to sales and to assets, operating income to sales and to assets, sales to assets, net income and operating income per employee, total inventory to sales and to costs of goods sold, cumulative daily stock returns).	
Forza and Flippini (1998)	Quality conformance and customer satisfaction			
Samson and Terziovski (1999)	Operational performance (product quality, customer satisfaction, employee morale, productivity, and delivery performance)			
Das et al. (2000)	Customer satisfaction		Financial performance (market share, ROA, and market share growth).	
Wilson and Collier (2000)	Customer focus and satisfaction		Financial and market performance (market share, market share growth, ROI, growth in ROI, ROS, growth in ROS).	
Douglas and Judge (2001)			Financial performance (growth in earnings, growth in revenue, changes in market	

Study	Empirically Proved Influence of TQM or TQM practices on			
	Non-financial Performance Measures		Financial and Market Performance Measures	
	Positive	No Influence	Positive (Direct and Indirect)	No Influence
			share, return on assets, long-run level of profitability) and industry expert rating of performance	
Hendricks and Singhal (2001)			Financial performance (operating income, total sales, total assets, return on sales, and return on assets)	
Kaynak (2003)	Inventory management performance (of purchase material turnover, total inventory turnover), quality performance (product quality, productivity, cost of scrap and rework as a % of sales, delivery lead-time of purchased materials, delivery lead-time of finished products/services to customer)		Financial and market performance (ROI, sales growth, profit growth, market share, market share growth).	
Prajogo and Sohal (2003)	Product quality		Innovation as market performance	
Sanchez-Rodriguez and Martinez-Lorente (2004)	Purchasing's operational performance POP (quality of materials purchased, on-time delivery, and actual versus targeted cost and an indicator referred to materials inventory performance), internal customer satisfaction based on the service quality (reliability, assurance, responsiveness, empathy, tangibles)		Business performance (ROA, ROS, production costs, market share)	
York and Miree (2004)				Financial performance (sales, market share, profits)

Study	Empirically Proved Influence of TQM or TQM practices on			
	Non-financial Performance Measures		Financial and Market Performance Measures	
	Positive	No Influence	Positive (Direct and Indirect)	No Influence
Prajogo and Sohal (2006)	Quality performance			Innovation performance
Sila (2007)	Human resources results (employee turnover rate; employee absenteeism; the number of employee suggestions received; employee job performance); customer results (customer retention; reliability and timely delivery of products and services; personalized service; value for the money spent); organizational effectiveness (cost; quality; productivity; cycle times; the number of errors or defects; supplier performance)		Financial and market results (market share, profit, ROA; overall competitive position; the number of successful new product and service introductions).	
Macinati (2008)				Financial results
Sadikoglu and Zehir (2010)	Employee performance (level of employee satisfaction, level of absenteeism, employee morale), innovation performance (the number of new products/services), and firm performance (reducing customer complaints, level of customer satisfaction, products /services quality to meet or exceed customer's demands, delivery lead-time of purchased materials and delivery lead-time of finished products/services to customer).			

Study	Empirically Proved Influence of TQM or TQM practices on			
	Non-financial Performance Measures		Financial and Market Performance Measures	
	Positive	No Influence	Positive (Direct and Indirect)	No Influence
Corredor and Goni (2011)		Productivity (AVOE, SOA, DOE).		Profitability (ROA, CFOI, ROS), the ability to raise long-term capital resources (SOA, DOE), and the firm's investment in its future (WOS).
Zhang and Xia (2013)			Sales performance (net sales, sales-per employee, sales-per-dollar of asset), cost (cost-per-dollar sales, which is the total annual cost of goods sold plus general and administrative (G&A) and sales expenses divided by annual sales), and profitability (operating income before depreciation, operating income per employee, operating margin, and ROA)	
Sadikoglu and Olcay (2014)	Operational performance (quality of products/services, reliability of products/services, delivery to customers), inventory management performance (purchase material turnover total inventory turnover), employee performance (employees' organizational commitment, employees' job performance, employees' absenteeism, employees' morale, employees' turnover rate), social responsibility (protection of environment, noise levels,		Market and financial Performance (ROA, market share, profits growth, sales growth). Innovation performance (the number of successful new products/services, the use of latest technological innovations, the technological competitiveness, the speed of new product development. The number of new products that are first-to-market)	

Study	Empirically Proved Influence of TQM or TQM practices on			
	Non-financial Performance Measures		Financial and Market Performance Measures	
	Positive	No Influence	Positive (Direct and Indirect)	No Influence
	pollution levels, positive impact on society, involvement in the community), customer results (customer satisfaction, customer retention, customer complaints)			
Arshad and Su (2015)	Service innovation, quality of service			
Ngambi and Nkemkafu (2015)	Corporate social responsibility, employee satisfaction, and cost reduction	Customer satisfaction		
Lee and Park (2016)	Operational performance			
Panuwatwanich and Nguyen (2017)	Organizational performance (quality of work, external customer satisfaction, safety, market share (market share belongs to financial and market performance measure by other scientists), effectiveness of planning, labor efficiency, rate of successful tenders or quality contractor selected, competency in human resource management, risk control, manager's competency)			
Shafiq et al., (2019)	Non-financial results (customer complaints, problems in the technical processes, defects in products, resources utilization, gases emission)		Financial results (size of sales, profit level)	

Study	Empirically Proved Influence of TQM or TQM practices on			
	Non-financial Performance Measures		Financial and Market Performance Measures	
	Positive	No Influence	Positive (Direct and Indirect)	No Influence
Khan et al. (2020)	Operational performance (with respect to hotels considered in this study is services and facilities, personnel, and management system)			
Pham (2020)	Product and customer results, process results and workforce results		Profitability (revenue growth, sales growth, profit growth), market results (market share, market share growth, and new market/customer) (indirect through non-financial results)	
Sila (2020)	Corporate social performance		Financial and market performance (market share, profit, return on total assets, overall competitive position, and the number of successful new product or service introductions)	
Augustyn et al. (2021)			Financial performance of hotels (average total revenue for the last three years, revenue per room and employee productivity)	

According to the analysis presented in the Table 8, all scales can be divided into non-financial and financial / market performance measures. It can be concluded that researchers choose an appropriate scale for performance indicators to capture the efficacy of TQM. The choice depends on what they aim to analyze, what theoretical assumptions should be proved, or which study they continue or replicate.

Even empirically proved positive relationships of TQM or TQM practices and organizational performance measures prevail, there are research results that show no relationship between TQM with organizational performance. One of the possible reasons for the different efficacies of TQM in different studies can be the cultural dependence of TQM efficacy. The next section presents the literature review about the efficacy of TQM in different national cultures.

2.3.2. Efficacy of TQM in Different National Cultures

Deming, the pioneer of TQM, postulates that his principles of TQM are applicable universally in any organization across the world (Deming, 1982, p.23). However, literature reports that TQM does not always lead to the expected benefits (York and Miree, 2004, p. 309; Corredor and Goñi, 2011, p.836). Scientists question if cultural differences can play an important role in the efficacy of TQM (Sousa-Poza et al., 2001; Kujala and Lillrank, 2004; Zhao et al., 2004; Rungtusanatham et al., 2005; Flynn and Saladin, 2006; Jung et al., 2008; Vecchi and Brennan, 2009; Wehnert, 2009; Kull and Wacker, 2010; Wu and Zhang, 2013; Zhang and Wu, 2014; Sila and Walczak, 2017; Shafiq et al., 2019; Alofan et al., 2020).

The debate if national culture impacts TQM's efficacy gains importance in the era of world globalization and can be considered a part of the general scientific debate on the "convergence hypothesis" proposing that in our rapidly globalizing world, the societies of the world are becoming more similar regarding industrial development and institutional patterns (Inkeles, 2019, p.24) and resulting from this global alignment of social, economic and cultural values, "management exhibit rational patterns for solving operational problems" without the need for different cultural solutions (Barmeyer et al., 2021, p.11). The divergence thesis, on the contrary, assumes that even a tendency of convergence is powerful, the influence of cultural traditions or national history still distinguish countries in a stronger way and unique cultural characteristics will always exist (Inkeles, 2019, p.22; Barmeyer et al., 2021, p.12). Moreover, the growing interdependence between countries not simply does not lead to the alignment between cultures, but, on the contrary, leads to the new challenges caused by cultural differences (House et al., 2004, p.5).

Detert et al. were one of the first researchers who investigated the universal applicability of TQM (the convergence hypothesis) versus the non-universal applicability of TQM (the divergence hypothesis). Detert et al built on the many times proven assumption of the management literature that agreement between organizational strategies, structures, and cultures with national culture defines their effectiveness (Scholz et al., 2012, p.197) and suggested that TQM will be more effective in the cultures the cultural values of which are congruent with TQM values, and accordingly, less effective in the cultures, the cultural values of which are incongruent with TQM values (Detert et al., 2000, p.858). The scientists conducted the theoretical analysis and derived the specific TQM values within eight general types of cultural values (Detert et al., 2000). Later, empirical evidence was found (Detert et al., 2003). Although Detert et al. (2000) concentrated their work on the organizational culture, their framework can also be applied for the national culture as national culture forms and affects organizational culture (Brodbeck and Frese, 2007, p.156; Schein, 2006, p.60) and remains always a part of the environmental context (Stein et al., 2014, p.39). The eight cultural values are: (1) the basis of truth and rationality; (2) the nature of time and time horizon; (3) motivation; (4) stability versus change; innovation and personal growth; (5) orientation to work, task, and coworkers; (6) isolation versus collaboration and cooperation; (7) control, coordination, and responsibility; (8) orientation and focus—internal or external (Detert et al., 2000, p.854). The TQM values which correspond with cultural values are the following: (Q1) decisions should rely on factual information; (Q2) improvements should require long-term orientations; (Q3) quality

problems should be understood as caused by systems, not people; (Q4) continuous improvement should be never-ending; (Q5) stakeholder needs should be satisfied through internal change; (Q6) cooperation is important; (Q7) decision making should be shared; (Q8) financial results should follow from customer satisfaction (Detert et al., 2000, p.855). Table 9 represents the description of the cultural values corresponding with TQM values and beliefs.

Table 9: *Corresponding Cultural and TQM Values and Beliefs (Detert et al. 2000, p.855)*

Cultural Value	TQM Value
1 The basis of truth and rationality in the organization	Q1: Decision-making should rely on factual information and the scientific method.
2 The nature of time and time horizon	Q2: Improvement requires a long-term orientation and a strategic approach to management.
3 Motivation	Q3: Quality problems are caused by poor systems-not the employees; Employees are intrinsically motivated to do quality work if the system supports their efforts.
4 Stability versus change/innovation/personal growth	Q4: Quality improvement is continuous and never-ending; Quality can be improved with existing resources.
5 Orientation to work, task, and coworkers	Q5: The organization's main purpose is to achieve results that its stakeholders consider important; Results are achieved through internal process improvement, prevention of defects, and customer focus.
6 Isolation versus collaboration/cooperation	Q6: Cooperation and collaboration (internal and external) are necessary for a successful organization.
7 Control, coordination, and responsibility	Q7: A shared vision and shared goals are necessary for organizational success; All employees should be involved in decision-making and support the shared vision.
8 Orientation and focus-internal and/or external	Q8: An organization should be customer-driven; Financial results will follow.

Kujala and Lillrank also conducted a theoretical analysis and concluded that TQM's success depends on the coherence of TQM and organizational culture (Kujala and Lillrank, 2004, pp. 52–53). Their research can also be referred to the national culture as national culture influences organizational culture (Brodbeck and Frese, 2007, p. 156; Schein, 2006, p.60).

Rungtusanatham et al. study the “universality of TQM” considering two conflicting theoretical perspectives—the convergence hypothesis and the divergence hypothesis. The convergence hypothesis supports the universal applicability of TQM, and the divergence hypothesis questions it and tries to explain how and why the differences between cultures impact the success of TQM (Rungtusanatham et al., 2005, p.44). The authors do not find support for the convergence with respect to the applicability of TQM across all four investigated countries (USA, Japan, Germany, and Italy) but find some support for the convergence hypothesis

with respect to TQM in Japan and the USA and, to a lesser extent, to TQM in Germany and Italy (Rungtusanatham et al., 2005, p.58).

Flynn and Saladin prove that quality practices must be adapted to the national culture in order to be more effective (Flynn and Saladin, 2006, p.599).

Jung et al. argue that organizational culture, which is driven by the national culture, plays a significant role in the efficacy of TQM (Jung et al., 2008, p.631).

Vecchi and Brennan study whether quality should be managed differently in different national cultures and conclude that the “culture-specific” argument explains quality practices and performance variations (Vecchi and Brennan, 2009, p.155).

Wehnert finds support for TQM effectiveness being dependent on the environment in which it is implemented (Wehnert, 2009, p.152).

Kull and Wacker prove that two GLOBE cultural values have a significant moderation effect on the effectiveness of QM: high Assertiveness is associated with lower efficacy of QM and high Uncertainty Avoidance with higher efficacy of QM (Kull and Wacker, 2010, p.236).

Zhang and Wu (2014) find out that “exploitative quality practices are highly related to performance outcome in national cultures featured by high power distance and high uncertainty avoidance. In contrast, exploratory quality practices are significantly associated with operations performance in nations with low power distance and low uncertainty avoidance. The study suggests that quality management practices be adopted selectively based on the national culture profile” (Zhang and Wu, 2014, p.91).

The findings of Shafiq et al. indicate that TQM is an effective management instrument not only for organizations located in developed nations but also for those situated in developing countries (Shafiq et al., 2019, p.31).

Alofan et al. find empirical support that the joint effect of national and organizational culture impacts the implementation of TQM, but organizational culture can offset the differences in the national culture by the adoption of TQM (Alofan et al., 2020, p.189).

Thus, the conducted literature analysis contains diverse research results considering the cultural efficacy of TQM. The next section focuses on the theoretical comparison of the efficacy of TQM in Russia and Germany.

2.3.3. Efficacy of TQM in Russian and German National Cultures. The Comparison.

The comparison of the cultural efficacy of TQM in Germany and Russia is based on the theory of Detert et al. (2000), derived from the many times proven assumption of the management literature that agreement between organizational strategies, structures, and cultures with national culture defines their effectiveness (Scholz et al., 2012, p.197) that the more national cultural values are congruent with TQM values, the more effective TQM will be in this organization (Detert et al., 2000, p. 858).

Kull and Wacker (2010) followed Detert et al. (2000), Kujala and Lillrank (2004), and analyzed the congruence between GLOBE's societal, cultural values and TQM values of Detert et al. (2000, p.855). One important note for the further understanding of TQM and QM abbreviation usage in this section of the study: Detert et al. (2000) and Kujala and Lillrank (2004) use the term TQM. Kull and Wacker ground their analysis on both research studies but use the term QM. That's why I refer to it in this section as TQM/QM.

Table 10 presents the theoretical conclusions of Kull and Wacker about the level of the congruence between GLOBE cultural dimensions and TQM/QM values of Detert et al. (2000, p.855) as well as the consequential hypothesizing effect of GLOBE cultural dimensions on the efficacy of TQM. "The grey backgrounds are positively related to a QM value category, while the black backgrounds are negatively related, and the white backgrounds are unrelated. The overall result of this theoretic approach to determine a GLOBE dimension's hypothesized effect is presented in the bottom row. (...). Thus, both the significance and direction of each hypothesis follow from the theoretical congruence between a GLOBE dimension and QM values." (Kull and Wacker, 2010, p.226). Kull and Wacker noted that even all eight cultural values Q1–Q8 underlie TQM/QM, the particular attention by developing their hypotheses was paid to Q4, Q6, and Q8 (Kull and Wacker, 2010, p.225) because these values are considered the most important values of QM (Kujala and Lillrank, 2004, p.48). The authors derived the hypothesis that the effectiveness of TQM/QM is positively moderated by Institutional Collectivism, Future Orientation, Human Orientation, and Uncertainty Avoidance, negatively moderated by Assertiveness and Power Distance, and not influenced by In-group Collectivism and Performance Orientation. Gender Egalitarianism was excluded from their study as quality management is not influenced by gender (Kull and Wacker, 2010, p.224). After the empirical validation of their theory, only two GLOBE cultural dimensions had a significant moderation effect on the effectiveness of TQM/QM: high Assertiveness was associated with lower efficacy of QM and high Uncertainty Avoidance with higher efficacy of TQM/QM (Kull and Wacker, 2010, p.236). The empirical results of the research of Kull and Wacker (2010) are presented at the bottom row of the Table 10.

Table 10: *The Congruence Between GLOBE Cultural Dimensions and TQM Values of Detert et al. (2000, p.855). Theoretical and empirical conclusions of Kull and Wacker (2010, p.227)**

	In-group collectivism	Institutional Collectivism	Future Orientation	Assertiveness	Uncertainty Avoidance	Performance Orientation	Human Orientation	Power Distance
Q1. Decisions should rely on facts and science.		Relationship over rationality (self-interest).		Rational thought, direct communication.	World is predictable; laws reduce ambiguity, formal systems.		Decisions are individualistic, not standard, trust informal processes	Superiors know best, discussion unhelpful.
Q2. Improvement is long-term and strategic		Relational (long-term) over transactional (short-term).	Long time horizon, advantageous times come/go, be strategic.					Status and worth are constant over time, difficult to change in short-term.
Q3. Problems are systemic, people intrinsically motivated		Desire to achieve group goals.	Future outcomes matter most, self-control, immediate needs unclear.	Personal responsibility for results, work hard, difficult targets.	Avoid uncertainty; people are unpredictable, conform		Altruism, benevolence, kindness, need for affiliation, self-sacrifice	Please/emulate superiors; superiors maintain control/order.
Q4. Improvement is never-ending, accomplished with existing resources.		Respect structures in place.	Knowledge acquisition, development for future.	Value progress, not bound by tradition.	Legitimate procedures, codes, keep status quo			Concentrated power assures stability, order, new skills, unnecessary

	In-group collectivism	Institutional Collectivism	Future Orientation	Assertiveness	Uncertainty Avoidance	Performance Orientation	Human Orientation	Power Distance
Q5. Results are for stakeholders, achieved through internal change, prevention, and customer focus.		Teamwork is the approach, consensus, relation-based hiring, not skill-based (need training).	Ideals exist and can be attained.	Change environment, satisfy internal needs, competition, opportunistic, results in relationships.	Need rules and process control to increase trust		Profit-oriented, social relations critical, human rights, forgive errors, resources for needs, shareholders over stakeholders.	Titles/ranking expected, accept automated technology, personal choice unimportant.
Q6. Cooperation and collaboration are necessary.		Resolve conflicts with compromise, cooperate for group, collective concern.		Dominant, tough, trust capabilities not obligation, cooperation, not useful.	Group processes provide assurance, avoid risks		Relationship-oriented, sensitive of others, share power.	
Q7. Shared vision is necessary for success, with employees involved in decisions.		Reward group, poor performance tolerated, group decision-making.	Actions always influence future, strategies, current structures flexible, goal oriented.	Individuals are in control, control over environment.	Systems need control, planning; experts help, solidarity is important		Work with others, mentor, paternalistic, informal control, responsible for co-workers.	Workers aren't responsible, superiors decide, resources are unequally distributed.

	In-group collectivism	Institutional Collectivism	Future Orientation	Assertiveness	Uncertainty Avoidance	Performance Orientation	Human Orientation	Power Distance
Q8. Be customer-driven and financial results will follow.				Internal culture, the external needs aren't important.	External highly uncertain, careful selection of relations.		Internal means of solutions, informal relationships are crucial.	Higher-status organizations and institutions should direct companies.
The consequential hypothesizing effect of GLOBE dimension on TQM efficacy	No effect	Positive	Positive	Negative	Positive	No effect	Positive	Negative
Empirically validated effect of GLOBE dimension on TQM efficacy	Not included in the empirical analysis.	Non-sign.	Non-sign.	Negative	Positive	Not included in the empirical analysis.	Non-sign.	Non-sign.

**Grey boxes show where there is agreement, black boxes show disagreement, and white boxes show no effect. Q4, Q6, and Q8 are highlighted in bold as the most important values (Kull and Wacker, 2010, p.227).*

The current study compares Russia and Germany by practices (P) and values (V). Cultural values are considered to be stable in nature and influence behaviors: “A value is a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means and ends of actions” (Kluckhohn, 1951, p. 395, cited from Spencer-Oatey and Kádár, 2021, p.58). Values influence human behavior and form ideas about desirable form of living together playing that’s why a particularly important role in the intercultural management (Barmeyer et al., 2021, p.34). Values “show a high degree of continuity” and “change more slowly than institutions or structures” (Barmeyer, et al., 2021, p.34). TQM literature also suggests considering cultural values rather than practices in QM studies because values drive attitudes and behaviors (Kull and Wacker, 2010, p.224).

Table 11 presents the analysis of the theoretical efficacy of TQM in Russian and German National Cultures. The analysis of the cultural efficacy of TQM in Russia and Germany is based on the premise, the more national cultural values are congruent with TQM values, the more effective TQM will be in this organization (Detert et al., 2000, p.858). Following Kull and Wacker, Gender Egalitarianism as well as In-group Collectivism and Performance Orientation have been excluded from the analysis as their values do not overlap with TQM values.

Russian culture matches the TQM values to the very high extent in Assertiveness and to the high extent in Power Distance, Uncertainty Avoidance, and Human Orientation. But it contradicts the TQM values in Institutional Collectivism and Future Orientation. The interaction of cultural dimension and TQM efficacy was empirically confirmed only for Assertiveness, Uncertainty Avoidance, the Russian values of which overlap with the TQM values to a remarkably high extent (Table 11). Therefore, it is to assume that TQM will be effective in Russian culture. This statement should be proved empirically.

German culture matches TQM values to a very high extent in Assertiveness and to a high extent in Power Distance Value, Institutional Collectivism, and Human Orientation. But it contradicts the TQM values in Future Orientation and Uncertainty Avoidance. The interaction of cultural dimension and TQM efficacy was empirically confirmed only for Assertiveness and Uncertainty Avoidance. Assertiveness value in Germany overlaps with the TQM value to very high, but it also matches with the German value of UA to a very low extent (Table 11). Therefore, it's not possible to conclude theoretically if TQM will be effective in Germany. TQM Efficacy in Germany should be proved empirically.

Both Russia and Germany have low values of Power Distance, which match TQM culture and make TQM theoretically effective. As the Power Distance value in Russia is higher, Germany has a better Power Distance to implement TQM. The higher score of the Institutional collectivism in Germany creates the framework in Germany where TQM is more effective than in Russia. But the lower Future Orientation value of Germany makes TQM less effective than in Russia. Both Russia and Germany have high values of HO, which match TQM culture and makes TQM theoretically effective. As the Human Orientation value in Russia is higher, Russia has a better Human Orientation to implement TQM. But all these interdependences have been theoretically derived but have not been significant in the empirical research of Kull and Wacker (2010).

Kull and Wacker (2010) theoretically and empirically proved the positive influence of Uncertainty avoidance. As Russia has a high score of Uncertainty Avoidance value and Germany has a significantly low score for it, it is to assume that TQM is more effective in Russia. Moreover, according to the Table 11, it is theoretically assumed and empirically proved that Assertiveness influences the Efficacy of TQM negatively, meaning that the lower Assertiveness leads to higher performance. Even Russia and Germany both have a significantly low value of Assertiveness, Russia's score (2.83) is lower than Germany's score (3.09), which implies that TQM will be more effective in Russia.

Table 11: *The Agreement Between National Cultures of Russia and Germany and TQM Values*

Comparison of GLOBE Values (based on Table 7)			How the Cultural Dimension should be to match the TQM Culture (based on Table 10)		The Agreement between National Cultures and TQM Values	
	Russia	Germany	Theoretical hypotheses of Kull and Wacker (2010)	Results of the Empirical Study of Kull and Wacker (2010)	Russia	Germany
Power Distance	L	L	Low	Non-sign.	high	high
Institutional Collectivism	L*	H	High	Non-sign.	very low	high
Future Orientation	L	L*	High	Non-sign.	low	very low
Assertiveness	L*	L*	Low	Sign.	very high	very high
Uncertainty Avoidance	H	L*	High	Sign.	high	very low
Human Orientation	H	H	High	Non-sign.	high	high

Grey box means that Kull and Wacker (2010) empirically proved this interdependence.

Concluding the theoretical comparison of the cultural efficacy of TQM between Russia and Germany, the efficacy of TQM should be higher in Russia than in Germany. Table 12 presents the final overview over the comparison between TQM efficacy in Russia and Germany.

Table 12: Theoretical Comparison Between TQM Efficacies in Russia and Germany

Comparison of GLOBE Values		The influence of GLOBE Dimensions on the Efficacy of TQM (Table 11)			TQM is more effective in:		
	Russia	Germany	Theoretical hypotheses	Empirically proved?	Comparison of the TQM efficacy between Russia and Germany	Russia	Germany
Power Distance (PD)	L (2.62)	L (2.54)	Negative	Non-sign.	Both Russia and Germany have low values of PD, which matches TQM culture and makes TQM theoretically effective. As the PD value in Russia is higher, Germany has a better PD to implement TQM.		+
Institutional Collectivism (IC)	L* (3.89)	H (4.82)	Positive	Non-sign.	The IC Value in Russia is L*, which contradicts with TQM culture. Conversely, the high (H) value of IC in Germany matches TQM values and makes TQM theoretically effective in Germany.		+
Future Orientation (FO)	L (5.48)	L* (4.85)	Positive	Non-sign.	FO value of German culture is very low (L*) and contradicts with TQM culture whereas Russian FO value is higher as German one and therefore more suitable with TQM culture.	+	
Assertiveness (AS)	L* (2.83)	L* (3.09)	Negative	Sign.	Both Russia and Germany have very low values of AS, which matches TQM culture and makes TQM theoretically effective. As the AS value in Russia is lower than in Germany, Russia has better than Germany to implement TQM.	+	
Uncertainty Avoidance (UA)	H (5.07)	L* (3.32)	Positive	Sign.	The UA Value in Russia is H which matches with TQM culture. Conversely, the very low (L*) value of UA in Germany contradicts TQM values. This makes TQM potentially more effective in Russia.	+	

Comparison of GLOBE Values			The influence of GLOBE Dimensions on the Efficacy of TQM (Table 11)		TQM is more effective in:		
Human Orientation (HO)	H (5.59)	H (5.46)	Positive	Non-sign.	Both Russia and Germany have high values of HO, which matches TQM culture and makes TQM theoretically effective. As the HO value in Russia is higher, Russia has a better HO to implement TQM.	+	

Grey box means that this interdependence was proved empirically by Kull and Wacker (2010).

3. Investigations Frames

3.1. Mental Model

Depending on the definition of the goal of the research project, a theoretical analysis allows the research problem to be broken down into individual components that are related to one another as a model (Riesenhuber, 2007, p.4). The goals of the current study are to prove how the national cultures of Russia and Germany influence TQM's efficacy in these countries and to compare the efficacies of TQM in Russia and Germany considering the influence of Russian and German national cultures. Therefore, the following interconnected areas will be included in the mental model:

- The central design area of the model is the level of the implementation of TQM in organizations that took part in the study. TQM's level of implementation is the mean value of the seven TQM practices—Leadership, Strategic Planning, Customer Focus, Information and Analysis, Human Resource Management, Process Management, and Supplier Management—implemented to a certain extent in this organization to which TQM value refers. The implementation of each TQM practice is to be measured in each organization that takes part in the study with 1–7 Likert scale, where 1 means that the practice is not implemented at all and 7 means that the practice is fully implemented.
- The situational influence on the left is presented by countries of origin and operating of organizations, Russia and Germany. The countries are characterized through the agreement of the national cultural values of the country and TQM values. The values scores of the GLOBE project are used to describe the national cultural values of Russia and Germany. The TQM cultural values described by Detert et al. (2000) are used to describe the TQM cultural values. The agreement between Russian and German national values and TQM cultural values will be conducted based on the research results of Kull and Wacker (2010), who matched theoretically and proved empirically the interaction of the GLOBE dimensions and TQM cultural values.
- Success criteria on the right are represented by organizational effectiveness (OE) and financial and market results (FMR) of organizations. Both influences of TQM on OE and FMR are referred to as the efficacy of TQM. There is no universal definition for which performance dimensions should be used to measure the efficacy of TQM. Researchers choose appropriate items in dependence on what they aim to analyze, what theoretical assumptions should be proved or which study they continue or replicate (2.3.1). In the current study, organizational effectiveness is the mean of supplier performance, customer retention, reliability, and timely delivery of products, quality and productivity, and financial and market results is the mean of following dimensions: market share, number of successful new products, profit, return on total assets (ROA), and overall competitive position. All items of both performance measures have been assessed by organizations for the past three years compared to that of major industry competitors.

All three presented areas in the model should be interconnected with each other:

- TQM was created as a management tool to help organizations to increase productivity, decrease costs, and gain a competitive position on the market (Deming, 1986, p.1). The analysis of the scientific literature shows that many research studies prove that TQM positively influences different organizational performance measures. This is reflected in the model through the influence of the level of the TQM implementation influences on OE and FMR of the organization.
- The current research supports the divergence argument arguing that the differences between the Russian and German national cultural values lead to the differences in the efficacies of TQM in Russian and German organizations. This assumption is based on the literature analysis results, which show that the cultural differences between countries play an important role in the efficacy of TQM and are gaining importance in the modern globalizing world (Sousa-Poza et al., 2001; Kujala and Lillrank, 2004; Zhao et al., 2004; Rungtusanatham et al., 2005; Flynn and Saladin, 2006; Jung et al., 2008; Vecchi and Brennan, 2009; Wehnert, 2009; Kull and Wacker, 2010; Wu and Zhang, 2013; Shafiq et al., 2019; Alofan et al., 2020). The theory of the current study follows the premise of Detert et al. (2000) and Kujala and Lillrank (2004), which assert that the efficacy of TQM is higher in the cultures where the values are congruent with TQM values, and, accordingly, less effective in the cultures where the values are incongruent with TQM values (Detert et al., 2000, p. 858; Kujala and Lillrank, 2004, pp.52–53). Although Detert et al. (2000) and Kujala and Lillrank (2004) concentrated their research on the relationship of organizational culture and TQM, their conclusions can be transferred to the national culture as national culture forms and impact organizational culture (Brodbeck and Frese, 2007, p.156; Schein, 2006, p.60). This is reflected in the model through the moderation effect of the country on the TQM's efficacy (the influence of the level of the TQM implementation on OE and FMR of the organization). The greater the agreement between the national cultural values of the country with the TQM values, the stronger the influence of TQM on OE and FMR will be in this country, in other words, the more effective TQM will be in this country.

Figure 8 presents the mental model drawn according to all assumption, explained above. All theoretical assumptions reflected in the mental model need to be hypothesized and empirically proved further in this study.

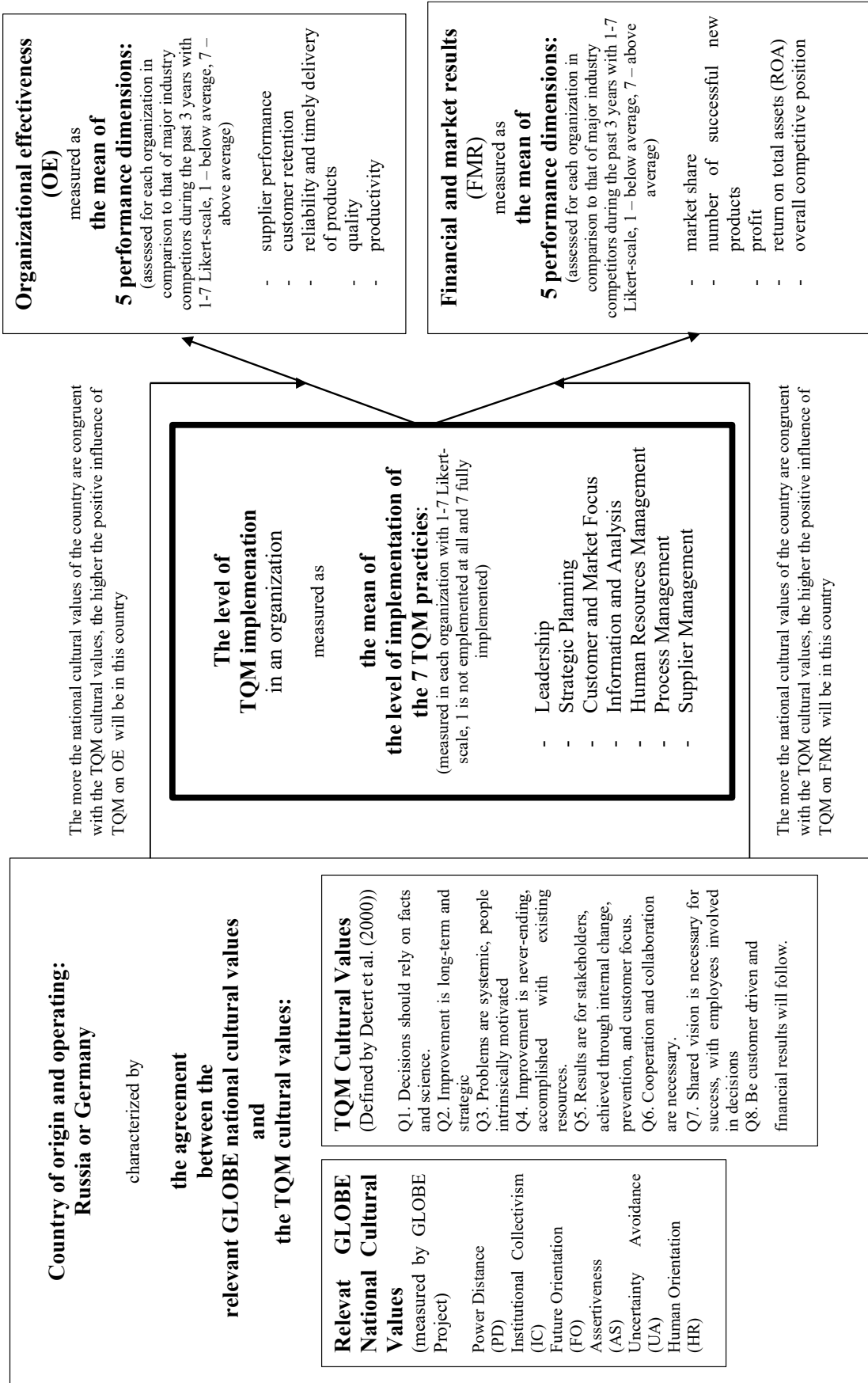


Figure 8: The Mental Model

3.2. Hypotheses Development

3.2.1. Derivation of the Hypotheses

Hypotheses of the current study are derived following the theory of Detert et al. (2000, p.858) that the more cultural values are congruent with TQM values, the more effective will be TQM in the organization.

As theoretically analyzed and proposed in 2.3.3:

- Russian culture matches the TQM values to the very high extent in Assertiveness and to the high extent in Power Distance, Uncertainty Avoidance, and Human Orientation. But it contradicts the TQM values in Institutional Collectivism and Future Orientation. The interaction of cultural dimension and TQM efficacy was empirically confirmed only for Assertiveness, Uncertainty Avoidance, the Russian values of which overlap with the TQM values to a very high and high extent (Table 12). Therefore, it is to assume that TQM will be effective in Russian culture, influencing organizational effectiveness and financial and market results.

H1 (Ru): TQM positively influences the organizational effectiveness in Russian organizations situated and operating in Russia.

H2(Ru): TQM positively influences the financial and market results in Russian organizations situated and operating in Russia.

- German culture matches TQM values to a very high extent in Assertiveness and to a high extent in Power Distance Value, Institutional Collectivism, and Human Orientation. But it contradicts the TQM values in Future Orientation and Uncertainty Avoidance. The interaction of cultural dimension and TQM efficacy was empirically confirmed only for Assertiveness and Uncertainty Avoidance. Assertiveness value in Germany overlaps with the TQM value to very high, but it also matches with the German value of UA to a very low extent. Therefore, it's not possible to conclude theoretically if TQM will be effective in Germany. According to the literary analysis on the topic of the efficacy of TQM in different countries, provided in sections 2.3.1 and 2.3.2, there is evidence for both significant positive and non-significant relationships between TQM and different non-financial and financial performance measures all over the world. Significant positive relationships of TQM and performance measures prevail (Table 12). Therefore, it will be assumed that TQM will be effective in German culture, influencing organizational effectiveness and financial and market results.

H1 (Ge): TQM positively influences the organizational effectiveness in German organizations situated and operating in Germany.

H2 (Ge): TQM positively influences the financial and market results in German organizations situated and operating in Germany.

- The positive influence of Uncertainty Avoidance and the negative influence of Assertiveness was theoretically and empirically proved by Kull and Wacker (2010, p.234). Russia has a high score of Uncertainty Avoidance value, and Germany has a significantly low score for it, meaning that TQM in Russia should be more effective. Russia and Germany both have a significantly low value of Assertiveness. Russia's score (2.83) is lower than Germany's score (3.09), which also supports the assumption that TQM will be more effective in Russia than in Germany.

H3a: TQM positively influences the organizational effectiveness of Russian organizations stronger than the organizational effectiveness of German organizations.

H3b: TQM positively influences the financial and market results of Russian organizations stronger than the financial and market results of German organizations.

3.2.2. Consolidation of the Hypotheses in the Model

Figure 9 presents the detailed theoretical Model with six derived hypotheses:

H1(Ru): TQM positively influences the organizational effectiveness in Russian organizations situated and operating in Russia.

H1(Ge): TQM positively influences the organizational effectiveness in German organizations situated and operating in Germany.

H2(Ru): TQM positively influences the financial and market results in Russian organizations situated and operating in Russia.

H2(Ge): TQM positively influences the financial and market results in German organizations situated and operating in Germany.

H3(a): TQM positively influences the organizational effectiveness of Russian organizations stronger than the organizational effectiveness of German organizations.

H3(b): TQM positively influences the financial and market results of Russian organizations stronger than the financial and market results of German organizations.

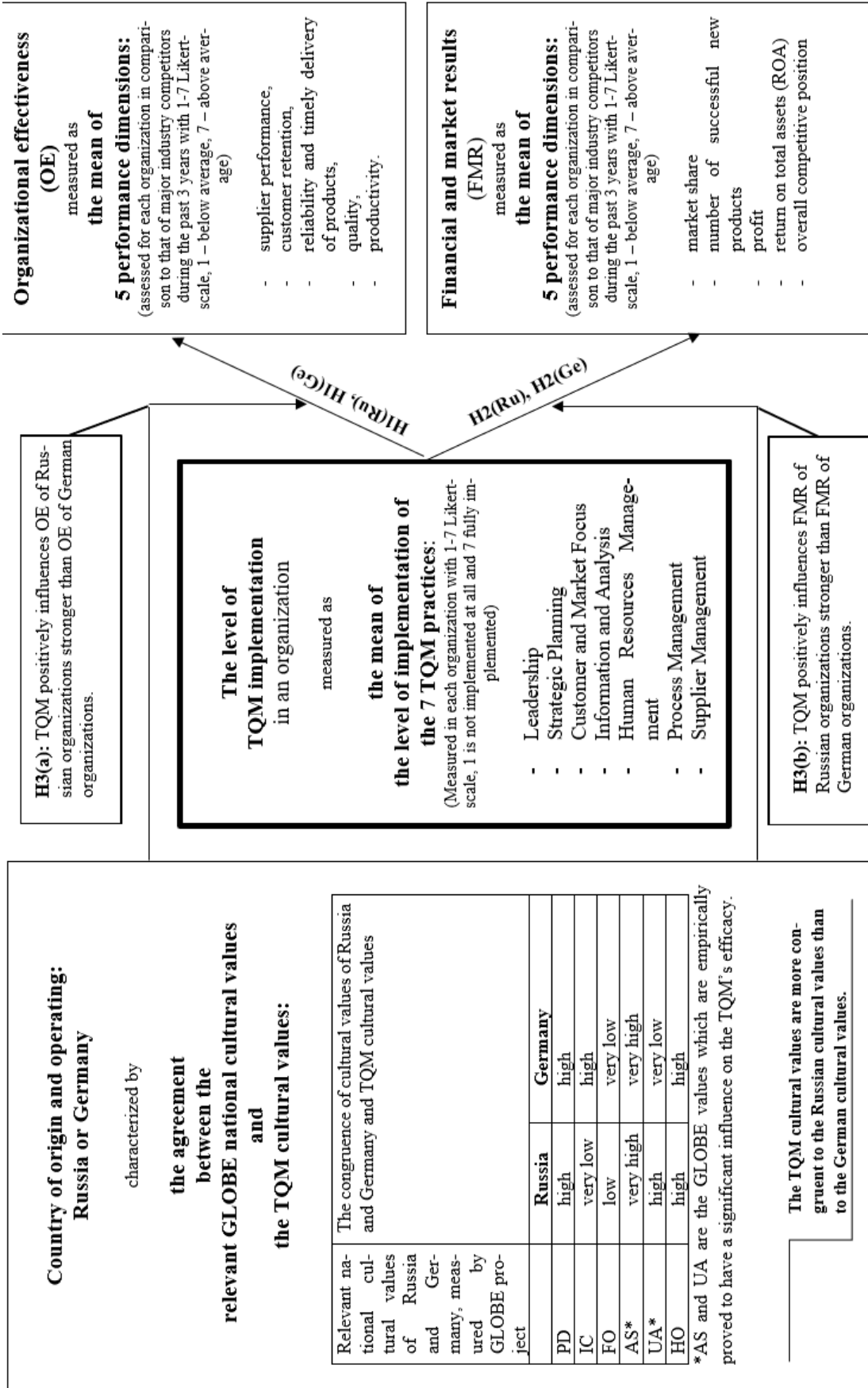


Figure 9: Mental model with Hypotheses

3.3. Methodology

The reader is already familiar with the research questions of the current study. But research questions only make sense if they can be processed methodologically in a correct way (Kutschker, Bäurle und Schmid 1997, p.5). After the research problem is described, the theory is formed, and the hypotheses are derived, the following methodologically correct steps on the research way will be:

- the choice of the research method, which will be applied to generate the results of the study (3.3.1),
- operationalization of the variables and constructs (3.3.2),
- the choice of the statistical method, which will be used for the hypothesis testing (3.3.3).

3.3.1. Research Design

Research design depends on the nature of the research question. Generally, it can be differentiated between the large quantitative and small-scale, qualitative empirical research designs (Riesenhuber, 2007, p.4). Qualitative research captures the variability of the characteristics of the subject under study through verbal description using the example of carefully selected individual cases and is usually conducted in the form of case studies in areas with little knowledge with the aim of gaining an in-depth understanding of the real complex phenomenon (Riesenhuber, p.6, 2007). It is primarily based on an inductive approach and is used to develop new explanatory models and generate hypotheses (Borchardt and Göthlich, 2007, p.46; Mayring, 2010, pp.19,22). Quantitative research methods, in contrast to the qualitative research, are suitable for hypotheses checking in a deductive procedure (Bamberg and Baur. 2002, p.6; Mayring, 2010, pp.19,22), which is the case of the current study. Quantitative methods capture the variability of traits through the defined assignment of numerical values, which makes it easier to process the data (Riesenhuber, 2007, p.6). For this reason, quantitative research can work with much larger samples than qualitative research (Riesenhuber, 2007, p.6). The choice of research design should primarily depend on the research question and the degree of development of the research object (Borchardt und Göthlich, 2007, p.46). To give answers to the research questions of the current study, it is meaningful to use the quantitative research method.

The basis for applying any quantitative research method is data collection, which is the systematic and targeted activity to obtain information (Hammann and Erichson, 2000, p.81). One differentiates between the procurement of primary and secondary data. Primary data collection methods include experimental and non-experimental surveys as well as experimental and non-experimental observation (Kaya, 2007, p.62). The best-suited method to collect data for answering the research questions of the current study is a non-experimental survey. The instrument for the data collection via survey is a questionnaire. In the survey, a distinction is made between written, oral, and internet surveys (Kaya, 2007, p.51). Kaya analyzed advantages and disadvantages of oral (personal or phone interviews) and written (post or internet) surveys (2007, pp.52–53):

- Personal surveys cause the longest processing time and the highest costs for the examiner, especially if the target group is spread over a large area. Telephone surveys can be carried out quickly and cheaply, but offer limited flexibility, as there are no visual stimuli. The so-called interviewer bias is very high in personal surveys as there is a lot of room for interaction. In phone interviews, there is also a possibility of interaction, that is why interviewer bias is also high, but not to the same extent as in face-to-face interviews.
- Written surveys provide largely unbiased results in terms of interviewer bias. Internet surveys are the cheapest way to collect data but not always the fastest. Written surveys provide little flexibility since the subject area is to be asked, and the scope of the questions is limited. In addition, the survey situation cannot be controlled, since possible influence by third parties or non-compliance with the order of questions cannot be prevented, which might be very important for different questionnaires.

After determining the data collection method, the question arises if data should be collected as a full or partial survey. In the full census, each element of the population is examined for the characteristics of interest (Kaya and Himme, 2007, p.79). From a statistical point of view, complete coverage of the population represents the ideal case (Homburg and Krohmer, 2003, p. 225). However, a full census can only be considered if the population of interest is small that's why data collection is usually carried out in the form of a partial or random sample survey (Kaya and Himme, 2007, p.79).

Finalizing the theoretical background of research design, the ultimate choice for all procedures of the correct methodological research depends on the current examination goals, the desired information quality, and the cost and time restrictions (Kaya, 2007, p.51). The current study is designed as a theory-driven questionnaire based on empirical research. It obtains the primary data via questionnaire-based telephone interviews in the form of a random sample survey in Russia and Germany.

The questionnaire for the current research was created in English as most constructs were taken over from Sila (2007), as it will be described in Section 3.3.2. The questionnaire was first translated from English into Russian and German. A different native speaker for each country translated them back into English. Necessary corrections were made to be sure that all three language versions (English, Russian, and German) are identical. The questionnaires were then pre-tested in both Russia and Germany for their validation through the pilot survey. The questionnaires of the pilot survey were distributed to the five respondents to evaluate the suitability of the instrument. Phone interviews were conducted with these five respondents, and slight modifications of the survey have been done to improve its validation. The final versions of surveys in Russian, German and English, can be found in attachments (Appendix).

Fey conducted a cross-cultural comparison of Sweden and Russia, based on his "past experience," and decided "to deliver questionnaires personally to each of the firms by a researcher" because "mailing questionnaires would result in an unacceptably low response rate in Russia" (Fey, 2005, p.354). Questionnaires could not be personally delivered, but it was decided to obtain the data in Russia, and accordingly, in Germany, per phone interviews. The

possibly great time expenditure was taken into consideration to find organizations that would agree to take part in the research and to conduct these interviews. It was also expected to get well-considered, honest answers per phone, avoiding the situation that questionnaires are being filled in merely to complete of the task. Indeed, respondents paid a greater deal of attention to the questionnaire in the personal structured conversation, as they felt personally responsible for their answers. To make participation attractive, a feedback profile was promised to each respondent. If an organization agreed to take part in the study, a structured 30 to 60-minute-long phone interview with a responsible person was conducted. If wished by an organization, the questionnaire was sent in advance per email to give the possibility for the responsible person to consult with other people in his or her organization.

The data was obtained in the native language of each country in different German and Russian manufacturing plants with no foreign capital situated and operating respectively in Germany and Russia. Manufacturing plants are a good starting point for examining the context-dependent perspective of quality management practices as they have enough experience of implementing of QM practices (Zhang et al., 2012, p.21). Interviews took part from September 2011 to March 2013 via telephone and skype. First, 1037 randomly selected German organizations from Hoppenstedt databank of various kinds of manufacturing (codes 10 to 33) were contacted per mail with the announcement of the study and then re-contacting them per telephone. Only thirty-eight organizations agreed to take part in the study (3.66% response rate). The reasons for such a low response rate in Germany were announced as follows:

- “no possibility to take 30 to 60 minutes to answer the questionnaire”,
- “too many questionnaires come, and there is no time to work”,
- “no phone interviews – only written ones.”

To increase the response rate in Germany, it was decided to involve in a survey of not only randomly selected German organizations, but also those that indeed are especially interested in comparing results between the efficacy of TQM in Russia and Germany. Members of Deutsch-Russische Auslandshandelskammer (German-Russian Foreign Chamber of Commerce) and of Verband der Deutschen Wirtschaft in Russland (Association of German Businesses in Russia) were contacted. If only the address of the Russian representative office was given as a contact, the Russian representative office of this German organization was contacted and asked for a contact person in Germany. That person was then contacted in Germany and told that the answers should be given about the German manufacturing organization and not the Russian representative office. Organizations that already took part in the interview were asked to recommend other manufacturing organizations in Germany that could be interested in the comparison of TQM efficacy between Germany and Russia. These activities resulted in three hundred more contacted organizations in Germany and 82 more conducted phone interviews, which is a 27.3% response rate for organizations that might be directly interested in the comparison results. Thus, by April 2013, a sample of 120 domestic manufacturing plants with no foreign capital located in Germany had been obtained.

The situation with the data collection in Russia was, as expected, much more difficult than in Germany. Not only a lack of time (as, for example, in Germany), but also mistrust and fear of giving too much information to the dissatisfaction of the company owner or CEO were the reasons for refusals. Russians are traditionally suspicious of behavioral research (Grachev, 2009, p.4) and “are not used to being interviewed, with concerns arising from the Communist/KGB era also inhibiting participation meaning that not only was the sample difficult to access, but extra allowances had to be made in implementing fieldwork” (Kobernyuk, 2014, p.473). Permission from the CEO was required to be able to conduct an interview with through the CEO’s chosen person. On average, fifteen phone contacts per organization were required only to get permission to speak with the CEO or to get permission from the CEO to interview somebody in his or her organization. Official confidentiality agreements were frequently signed to get permission to conduct a survey. Savin (2005, p.190) also wrote about the difficulty of accessing and collecting the data of Russian companies. Anghel (2012) described the task of enlisting a sufficient number of participants in Russia as one of the most difficult tasks in his research (Anghel, 2012, p.34). After the months of such time investments, it was decided to engage a professional call center in Russia additionally. The call center was instructed how to conduct the interviews. In March 2012, they contacted 425 organizations and got permission for a phone interview with 50 organizations (response rate by professional call center 11.77%). The author of the study contacted 680 organizations and was able to conduct 79 interviews (response rate 11.62%). Response rates of 11.62% and 11.77% are not low; the time expenditure should not be underestimated, as, on average, 15 phone contacts per organization were needed to get an acceptance or a rejection for an interview. By April 2013, a sample of 129 domestic manufacturing plants with no foreign capital located in Russia was obtained.

3.3.2. Operationalization of Variables

3.3.2.1. Control Variables

TQM was developed and first adopted by large Japanese and later U.S. companies, but nowadays, not only large but also small and medium-sized companies implement TQM (Sila, 2007, p.94). Scientific literature reports evidence that the differences between large and medium-sized companies could lead to the different benefits the companies obtain from TQM (Sila, 2007, p.95).

Organizational size in many TQM – performance or culture–performance studies have been measured by the number of employees (Cua et al., 2001, p. 681; Kull and Wacker, 2010, p.232; Sadikoglu and Zehir, 2010 p.19).

TQM is also being adopted by organizations from different industries and services. Some recent research projects have a goal to prove the benefits of TQM for various kinds of industries (Shafiq et al., 2019, p.38; Patyal et al., 2020, p.896).

Two control variables, organizational size measured by the number of employees, and kind of manufacturing, have been added to the models as control variables. The inclusion of these

two control variables in the TQM-performance models will make the results more credible, declining the risk of potential missing-variable bias (Sadikoglu and Zehir, 2010 p.19).

The questionnaire includes the following ordinal scale to measure organizational size:

The number of employees in the company in the year 2010 was:

0–20	21–100	101–500	501–1000	1001–2500	2501–5000	Over 5000
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In the current study, service organizations are excluded from the research. The participant is asked to give the kind of manufacturing to which his/her organization belongs, building a nominal scale variable kind of manufacturing. Before adding kind of manufacturing in the models, it will be transferred into dummy variables (4.3.1.1).

3.3.2.2. Country

Country of origin contains unique cultural characteristics (Sila, 2007, p.92), which, as grounded in 2.3, can lead to divergence in the TQM's efficacy. One of the objectives of the current study is to give an answer to the question of whether TQM in Russian and German organizations situated and operating accordingly in Russia and Germany have the same efficacy or not? For this purpose, the efficacy of TQM should be investigated in dependence on if the country of origin and operation of the organization is Russia or Germany.

Russian and German countries with no foreign capital situated and operating accordingly in Russia and Germany take part in this study. Dummy variable country was coded with 1 for Russian organizations and 0 (reference category) for German organizations.

3.3.2.3. TQM

As justified in 2.1.2, the measurement instrument, developed and validated by Sila (2007, pp.84–85), is used in the current research to measure TQM. The questionnaire contains 92 questions measuring the seven TQM practices Leadership (L), Strategic Planning (SP), Customer and Market Focus (CM), Information and Analysis (IA), Human Resources Management (HR), Process Management (PM), Supplier Management (SM). Organizations have been asked to answer all the questions by indicating the following items on a scale of 1 to 7, where 1 is “Strongly disagree,” 4 is “Neutral,” and 7 is “Strongly agree.”

TQM is measured as the mean of the seven TQM practices:

$$TQM = \text{Mean} (L, SP, CM, IA, HR, PM, SM).$$

Table 13 represents the questions from the questionnaire of Sila (2007) measuring the seven TQM practices for the current studies.

Table 13: Measurement Constructs of the Seven TQM Practices

Measurement Construct and its Description	Name of Variable	Questions (Appendix)
Leadership (top management and supervisory commitment and leadership; public responsibility and citizenship)	L	L1151a L1151b L1151c L1151d L1151e L1152f L1152g L1152h L1152i L1152j
Strategic Planning (quality mission; goals and policy; development and deployment)	SP	SP116k SP116l SP116m SP116n SP116o SP116p SP116qa SP116qb SP116qc
Customer and Market Focus (customer and market knowledge; attention to customer satisfaction; management of customer relationships)	CM	CM117r CM117s CM117t CM117u CM117v CM117w CM117x CM117y CM117za CM117zb CM117zc CM117zd
Information and Analysis (performance measurement and analysis; information management;	IA	IA118aa IA118bb IA118cc

Measurement Construct and its Description	Name of Variable	Questions (Appendix)
use of information technology; quality tools; benchmarking)		IA118dd IA118ee IA118ff IA118gg IA118hha IA118hhb IA118ia IA118iib IA118iic IA118jja IA118jjb IA118jjc IA118kka IA118kkb IA118kkc IA118lla IA118llb
Human Resource Management (employee involvement; employee empowerment; teamwork; rewards. recognition and performance appraisal; employee training)	HR	HR119mm HR119nn HR119oo HR119pp HR119qq HR119rr HR119ss HR119tt HR119uu HR119vv HR119ww HR119xx HR119yy
Process Management (product and service design; process control; innovation and continuous improvement)	PM	PM120zz PM120aaa PM120bbb PM120ccc PM120ddd PM120eee

Measurement Construct and its Description	Name of Variable	Questions (Appendix)
		PM120fff PM120ggg PM120hhh PM120iii
Supplier Management (supplier quality; supplier involvement; products and services)	SM	SM121jjj SM121kkk SM121lll SM121mmm SM121nnn SM121oooa SM121oob SM121pppa SM121pppb SM121pppc SM121qqqa SM121qqqb SM121qqqc SM121qqqd

3.3.2.4. Efficacy of TQM

As concluded in 2.3.1, to measure the efficacy of TQM, researchers explore the influence of TQM on organizational performance, which is divided into non-financial and financial / market performance measures.

There is no unanimous definition of which performance dimensions should be used to measure the influence of TQM on them. Researchers choose appropriate items in dependence on what they aim to analyze, what theoretical assumptions should be proved, or which study they continue or replicate (2.3.1).

To assess the efficacy of TQM in the current study, organizational effectiveness and financial and market results are introduced as two dependent variables.

As presented above in 3.3.2.3, the current study adopts the instrument of Sila to measure the TQM construct. Sila also measures the efficacy of TQM, exploring the influence of TQM on both financial and non-financial measures of organizational performance (Sila, 2007, p.85). The instrument of Sila is also consistent with Malcolm Baldrige's National Quality Award Criteria and uses sufficiently wide constructs to measure organizational performance (Sila, 2007, p 85). The author used the same TQM construct in his recent investigation of changes in TQM's effects on corporate social performance and financial performance over

time (Sila, 2020, p.216). To capture the efficacy of TQM, the present study will measure organizational effectiveness (OE) and financial and market results (FMR), adopting dimensions from Sila's instrument.

3.3.2.4.1. Organizational Effectiveness

As already explained in 3.3.2.4, for the development of the existing instrument, initially, most items were taken from the existing instrument of Sila (2007). I adopt the following dimensions from the original instrument of Sila, which he sent me as I asked him for it, to measure organizational effectiveness in the study.

I selected for my measurement instrument of organizational effectiveness the following items:

- supplier performance,
- customer retention,
- reliability and timely delivery of products and services,
- quality,
- productivity,
- cost,
- cycle times,
- a number of errors or defects.

Sila divided these items into customer results and organizational effectiveness. I relate all of them to one non-financial construct, which I refer to as organizational effectiveness.

The respondents of the questionnaire were asked to assess the level for each of the organizational performance dimensions during the past three years compared to that of major industry competitors through indicating the following items on a scale of 1 to 7, where 1 is below average, 4 is average, and 7 is above average. The overall measure of performance, in this case of organizational effectiveness (OE), has been obtained by taking the mean of the performance dimensions as it has been done in other studies using overall performance measures (Sila, 2007, 85; Naor et al., 2010, p.199).

Concluding, organizational effectiveness (OE) construct should be a mean of eight items: supplier performance, customer retention, reliability and timely delivery of products, quality, productivity, cycle times, number of errors or defects, and cost. After reliability and validity analysis (4.2.2), three items had to be deleted from the scale as they loaded on another factor. The final organizational effectiveness (OE) construct is the mean of supplier performance, customer retention, reliability and timely delivery of products, quality, and productivity.

3.3.2.4.2. Financial and Market Results

As already explained in 3.3.2.4, I adopt dimensions from the original instrument of Sila, which he sent me as I asked him for it, to measure financial and market results (FMR) in the study.

I selected all dimensions which have been used by Sila (2007) for my measurement instrument of financial and market results (FMR). Sila (2020) used the same items to measure financial and market performance:

- market share,
- number of successful new product
- profit,
- return on total assets (ROA),
- overall competitive position

The respondents of the questionnaire were asked to assess the level for each of the organizational performance dimensions during the past three years compared to that of major industry competitors through indicating the following items on a scale of 1 to 7, where 1 is below average, 4 is average, and 7 is above Average. The overall measure of performance, in this case of financial and market results (FMR), has been obtained by taking the mean of the performance dimensions as it has been done in other studies using overall performance measures (Sila, 2007, p.85, Naor et al., 2010, p.199).

The final financial and market results (FMR) construct is the mean of the following dimensions: market share, number of successful new products, profit, return on total assets (ROA), overall competitive position.

3.3.3. Statistical Method

Finally, the statistical method, which will be used for the hypothesis testing, has to be chosen and introduced before chapter 4 will immerse the reader in the depth of the statistical analysis and its results.

Everything depends on the type of research hypothesis and the underlying data of the study; different methods are suitable for testing the statistical hypothesis (Riesenhuber, 2007, p.13). Univariate methods examine only one variable at a time. Multivariate methods allow the simultaneous investigation of several variables. A distinction is made between interdependence analyzes and dependency analyses. Interdependence analyzes examine the relationships between variables (factor analysis) and the similarity of cases in relation to certain variables (cluster analysis). Dependency analyzes examine how one or more independent variables affect a dependent variable (Riesenhuber, 2007, p.14)

The linear regression analysis represents one of the most flexible and commonly used statistical methods to analyze the relationship between a dependent and one or more independent variables (Backhaus et al., 2008, p.52).

It is based on a model that describes a straight line that summarizes the data pattern in the best possible way (Field, 2018, p.397) and is used to describe the relationship of dependent and independent variables quantitatively and forecast values of the dependent variable (Backhaus et al., 2008, p.52).

The linear regression analysis will be applied to test the hypotheses in this research.

Before applying the linear regression analysis, the following assumptions will have to be proved on their violation:

- Additivity and linearity.
The most crucial assumption which cannot be violated is additivity and linearity. If the combined effect of the predictors is added together and the straight line cannot describe the outcome variable, the model is wrong and cannot be applied to the data pattern (Field, 2018, p.230).
- Normality.
Normality in the regression diagnostics means the normally distributed errors or, in other words, that the residuals in the model are “random, normally distributed variables with a mean of 0” (Field, 2018, p.388).
- Homoscedasticity/homogeneity of variance.
Homoscedasticity or homogeneity of variance means that each level of the predictors’ residual terms should have equal variance. In other words, it is assumed that the variance of the outcome variable is constant across different values of the predictor variable. If the variance is not stable, it is called heteroscedasticity. Heteroscedasticity invalidates confidence intervals and significance tests (and therefore p -values) (Field, 2018, pp.237,387).
- Independence.
Independence means independent errors, which means that the terms of the residual should be uncorrelated. If the assumption that errors in the model are not correlated (are independent), the confidence intervals and significance tests (and therefore p -values) will be invalid (Field, 2018, p.239).
- No perfect multicollinearity.
There should be no ideal linear relationship among two or more predictor variables in the multiple regression analysis as it makes it impossible to assess the individual importance of a predictor and would accordingly lead to problems to estimate regression coefficients (Field, 2018, p.402).

If any of the assumptions described above is violated, we should find the appropriate way to reduce the biases. But despite numerous assumptions, linear regression analysis is quite insensitive to minor violations, and that’s why it is a very widespread and versatile instrument in the statistical analysis (Backhaus et al., 2008, pp.90–91).

The analysis will be run in the software SPSS 27, which has been widely used by scientists and praxis (Backhaus et al., 2008, p.20). SPSS stood initially for “Statistical Package for the Social Science,” later it was also interpreted as “Statistical Product and Service Solution” or “Superior Performing Software System” (Backhaus et al., 2008, p.20).

4. Analysis and Results

4.1. Sample Description

By April 2013, a sample of 249 cases was obtained. The pool includes 129 domestic manufacturing plants situated in Russia and 120 domestic manufacturing plants located in Germany. To make the study results more representative, we exclude organizations with foreign capital from the study to avoid the additional influence of other cultures on this organization. All 120 German and 129 Russian manufacturing organizations have no foreign capital.

Tables 14 - 21 and Figures 10 - 14 below present the detailed respondents' profiles. Organizations from different businesses (Table 14) and of varied sizes (Table 15, Figure 10) took part in the research. 24 CEOs and Vice CEOs in Germany and 56 in Russia answered the questionnaire personally. Other respondents were quality managers (33 in Germany and 8 in Russia), production managers (4 in Germany and 4 in Russia), and the other types of managers or positions (Table 19). Mostly men (101 from Germany and 101 from Russia) and only a few women (28 from Russia and 19 from Germany) answered the questionnaires (Table 18).

Table 14: *Kind of Manufacturing*

Industries	Germany	Russia	Total
Chemical and allied products	10	4	14
Construction materials and allied products	4	11	15
Rubber and plastic products	7	5	12
Metal production and processing	11	4	15
Fabricated metal products	21	11	32
Automotive industry	8	0	8
Machinery and computer equipment	20	6	26
Electronic and electric equipment	9	15	24
Food, beverages, and feed industry	6	50	56
Textile, Clothes, Shoes, Leather Industry	2	3	5
Not specified or missing	22	20	42
Total	120	129	249

Table 15: Turnover

Mil USD	Germany	Russia	Total
0-1	6	35	41
2-10	28	49	77
11-20	12	5	17
21-50	13	10	23
51-100	18	3	21
101-500	19	5	24
501-1000	3	3	6
Over 1000	14	3	17
Missing	7	16	23
Total	120	129	249

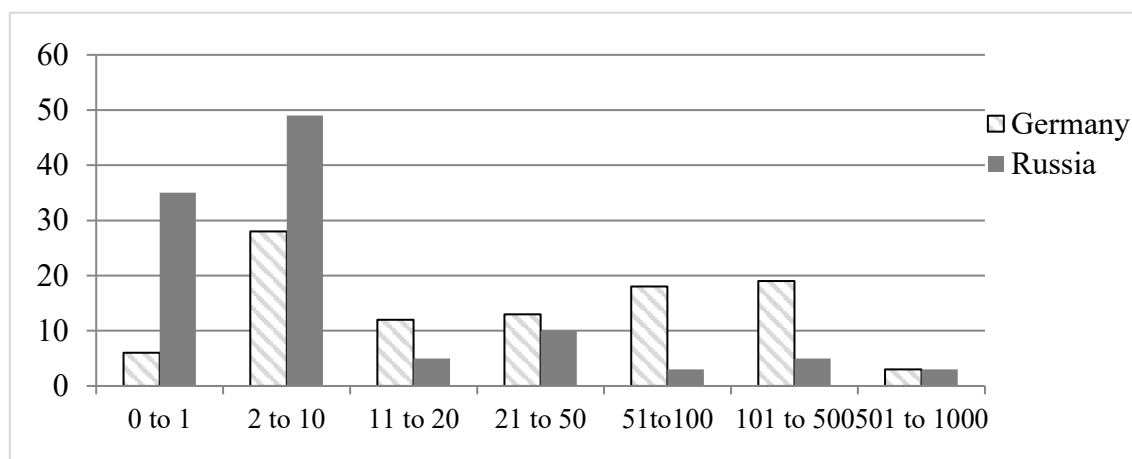


Figure 10: Turnover (mil USD)

Table 16: Number of Employees

Number of Employees	Germany	Russia	Total
0-20	16	29	45
21-100	31	53	84
101-500	37	29	66
501-1000	8	5	13
1001-2500	7	4	11
2501-5000	3	2	5
Over 5000	12	7	19
Missing	6	0	6
Total	120	129	249

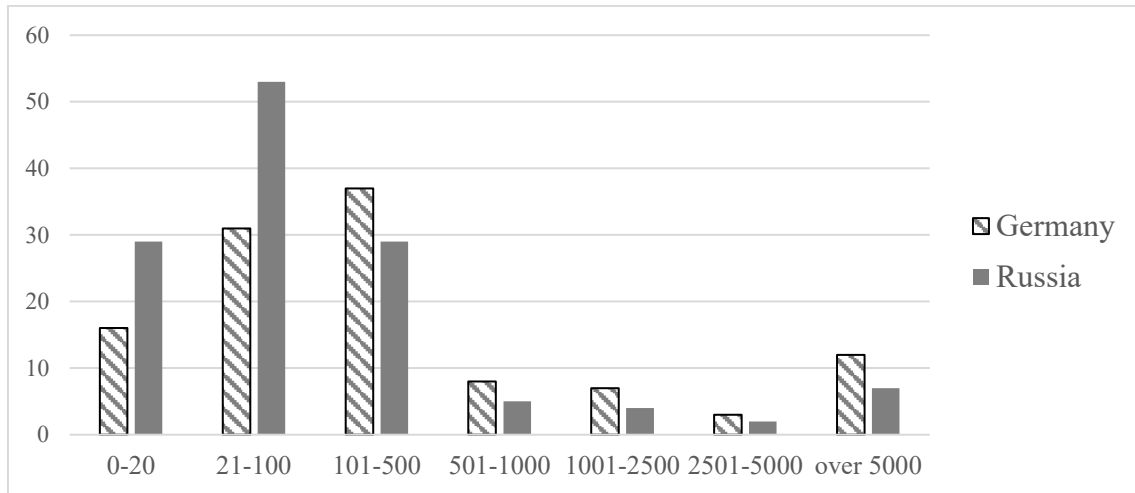


Figure 11: Number of Employees

Table 17: Job Titles of the Respondents

Job Titles	Germany	Russia	Total
CEO	24	42	66
Vice CEO	0	14	14
Quality manager	33	8	41
Production manager	4	4	8
Other types of managers	27	37	64
Other positions	25	17	42
Missing	7	7	14
Total	120	129	249

Table 18: Sex of the Respondents

Sex	Germany	Russia	Total
Female	19	28	47
Male	101	101	202
Total	120	129	249

Table 19: Age of the General Manager

Age of the General Manager	Germany	Russia	Total
Under 30	1	5	6
30–39	12	21	33
40–49	30	53	83
50–59	58	34	92
Over 60	19	16	35
Missing	0	0	0
Total	120	129	249

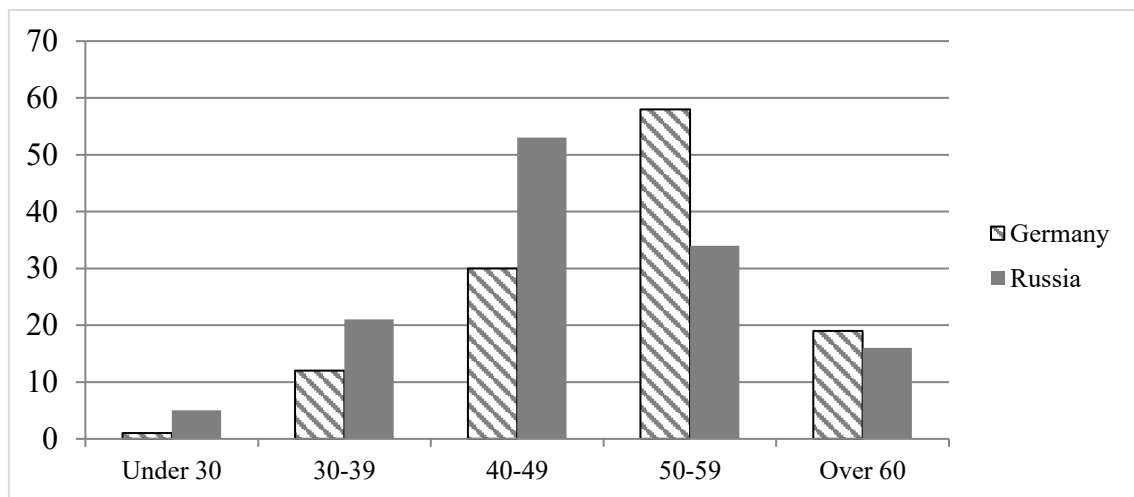


Figure 12: Age of the General Manager

Table 20: Age of the Top Management

Age of the Top Management	Germany	Russia	Total
Under 30	1	7	8
30–39	6	56	62
40–49	59	60	119
50–59	50	5	55
Over 60	3	0	3
Missing	1	1	2
Total	120	129	249

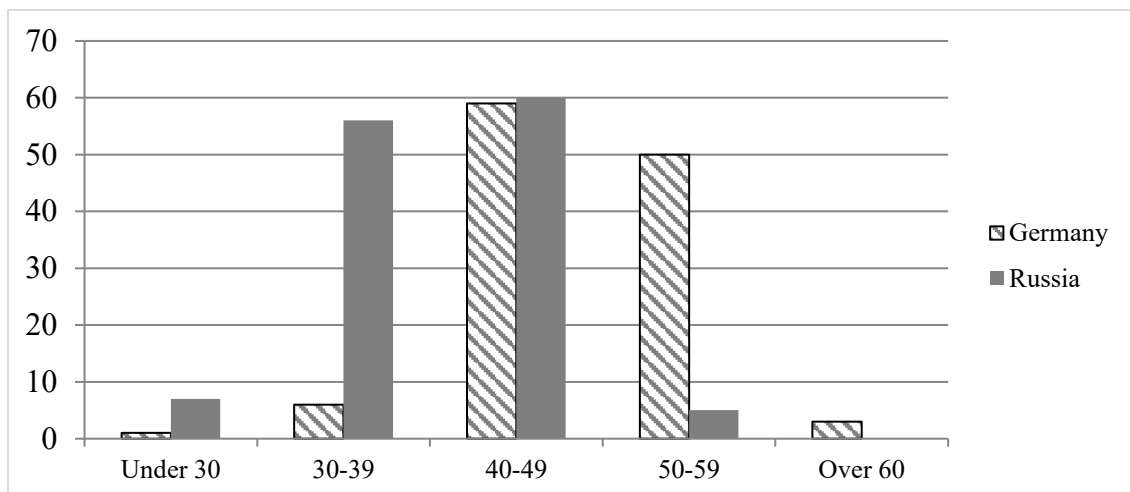


Figure 13: Age of the Top Management

Table 21: Average Age of Employees

Average Age of Employees	Germany	Russia	Total
Under 30	2	21	23
30-39	34	66	100
40-49	75	36	111
50-59	5	6	11
Over 60			
Missing	4	0	4
Total	120	129	249

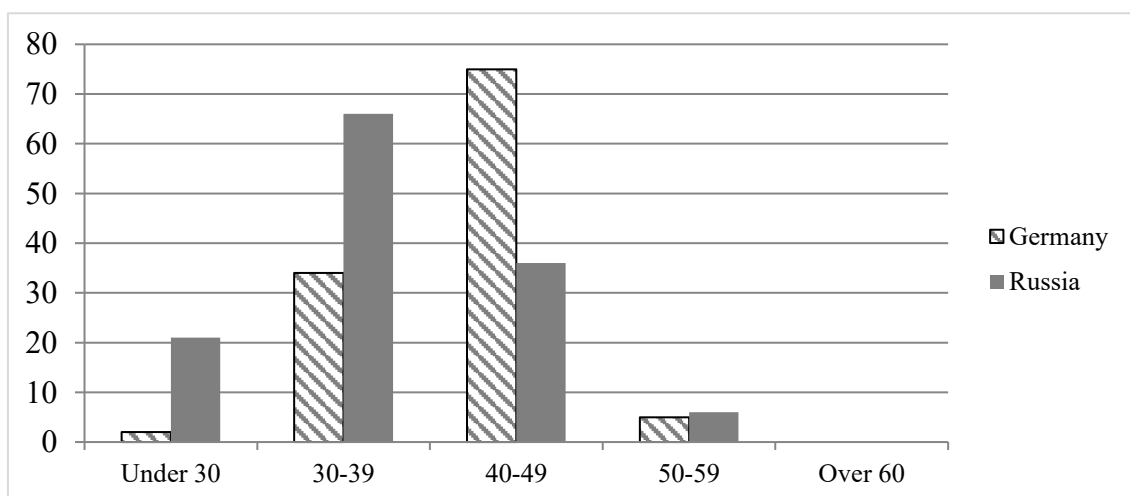


Figure 14: Average Age of Employees

The visual inspection of the sample distribution of the Russian and German samples (figures 10 – 14) implies that Russian and German organizations might differ from each other significantly in age of the general manager, average age of the top management, and average age of the employees.

The special statistical procedures allow proving these differences statistically. The Independent Samples t-Test has been used to assess whether the means of two different groups are statistically different from each other. For the Independent Samples t-Test, it is assumed that both Russian and German samples come from normally distributed data with equal standard deviations, but *Field* recommends not to worry about the normal distribution of the sample if it is large enough which the sample of 249 cases is (Field, 2018, p.235).

The Independent Samples t-Test has been conducted in SPSS 27 to prove if the samples differ significantly in age of the general manager, average age of the top management, average age of the employees.

Table 22 represents the results of the Independent Samples t-Test. Levene's test, which explores the homogeneity of variances, must be taken into consideration. If it is significant at $p \leq 0.05$, the assumption of homogeneity has been violated. If Levene's test is non-significant (i.e., $p > .05$), I can assume that the variances are roughly equal. Having selected the right row for each variable in the Table 22 I then check the p-value of the Independent Samples t-Test. Suppose the p-value is less than 5% ($p < 0.05$), in that case, the null hypothesis can be rejected, which implies strong evidence that there is a significant difference among the Russian and German organizations regarding the means of the respective variables (Field, 2018, p.257).

Table 22: *The Independent Samples t-Test*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Age of the General Manager	Equal variances assumed	1.643	0.201	3.415	247	0.001	0.412	0.121	0.174	0.650
	Equal variances not assumed			3.431	246.356	0.001	0.412	0.120	0.175	0.649
Average Age of the Top Management	Equal variances assumed	0.094	0.760	10.746	245	0.000	0.911	0.085	0.744	1.078
	Equal variances not assumed			10.743	243.477	0.000	0.911	0.085	0.744	1.078
Average Age of Employees	Equal variances assumed	6.408	0.012	5.802	243	0.000	0.506	0.087	0.334	0.678
	Equal variances not assumed			5.891	235.129	0.000	0.506	0.086	0.337	0.675

The results of the independent samples t-Test statistically confirm that Russian and German organizations which took part in the study differ significantly in:

- age of the general manager (general managers in Russian sample are younger as in German sample),
- average age of the top management (average age of the top management in Russian sample is lower as in German sample),
- average age of the employees (average age of the employees in Russian sample is lower as in German sample).

4.2. Validity and Reliability of Scales

To go further with the analysis of hypotheses, we assess the measurement constructs based on their validity and reliability to ensure that measurement error is kept to a minimum (Field, 2018, p.15).

Reliability of constructs assesses if the questionnaire (measurement constructs) produced the same results as in this research under the same conditions but across different situations or at other points of time (Field 2018 p.15; Hair et al., 2013, p.8).

The obvious way to confirm reliability is to test the same organizations twice. If the questionnaire is reliable, the same results will be produced. As it was difficult to interview the organizations even for the first time (for more details about the causes, please read 3.3.1), this method could not be considered seriously. Statistical methods have been used to prove the reliability of scales and validity of constructs in this study.

There are several reliable statistical analyses. Cronbach's Alpha (α) is commonly used to it: the higher Cronbach's Alpha is, the more reliable is the respective measurement construct (scale) (Field, 2018, p. 825).

The validity of construct assesses if the questionnaire (measurement constructs) measures what it was designed for or, in other words, what it claims to measure (Field, 2018, p. 15; Hair et al., 2013, p.8). The confirmatory factor analysis can measure validity.

The reliability and validity of the final scales will be proved in the next sections (4.2.1).

4.2.1. TQM

As grounded in 3.3.2.3, TQM should be measured as the mean of the seven TQM practices (Leadership, Strategic Planning, Customer and Market Focus, Information and Analysis, Process Management, Human Resource Management, and Supplier Management), which are in their turn constructs consisting of items gathered through a questionnaire (Appendix).

First, the Cronbach's Alpha (α) scores for these seven measurement constructs of TQM practices, including all items, had been calculated in SPSS 27 for the whole data sample (Russian and German organizations). After that, the items were deleted if their deletion increased the Cronbach's Alpha of the measurement construct of the respective TQM practice. Through the deletion of such items, the reliability of the scale was improved. Finally, there were no items left in the build, the exclusion of which would increase the overall Cronbach's Alpha of the respective construct.

Before the final scores of Cronbach's Alphas of all seven TQM practices constructs were assessed based on the whole data sample (Russian and German organizations), the validity had been confirmed through the confirmatory factor analysis to make sure that the deletion of such items did not affect the factor structure and the measurement construct was still valid. In other words, factor loadings of all items of each final construct were proved. Items of each construct must load on the overall factor with over 0.35 for this research's sample size with 249 cases (Field, 2018, p.795; Hair et al., 2013, p.115). All items of each final construct loaded on a single factor with much over 0.5 (Table 23), which is more than the value

of 0.35 recommended as the sufficient value for factor loadings by the sample size of 249 cases (Hair et al., 2013, p.115; Field 2018, p.795).

Table 23 consolidates the results of the reliability and validity analysis of seven TQM practices measurement constructs for the whole sample (Russian and German organizations). The Cronbach's Alpha final scores of 5 constructs (Strategic Planning, Customer Focus, Information and Analysis, Human Resource Management, and Supplier Management) are above 0.80, which are excellent values (Field 2018, p. 829). Cronbach's Alpha final scores of the other two constructs (Leadership and Process Management) are above 0.75, which is a commonly acceptable value (Field 2018 p.829). Corrected item-total correlations are the correlations between each item and the scale score that excludes this item and should be more than 0.3 (Field, 2018, p.826). All respective constructs' items correlate with the scale score at a sufficient level (all values of corrected item-total correlation are over 0.3). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy meets the minimum criteria of 0.5, and Bartlett's test of sphericity is significant for each construct (Field 2018, p.820).

Table 23: Factor Loadings, Corrected item-total Correlation, Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for Measurement Constructs of TQM Practices for the Whole Sample (Russian and German Organizations)

Measurement Construct and its Description	Name of Variable	Included and Excluded Items	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Leadership (top management and supervisory commitment and leadership; public responsibility and citizenship)	L	L1151a	0.530	0.358	0.75	0.793	Sign (0.00)
		L1151b	0.659	0.499			
		L1151c	0.568	0.421			
		L1151d	0.671	0.521			
		L1151e	0.545	0.401			
		L1152f	0.550	0.414			
		L1152g_Inv excluded					
		L1152h					
		L1152i	0.544	0.404			
		L1152j	0.618	0.460			
			0.544	0.404			
Strategic Planning (quality mission; goals and policy; development and deployment)	SP	SP116k	0.713	0.592	0.857	0.837	Sign (0.00)
		SP116l	0.797	0.686			
		SP116m	0.766	0.678			
		SP116n	0.768	0.663			
		SP116o	0.701	0.613			
		SP116p	0.701	0.614			
		SP116qa excluded					
		SP116qb	0.613	0.489			
		SP116qc	0.635	0.521			

Measurement Construct and its Description	Name of Variable	Included and Excluded Items	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Customer and Market Focus (customer and market knowledge; attention to customer satisfaction; management of customer relationships)	CM	CM117r	0.745	0.660	0.839	0.864	Sign (0.00)
		CM117s	0.652	0.552			
		CM117t	0.632	0.536			
		CM117u excluded					
		CM117v	0.585	0.486			
		CM117w	0.625	0.504			
		CM117x	0.538	0.428			
		CM117y	0.560	0.444			
		CM117za	0.580	0.488			
		CM117zb	0.610	0.510			
		CM117zc	0.681	0.587			
		CM117zd	0.660	0.557			
Information and Analysis (performance measurement and analysis; information management; use of information technology; quality tools; benchmarking)	IA	IA118aa	0.606	0.512	0.877	0.837	Sign (0.00)
		IA118bb	0.731	0.651			
		IA118cc excluded					
		IA118dd excluded					
		IA118ee excluded					
		IA118ff	0.680	0.585			
		IA118gg excluded					
		IA118hha excluded					
		IA118hhb excluded					
		IA118iia	0.699	0.608			
		IA118iib	0.729	0.643			
		IA118iic	0.709	0.623			
		IA118jja	0.557	0.494			
		IA118jib	0.667	0.593			
		IA118jic	0.655	0.576			
		IA118kka	0.592	0.516			
		IA118kkb	0.625	0.549			
		IA118kkc	0.588	0.520			
IA118lla excluded							
IA118llb excluded							

Measurement Construct and its Description	Name of Variable	Included and Excluded Items	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Human Resource Management (employee involvement; employee empowerment; teamwork; rewards, recognition and performance appraisal; employee training)	HR	HR119mm excluded			0.834	0.813	Sign (0.00)
		HR119nn					
		HR119oo	0.763	0.654			
		HR119pp	0.644	0.532			
		HR119qq excluded	0.642	0.531			
		HR119rr excluded					
		HR119ss					
		HR119tt	0.514	0.401			
		HR119uu	0.622	0.510			
		HR119vv	0.555	0.443			
		HR119ww	0.681	0.578			
		HR119xx	0.677	0.579			
HR119yy	0.724	0.637					
			0.517	0.406			
Process Management (product and service design; process control; innovation and continuous improvement)	PM	PM120zz excluded			0.778	0.811	Sign (0.00)
		PM120aaa	0.604	0.470			
		PM120bbb	0.621	0.476			
		PM120ccc	0.674	0.542			
		PM120ddd	0.544	0.416			
		PM120eee	0.683	0.523			
		PM120fff	0.664	0.530			
		PM120ggg excluded					
		PM120hhh					
		PM120iii	0.575	0.419			
			0.660	0.493			
Supplier Management (supplier quality; supplier involvement; products and services)	SM	SM121jjj excluded			0.868	0.846	Sign (0.00)
		SM121kkk excluded					
		SM121lll excluded					
		SM121mmm excluded					
		SM121nnn excluded					
		SM121oooa excluded					
		SM121oob excluded					
		SM121pppa					
		SM121pppb					
		SM121pppc	0.673	0.578			
		SM121qqqa	0.738	0.653			
		SM121qqqb	0.587	0.488			
		SM121qqqc	0.787	0.677			
		SM121qqqd	0.832	0.725			
			0.780	0.663			
	0.820	0.713					

In the second step, the reliability and validity of the TQM measurement construct have been proved. TQM is an over construct, consisting of seven TQM practices: Leadership, Strategic Planning, Customer and Market Focus, Information and Analysis, Human Resource Management, Process Management, and Supplier Management (for more details about the causes, please read 3.3.2.3). Table 24 reports the results of the reliability and validity analysis of the TQM construct for the whole sample (Russian and German organizations). All seven TQM practices of the TQM construct loaded on the TQM with much over 0.5, which is more than the value of 0.35 recommended as the sufficient value for factor loadings by the sample size of 249 cases (Hair et al., 2013, p.115; Field, 2018, p.795). The Cronbach's Alpha final score is 0.867, which is an excellent value (Field, 2018, p 829). Corrected item-total correlations should be more than 0.3 (Field, 2018, p.826) and are 0.54 and over. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy meets the minimum criteria of 0.5, and Bartlett's test of sphericity is significant (Field, 2018, p.820).

Table 24: Factor Loadings, Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for the TQM Measurement Construct for the Whole Sample (Russian and German Organizations)

Construct	Included Variables	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
TQM	L	0.674	0.541	0.867	0.826	Sign (0.00)
	SP	0.808	0.701			
	CM	0.820	0.724			
	IA	0.719	0.613			
	HR	0.834	0.734			
	PM	0.815	0.746			
	SM	0.639	0.535			

Thus, the reliability and validity of the TQM practices measurement constructs and TQM measurement construct have been proved for the whole sample (Russian and German organizations together).

Because not only the whole sample (Russian and German organizations together) will be needed for the further empirical analysis but also the separate samples of Russian and German organizations, the validity and reliability of measurement constructs should also be confirmed for Russian and German samples separately. To confirm that the TQM scale is reliable and valid also for Russian and German samples separately, the same steps of analysis have been run in SPSS 27 for Russian and German samples. Table 25 consolidates the results of the reliability and validity analysis of seven TQM practices measurement constructs for the Russian sample and German sample separately. The Cronbach's Alpha final scores of 5 constructs (Strategic Planning, Customer Focus, Information and Analysis, Human Resource Management, and Supplier Management) for both Russian and German samples are above 0.80, which are excellent values (Field, 2018, p.829). Cronbach's Alpha final scores of the

other two constructs (Leadership and Process Management) range between 0.739 and 0.794 in both samples, which are commonly acceptable values (Field, 2018 p.829). Corrected item-total correlations of all items for Russian and German scales are not presented in the Table 25 but they are all over than 0.3, which is sufficient (Field, 2018, p.826) with the only exception: the corrected item-total correlation for the item Leadership 115.1.a for the Russian pool is 0.288. As the proved instrument of Sila (2007) is being used and the corrected item-total correlation of this item in German sample and in a sample of Russian and German organizations together is over 0.3, and in the case of the Russian sample, it is near to 0.3, the score of 0.288 has been accepted. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy meets the minimum criteria of 0.5, and Bartlett's test of sphericity is significant for each construct (Field, 2018, p.820).

Table 25: Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for Measurement Constructs of TQM Practices for Russian and German Samples Separately

Measurement Construct and its Description	Name of Variable	Included and Excluded Items (Appendix ???)	Russian Sample			German Sample		
			Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Leadership	L	L1151a L1151b L1151c L1151d L1151e L1152f L1152g_Inv excluded L1152h L1152i L1152j	0.739	0.695	Sign (0.00)	0.776	0.811	Sign (0.00)
Strategic Planning	SP	SP116k SP116l SP116m SP116n SP116o SP116p SP116qa excluded SP116qb SP116qc	0.882	0.858	Sign (0.00)	0.810	0.781	Sign (0.00)

Measurement Construct and its Description	Name of Variable	Included and Excluded Items (Appendix ???)	Russian Sample			German Sample		
			Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Customer and Market Focus	CM	CM117r CM117s CM117t CM117u excluded CM117v CM117w CM117x CM117y CM117za CM117zb CM117zc CM117zd	0.861	0.832	Sign (0.00)	0.812	0.814	Sign (0.00)
Information and Analysis	IA	IA118aa IA118bb IA118cc excluded IA118dd excluded IA118ee excluded IA118ff IA118gg excluded IA118hha excluded IA118hhb excluded IA118iia IA118iib IA118iic IA118jja IA118jib IA118jic IA118kka IA118kbb IA118kkc IA118lla excluded IA118llb excluded	0.862	0.782	Sign (0.00)	0.884	0.838	Sign (0.00)
Human Resources Management	HR	HR119mm excluded HR119nn HR119oo HR119pp	0.853	0.777	Sign (0.00)	0.815	0.782	Sign (0.00)

Measurement Construct and its Description	Name of Variable	Included and Excluded Items (Appendix ???)	Russian Sample			German Sample		
			Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
		HR119qq excluded HR119rr excluded HR119ss HR119tt HR119uu HR119vv HR119ww HR119xx HR119yy						
Process Management	PM	PM120zz excluded PM120aaa PM120bbb PM120ccc PM120ddd PM120eee PM120fff PM120ggg excluded PM120hhh PM120iii	0.794	0.776	Sign (0.00)	0.765	0.785	Sign (0.00)
Supplier Management	SM	SM121jjj excluded SM121kkk excluded SM121lll excluded SM121mmm excluded SM121nnn excluded SM121oooa excluded SM121oob excluded SM121pppa SM121pppb SM121pppc SM121qqqa SM121qqqb SM121qqqc SM121qqqd	0.884	0.854	Sign (0.00)	0.863	0.831	Sign (0.00)

Table 26 reports the results of the reliability and validity analysis of the TQM construct for the Russian and German samples separately. All seven TQM practices of the TQM construct loaded on the TQM at the sufficient level (Hair et al., 2013, p.115; Field, 2018, p.795). The Cronbach's Alpha final score is 0.883 for the Russian sample and 0.865 for the German sample, which are excellent values (Field, 2018, p.829). Corrected item-total correlations should be more than 0.3 (Field, 2018, p.826) and are 0.509 and over. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is at an excellent level of 0.799 for the Russian sample and 0.865 for the German sample, and Bartlett's test of sphericity is significant (Field, 2018, p.820).

Table 26: *Factor Loadings, Corrected item-total Correlation, Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for the TQM Measurement Construct for Russian and German Samples Separately*

Measurement Construct	Included Variables	Russian Sample					German Sample				
		Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
TQM	L	0.688	0.561	0.883	0.799	Sign (0.00)	0.646	0.509	0.865	0.837	Sign (0.00)
	SP	0.772	0.677				0.853	0.748			
	CM	0.831	0.731				0.856	0.769			
	IA	0.817	0.732				0.721	0.623			
	HR	0.839	0.748				0.819	0.713			
	PM	0.807	0.750				0.825	0.748			
	SM	0.695	0.606				0.573	0.473			

Concluding, the reliability and validity of the TQM practices measurement constructs and TQM measurement construct has been proved for the whole sample as well as for Russian and German samples separately.

4.2.2. Organizational Effectiveness

As grounded in the theoretical part 3.3.2.5, organizational effectiveness (OE) includes the following items: supplier performance, customer retention, reliability and timely delivery of products, quality, and productivity.

Table 27 reports factor loadings, corrected item-total correlations, Cronbach's alpha scores, KMO values, and Bartlett's test significance levels for the final construct of OE for the whole sample (Russian and German organizations). All included items load on the final constructs with much over 0.5, which is more than the value of 0.35 recommended as the sufficient value for factor loadings by the sample size of 249 cases (Hair et al., 2013, p.115; Field, 2018,

p.795). The Cronbach's Alpha final score is 0.713, which is a commonly acceptable value (Field, 2018 p. 829). Corrected item-total correlations are as they should be over 0.3 (Field, 2018, p.826). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy meets the minimum criteria of 0.5, and Bartlett's test of sphericity is significant for each construct (Field 2018, p.820).

Table 27: *Factor Loadings, Corrected Item-Total Correlations, Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for Organizational Effectiveness for the Whole Sample (Russian and German Organizations)*

Measurement Construct	Variable	Items	Factor Loadings	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Organizational effectiveness	OE	BR5 (supplier performance)	0.668	0.467	0.713	0.741	Sign (0.00)
		BR6 (customer retention)	0.703	0.488			
		BR7 (reliability and timely delivery of products)	0.611	0.402			
		BR10 (quality)	0.722	0.514			
		BR11 (productivity)	0.720	0.499			

Thus, the reliability and validity of the OE scale have been proved for the whole sample (Russian and German organizations together).

Because not only the whole sample (Russian and German organizations together) will be needed for the further empirical analysis but also the separate samples of Russian and German organizations, the validity and reliability of measurement constructs should also be confirmed for Russian and German samples separately. To confirm that the OE scale is reliable and valid also for Russian and German samples separately, the same steps of analysis have been run in SPSS 27 for Russian and German samples separately. Table 28 report Factor Loadings, Corrected Item-Total Correlation, Cronbach's Alpha scores, KMO values, and Bartlett's test significance levels for the final construct of OE for the Russian sample and German sample separately. All five items of the OE construct loaded on the TQM at the sufficient level (Hair, 2013, p.115; Field, 2018, p.795). The Cronbach's Alpha final score is 0.676 for the Russian sample and 0.749 for the German sample, which are acceptable values (Field, 2018, p.829). All corrected item-total correlations are as they should be over than 0.3 (Field, 2018, p.826). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is at a sufficient level of 0.666 for the Russian sample and at an excellent level of 0.800 for the German sample, and Bartlett's tests of sphericity are significant for both samples (Field, 2018, p.820).

Table 28: Factor Loadings, Corrected Item-Total Correlations, Cronbach's Alpha Scores, KMO Values, and Barlett's Test Significance Levels for Organizational Effectiveness for the Russian and German Sample Separately

Measurement Construct	Variable	Items	Russian Sample				German Sample					
			Factor Loadings	Corrected Item-Total	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity	Factor Loadings	Corrected Item-Total	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Organizational effectiveness	OE	BR5 (supplier performance)	0.687	0.471	0.676	0.666	Sign (0.00)	0.632	0.443	0.749	0.800	Sign (0.00)
		BR6 (customer retention)	0.707	0.466				0.684	0.488			
		BR7 (reliability and timely delivery of products)	0.553	0.334				0.723	0.532			
		BR10 (quality)	0.669	0.443				0.769	0.586			
		BR11 (productivity)	0.694	0.452				0.731	0.537			

Concluding, the reliability and validity of the OE scale have been proved for the whole sample as well as for Russian and German samples separately.

4.2.3. Financial and Market Results

As grounded in 3.3.2.6, financial and market results (FMR) will be measured as a mean of market share, a number of successful new products, profit, return on total assets (ROA), and overall competitive position. The measurement instrument was adopted from Sila (2007, p.85), who has already validated it theoretically and empirically.

Table 29 reports Factor Loadings, Corrected Item-Total Correlations, Cronbach's Alpha scores, KMO values, and Barlett's test significance levels for the final construct of FMR for the whole sample (Russian and German Organizations together). All included items load on the final constructs with much over 0.5, which is more than the value of 0.35 recommended as the sufficient value for factor loadings by the sample size of 249 cases (Hair et al., 2013, p.115; Field, 2018, p.795). The Cronbach's Alpha final score is 0.772, which is a commonly acceptable value (Field 2018 p.829). Corrected item-total correlations are as they should be

over 0.3 (Field, 2018, p.826). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy meets the minimum criteria of 0.5, and Bartlett's test of sphericity is significant for each construct (Field, 2018, p.820).

Table 29: Factor Loadings, Corrected Item-Total Correlations, Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for Financial and Market Results for the Whole Sample (Russian and German Organizations Together)

Measurement Construct	Variable	Items	Factor Loadings	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Financial and Market Results	FMR	New products	0.642	0.467	0.772	0.766	Sign (0.000)
		Market share	0.551	0.388			
		Profit	0.826	0.630			
		ROA	0.845	0.670			
		Overall competitive position	0.795	0.637			

Thus, the reliability and validity of the FMR scale have been proved for the whole sample (Russian and German organizations together).

Because not only the whole sample (Russian and German organizations together) will be needed for the further empirical analysis but also the separate samples of Russian and German organizations, the validity and reliability of measurement constructs should also be confirmed for Russian and German samples separately. To confirm that the FMR scale is reliable and valid also for Russian and German samples separately, the same steps of analysis have been run in SPSS 27 for Russian and German samples separately. Table 30 report Factor Loadings, Corrected Item-Total Correlation, Cronbach's Alpha scores, KMO values, and Bartlett's test significance levels for the final construct of OE for the Russian sample and German sample separately. All five items of the OE construct were loaded on the FMR at the sufficient level by both samples (Hair et al., 2013, p.115; Field, 2018, p.795). The Cronbach's Alpha final score is 0.781 for the Russian sample and 0.762 for the German sample, which are very good values (Field, 2018, p.829). All corrected item-total correlations are as they should be over than 0.3 (Field, 2018, p.826). The Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy are at a sufficient level of 0.743 for the Russian sample and 0.720 for the German sample, and Bartlett's tests of sphericity are significant for both samples (Field 2018, p. 820).

Table 30: Factor Loadings, Corrected Item-Total Correlations, Cronbach's Alpha Scores, KMO Values, and Bartlett's Test Significance Levels for Organizational Effectiveness for the Russian and German Sample Separately

Measurement Construct	Variable	Items	Russian Sample					German Sample				
			Factor Loadings	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity	Factor Loadings	Corrected Item-Total Correlation	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity
Financial and Market Results	FMR	New products	0.616	0.455	0.781	0.743	Sign (0.00)	0.664	0.475	0.762	0.720	Sign (0.00)
		Market share	0.566	0.415				0.566	0.392			
		Profit	0.862	0.674				0.769	0.570			
		ROA	0.863	0.690				0.807	0.622			
		Overall competitive position	0.793	0.628				0.814	0.659			

Concluding, the reliability and validity of the FMR scale have been proved for the whole sample as well as for Russian and German samples separately.

4.2.4. Group Statistic Summary

Before the hypotheses are tested, it is interesting to make a conclusion if the degree of TQM (as a whole system as well as its separate practices) implementation differs significantly between Russia and Germany. Additionally, we will clear the question of how OE and FMR differ between Russia and Germany.

Table 31 represents the group statistics summary (mean values, standard deviations, and standard error mean) of variables presenting TQM practices (L, SP, CF, IA, PM, HR, SM), variable TQM, and variables, measuring organizational performance (OE and FMR), divided into two data pools (Russian and German organizations) run in SPSS 27. Minimum and maximum values of each construct have been checked to confirm that there are no outliers (scores that are very different from the rest of the data, which could influence the statistics and lead to false conclusions (Field, 2018, p.227). Mean is the measurement of central tendency. Standard deviations indicate how close to the mean the data points are. The standard error of mean shows how precise the sample's mean represents the real mean of the population.

Table 31: Group Statistics

Variable	Country	N	Min	Max	Mean		Std. Deviation
					Statistic	Std. Error	
Employees	Germany	114	1	7	3.14	0.164	1.754
	Russia	129	1	7	2.50	0.132	1.501
L	Germany	120	3.33	7.00	5.7852	0.06337	0.69422
	Russia	129	2.44	7.00	5.6453	0.06792	0.77145
SP	Germany	120	2.63	7.00	5.3573	0.08425	0.92288
	Russia	129	1.63	7.00	5.0114	0.11062	1.25641
CM	Germany	120	2.82	7.00	5.1409	0.08433	0.92378
	Russia	127	2.55	7.00	5.3747	0.09315	1.04977
IA	Germany	120	1.67	6.75	4.5269	0.11015	1.20664
	Russia	125	1.92	7.00	5.0892	0.09927	1.10984
HR	Germany	120	2.70	6.90	5.3437	0.07557	0.82779
	Russia	124	1.70	7.00	5.2480	0.08975	0.99938
PM	Germany	120	2.25	6.63	5.2489	0.08232	0.90177
	Russia	123	2.50	7.00	4.9183	0.09955	1.10410
SM	Germany	120	1.00	7.00	4.8258	0.10619	1.16331
	Russia	122	1.00	7.00	4.1155	0.13447	1.48524
TQM	Germany	120	3.20	6.73	5.1755	0.06541	0.71653
	Russia	129	2.48	6.69	5.0617	0.07506	0.85248
	Russia+Germany	249	2.48	6.73	5.1166	0.05009	0.79037
OE	Germany	118	3.40	7.00	5.3508	0.07467	0.81109
	Russia	128	3.00	7.00	5.0605	0.07288	0.82459
	Russia+Germany	246	3.00	7.00	5.1998	0.05287	0.82930
FMR	Germany	118	2.20	7.00	4.7788	0.08105	0.88037
	Russia	128	1.60	7.00	4.4887	0.09102	1.02976
	Russia + Ger- many	246	1.60	7.00	4.6278	0.06185	0.97000

The Independent Samples t-Test has been used to assess whether the means of two different groups are statistically different from each other. For the Independent Samples t-Test, it is assumed that both Russian and German samples come from normally distributed data with

equal standard deviations, but *Field* recommends not to worry about the normal distribution of the sample if it is large enough (Field, 2018, p.235).

The Independent Samples t-Test has been conducted in SPSS 27 to prove if TQM practices, TQM as a joint variable, OE and FMR in Russian and German organizations which took part in the study differ significantly.

Table 32 represents the results of the Independent Samples t-Test. Levene's test, which explores the homogeneity of variances, has to be taken into consideration. If it is significant at $p \leq 0.05$, the assumption of homogeneity has been violated. If Levene's test is non-significant (i.e., $p > .05$), I can assume that the variances are roughly equal. Having selected the right row for each variable in the Table 32 I then check the p-value of the Independent Samples t-Test. Suppose the p-value is less than 5% ($p < 0.05$), in that case, the null hypothesis can be rejected, which implies strong evidence that there is a significant difference among the Russian and German organizations regarding the means of the respective variables (Field, 2018. p.257).

Table 32: Independent Sample Test (t-Test)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
L	Equal variances assumed	1.534	0.217	1.500	247	0.135	0.13987	0.09325	-0.04380	0.32354
	Equal variances not assumed			1.506	246.735	0.133	0.13987	0.09290	-0.04310	0.32284
SP	Equal variances assumed	7.708	0.006	2.461	247	0.015	0.34594	0.14057	0.06908	0.62280
	Equal variances not assumed			2.488	234.638	0.014	0.34594	0.13905	0.07200	0.61988
CM	Equal variances assumed	0.110	0.741	-1.854	245	0.065	-0.23375	0.12611	-0.48215	0.01464

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
	Equal variances not assumed			-1.860	243.784	0.064	-0.23375	0.12565	-0.48126	0.01375
IA	Equal variances assumed	1.750	0.187	-3.798	243	0.000	-0.56226	0.14803	-0.85384	-0.27068
	Equal variances not assumed			-3.792	239.304	0.000	-0.56226	0.14828	-0.85436	-0.27016
HR	Equal variances assumed	1.435	0.232	0.813	242	0.417	0.09572	0.11768	-0.13610	0.32753
	Equal variances not assumed			0.816	236.408	0.415	0.09572	0.11732	-0.13542	0.32685
PM	Equal variances assumed	7.761	0.006	2.553	241	0.011	0.33061	0.12950	0.07551	0.58570
	Equal variances not assumed			2.559	233.808	0.011	0.33061	0.12918	0.07610	0.58511
SM	Equal variances assumed	13.389	0.000	4.137	240	0.000	0.71026	0.17169	0.37206	1.04846
	Equal variances not assumed			4.145	228.588	0.000	0.71026	0.17134	0.37264	1.04788
TQM	Equal variances assumed	2.729	0.100	1.136	247	0.257	0.11382	0.10018	-0.08351	0.31114
	Equal variances not assumed			1.143	244.538	0.254	0.11382	0.09956	-0.08229	0.30992

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
OE	Equal variances assumed	0.036	0.850	2.780	244	0.006	0.29030	0.10441	0.08464	0.49596
	Equal variances not assumed			2.782	242.967	0.006	0.29030	0.10434	0.08477	0.49583
FMR	Equal variances assumed	1.855	0.175	2.366	244	0.019	0.29014	0.12265	0.04856	0.53172
	Equal variances not assumed			2.381	242.649	0.018	0.29014	0.12187	0.05008	0.53020

The results of the Independent Samples t-Test (Table 32) statistically confirm that Russian and German organizations which took part in the study differ significantly in:

- SP (mean of SP in Russian organizations is lower as in German ones),
- CM ($p < 0.10$) (mean of CM in Russian organizations is higher as in German ones),
- IA (mean of IA in Russian organizations is higher as in German ones),
- PM (mean of PM in Russian organizations is lower as in German ones),
- SM (mean of SM in Russian organizations is lower as in German ones),
- OE (mean of OE in Russian organizations is lower as in German ones),
- FMR (mean of FMR in Russian organizations is lower as in German ones).

Table 33 gives an overview of the difference of means

Table 33: *The Means of Variables Which are Significantly Different Between Russian and German Organizations*

Variable	Country	Mean	
		Statistic	Std. Error
SP	Germany	5.3573	0.08425
	Russia	5.0114	0.11062
CM	Germany	5.1409	0.08433
	Russia	5.3747	0.09315
IA	Germany	4.5269	0.11015
	Russia	5.0892	0.09927
PM	Germany	5.2489	0.08232
	Russia	4.9183	0.09955
SM	Germany	4.8258	0.10619
	Russia	4.1155	0.13447
OE	Germany	5.3508	0.07467
	Russia	5.0605	0.07288
	Russia + Germany	5.1998	0.05287
FMR	Germany	4.7788	0.08105
	Russia	4.4887	0.09102
	Russia + Germany	4.6278	0.06185

4.3. Test of Hypotheses

4.3.1. Linear Regression Model

4.3.1.1. Control Variables

As grounded in 3.2.2.1, employees (number of employees) and kind of manufacturing are the control variables for the current study.

Employee

Table 34 represents the group statistics summary (mean values, standard deviations, and standard error mean) of the control variable employee, divided into two data pools (Russian and German organizations) run in SPSS 27.

Table 34: *Number of Employees. Group Statistics Summary*

Variable	Country	N	Min	Max	Mean		Std. Deviation
					Statistic	Std. Error	
Employees	Germany	114	1	7	3.14	0.164	1.754
	Russia	129	1	7	2.50	0.132	1.501

Kind of Manufacturing

Kind of manufacturing is a nominal scale variable and has to be reconstructed to be included in the regression analysis. Besides that, the scale of ten types of manufacturing is obviously too detailed for the obtained data sample as the data is not distributed evenly. Some categories contain 55 cases, and some categories include only 5 or 8 cases (Table 35). It could lead to problems in performing further analysis.

To solve this problem, the consolidation of scales measurement sections has been achieved. Table 35 contains the original scale, and Table 36 contains the Kind of Manufacturing variable's new scale. Four dummy variables (*dummy0_kind_of_manufacturing*, *dummy1_kind_of_manufacturing*, *dummy2_kind_of_manufacturing*, *dummy3_kind_of_manufacturing*) have been built in SPSS 27. Each of these dummy variables can be used as the reference category, and the rest two will be included in the regression analysis.

Table 35: *The Original Scale of the Kind of Manufacturing*

	Germany	Russia	Total
Chemical and allied products	10	4	14
Construction materials and allied products	4	11	15
Rubber and plastic products	7	5	12
Metal production and processing	11	4	15
Fabricated metal products	21	11	32
Automotive industry	8	0	8
Machinery and computer equipment	20	6	26
Electronic and electric equipment	9	15	24
Food. beverage and feed industry	6	50	56
Textile. Clothes. Shoes. Leather Industry	2	3	5
Not specified or missing	22	20	42
Total	120	129	249

Table 36: *The New Scale of the Kind of Manufacturing*

	Germany	Russia	Total
Dummy0_kind_of_manufacturing (chemical industries and construction materials)	32	15	47
Chemical and allied products			
Construction materials and allied products			
Rubber and plastic products			
Dummy1_kind_of_manufacturing (metal industries)	21	20	41
Metal production and processing			
Fabricated metal products			
Dummy2_kind_of_manufacturing (high technology industries)	37	21	58
Automotive industry			
Machinery and computer equipment			
Electronic and electric equipment			
Dummy3_kind_of_manufacturing (food and textile industries)	8	53	61
Food. beverage and feed industry			
Textile. Clothes. Shoes. Leather Industry			
Not specified or missing	22	20	42
Total	120	129	249

4.3.1.2. Interaction Between TQM and Country

The combined effects of TQM and Country on OE and on FMR are calculated through the including of interaction terms.

To build the interaction, term variables must be centered at their mean.

$$\begin{aligned}TQM \text{ centered } (TQM_c) &= (TQM - \text{Mean of TQM}). \\ \text{Mean of TQM} &= 5.1166 \\ TQM_c &= (TQM - 5.1166).\end{aligned}$$

Country is a dummy variable with values 0 for Germany and 1 for Russia.

Finally, the variables involved in the interaction term must be multiplied:

$$\text{Interaction of TQM and country} = (TQM_c \times \text{country}).$$

4.3.1.3. Hypotheses as Linear Regression Models

All six hypotheses have been written down as four mathematic models using dependent variables, independent variables, intercepts, and individual regression coefficients.

H1(Ru): TQM positively influences organizational effectiveness in Russian organizations situated and operating in Russia.

H1(Ge): TQM positively influences organizational effectiveness in German organizations situated and operating in Germany.

Model 1:

$$\begin{aligned}OE &= (\beta_0 + \beta_1 \times \text{employee} + \beta_2 \times \text{dummy1_kind_of_manufacturing} + \beta_3 \times \\ &\text{dummy2_kind_of_manufacturing} + \beta_4 \times \text{dummy3_kind_of_manufacturing} + \beta_5 \times TQM) \\ &+ C.\end{aligned}$$

H2(Ru): TQM positively influences financial and market results in Russian organizations situated and operating in Russia.

H2(Ge): TQM positively influences financial and market results in German organizations situated and operating in Germany.

Model 2:

$$FMR = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM) + C.$$

H3(a): TQM positively influences the organizational effectiveness of Russian organizations stronger than the organizational effectiveness of German organizations.

Model 3a:

$$OE = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM + \beta_6 \times country + \beta_7 \times TQM_c \times country) + C$$

H3(b): TQM positively influences the financial and market results of Russian organizations stronger than the financial and market results of German organizations.

Model 3b:

$$FMR = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM + \beta_6 \times country + \beta_7 \times TQM_c \times country) + C$$

where:

- OE—organizational effectiveness,
- FMR—financial and market results
- Employee—the number of employees,
- Dummy variables (dummy0_kind_of_manufacturing, dummy1_kind_of_manufacturing, dummy2_kind_of_manufacturing, dummy3_kind_of_manufacturing) for kind of manufacturing,
- TQM—the degree of TQM implementation,
- Country: 0 for Germany, 1 for Russia.
- $TQM_c \times country$ – the interaction term,
- The beta value β_0 is the intercept, and the beta values β_1 to β_i are the individual coefficients that indicate the contribution of each predictor to the model. The size of β shows the degree to which each predictor impacts the dependent variable if the effects of all other predictors are held constant (Field, 2018, p.414). On the graphics, the gradient of the regression line is formed through the beta value, as it measures the strength of the relationship between a predictor and the dependent variable (Field, 2018, p.397). To indicate

the degree of predictors' effect on the dependable variable, the β should be significantly different from 0, which means that the predictor and outcome relationship is other than 0. The associated significance value of p shows the significance of each predictor in the model,

- C - error for the entity.

Table 37 consolidates information on how hypotheses and linear regression models relate to each other.

Table 37: Hypotheses as Statistical Models

Hypothesis	Model
H1 (Ru) H1 (Ge)	1: $OE = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM) + C.$
H2 (Ru) H2 (Ge)	2: $FMR = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM) + C.$
H3(a)	3a: $OE = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM + \beta_6 \times country + \beta_7 \times TQM_c \times country) + C$
H3(b)	3b: $FMR = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM + \beta_6 \times country + \beta_7 \times TQM_c \times country) + C$

4.3.2. Regressions' Diagnostics

The linear regression analysis will be run in SPSS 27 for each model and each sample to test the models 1 (Russian sample), 1 (German sample), 2 (Russian sample), 2 (German sample), 3a (Russian and German samples together), 3b (Russian and German samples together).

Before applying the linear regression analysis, the following assumptions have been step-by-step proved on their violation for each of four models:

- additivity, linearity, and normality,
- homoscedasticity/homogeneity of variance,
- independence,
- no perfect multicollinearity.

If any of the assumptions described above are violated, the appropriate way to reduce the biases will be found.

4.3.2.1. Additivity, Linearity, and Normality

The most crucial assumption which cannot be violated is additivity and linearity. If the combined effect of the predictors is added together and the straight line cannot describe the outcome variable, the model is wrong and cannot be applied to the data pattern (Field, 2018, p.230).

Normality in the regression diagnostics means the normally distributed errors or, in other words, that the residuals in the model are “random, normally distributed variables with a mean of 0” (Field, 2018, p.388). This assumption implies that the differences between predicted and observed variables are small or equal to 0. This assumption should not be mixed up with the normal distribution of predictors, which they do not have to be for conducting the regression analysis (Field, 2018, p.388). Normality of residuals distribution can be tested visually with the help of graphics (histograms, P-P-plots, (probability-probability plot), Q-Q-plots (quantile-quantile plot) (Field, 2018, p.22). But it also can be tested analytically, for example, by the skew and kurtosis tests, by Shapiro-Wilk test, or by Kolmogorov-Smirnov test of which the Kolmogorov-Smirnov test is historically one of the most used ones and Shapiro-Wilk test is one of the most reliable ones provided by the SPSS 27 software. The Shapiro-Wilk test is being recommended by most researchers for assessing normality (Field 2018, p.249).

To prove if these assumptions hold for all models, the residual statistics (Tables 38–43), histograms, P-P plots, and scatterplots for all models have been counted and drawn in SPSS 27 (Figures 15–32). All histograms are approximately bell-shaped, and the dots on the P-P plots lie mostly on or very near the diagonal. The P-P-plots show the positive linear connection of the combined effect of independent variables on organizational effectiveness and on financial and market results in all models. This all indicates the normal distribution of the residuals of all models, showing that there is a linear relationship between the combined effect of independent variables on the dependent variables in each model for each sample. This confirms the assumptions of additivity and, linearity, normality for all four models applied on all samples (Field. 2018. p.425).

Table 38: Residuals Statistics (Model 1 (Russian Sample))

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.7285	5.9061	5.0605	.42119	128
Residual	-2.06050	2.12041	.00000	.70890	128
Std. Predicted Value	-3.163	2.008	.000	1.000	128
Std. Residual	-2.849	2.932	.000	.980	128

Table 39: Residuals Statistics (Model 1 (German Sample))

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.8519	5.8034	5.3661	.20222	112
Residual	-2.14741	1.94877	.00000	.79925	112
Std. Predicted Value	-2.543	2.163	.000	1.000	112
Std. Residual	-2.626	2.383	.000	.977	112

Table 40: Residuals Statistics (Model 2 (Russian Sample))

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.3758	6.4526	4.4887	.64258	128
Residual	-2.61954	1.74796	.00000	.80467	128
Std. Predicted Value	-1.732	3.056	.000	1.000	128
Std. Residual	-3.191	2.129	.000	.980	128

Table 41: Residuals Statistics (Model 2 (German Sample))

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.1267	5.7541	4.7955	.36215	112
Residual	-2.29970	2.41487	.00000	.82054	112
Std. Predicted Value	-1.847	2.647	.000	1.000	112
Std. Residual	-2.739	2.876	.000	.977	112

Table 42: Residuals Statistics (Model 3a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.7375	5.9351	5.2031	0.36467	240
Residual	-2.14566	2.08926	.00000	.75321	240
Std. Predicted Value	-4.019	2.007	.000	1.000	240
Std. Residual	-2.807	2.733	.000	.985	240

Table 43: Residuals Statistics (Model 3b)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.3066	6.2331	4.6319	.53442	240
Residual	-2.43106	2.29750	.00000	.82159	240
Std. Predicted Value	-2.480	2.996	.000	1.000	240
Std. Residual	-2.915	2.755	.000	.985	240

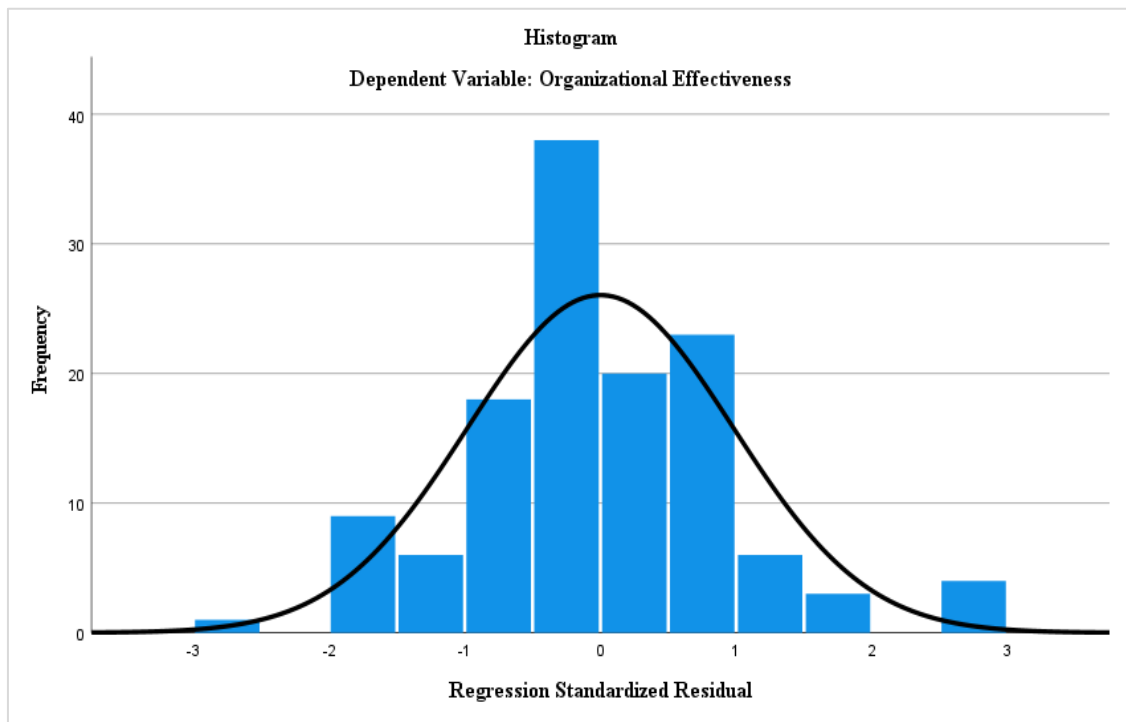


Figure 15: Histogram. Model 1. Dependent Variable: OE. Sample: Russian Organizations

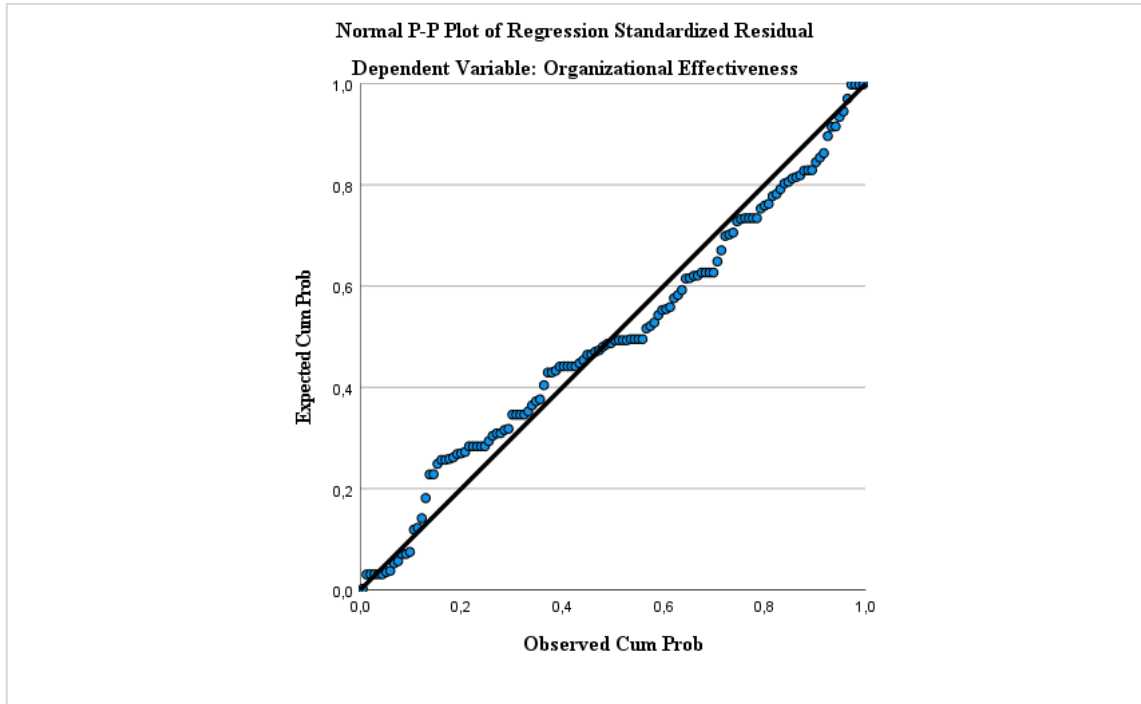


Figure 16: Normal P-P Plot of Regression Standardized Residual. Model 1. Dependent Variable: OE. Sample: Russian Organizations

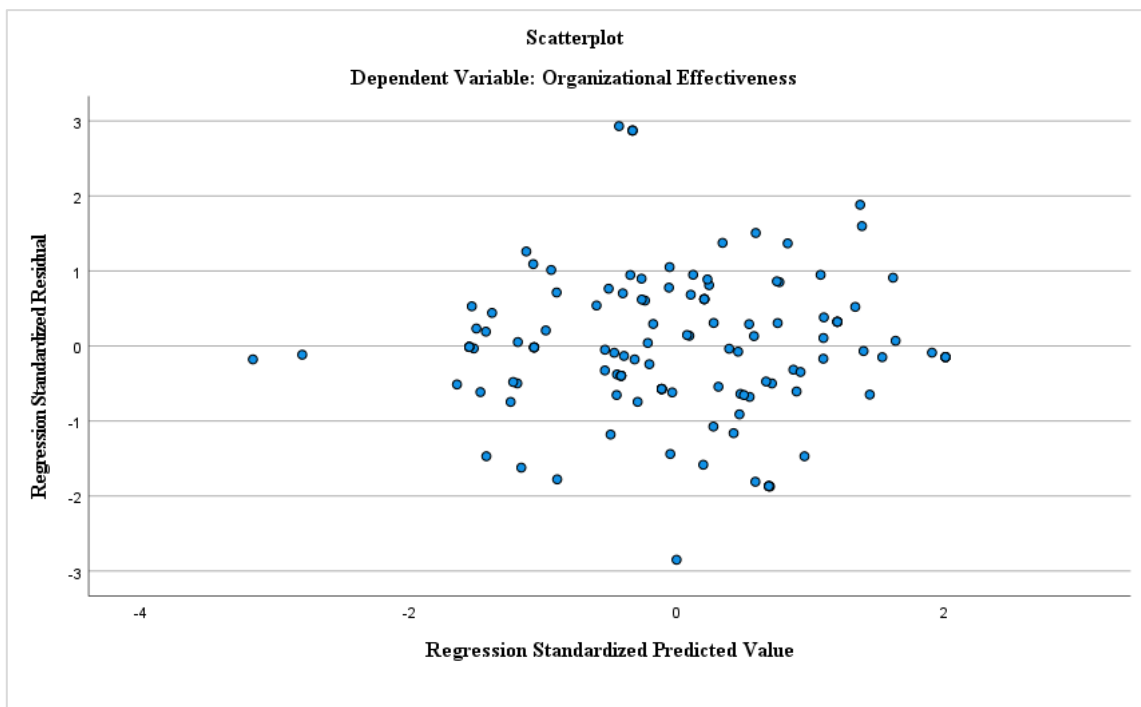


Figure 17: Scatterplot. Model 1. Dependent Variable: OE. Sample: Russian Organizations

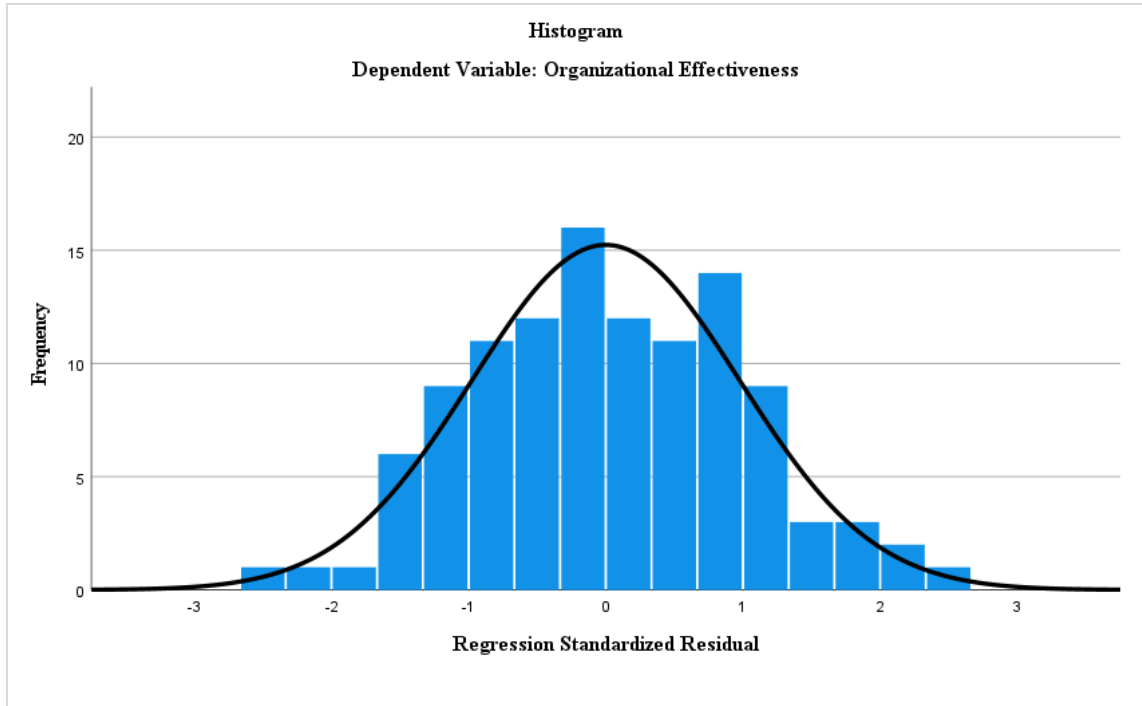


Figure 18: Histogram. Model 1. Dependent Variable: OE. Sample: German Organizations

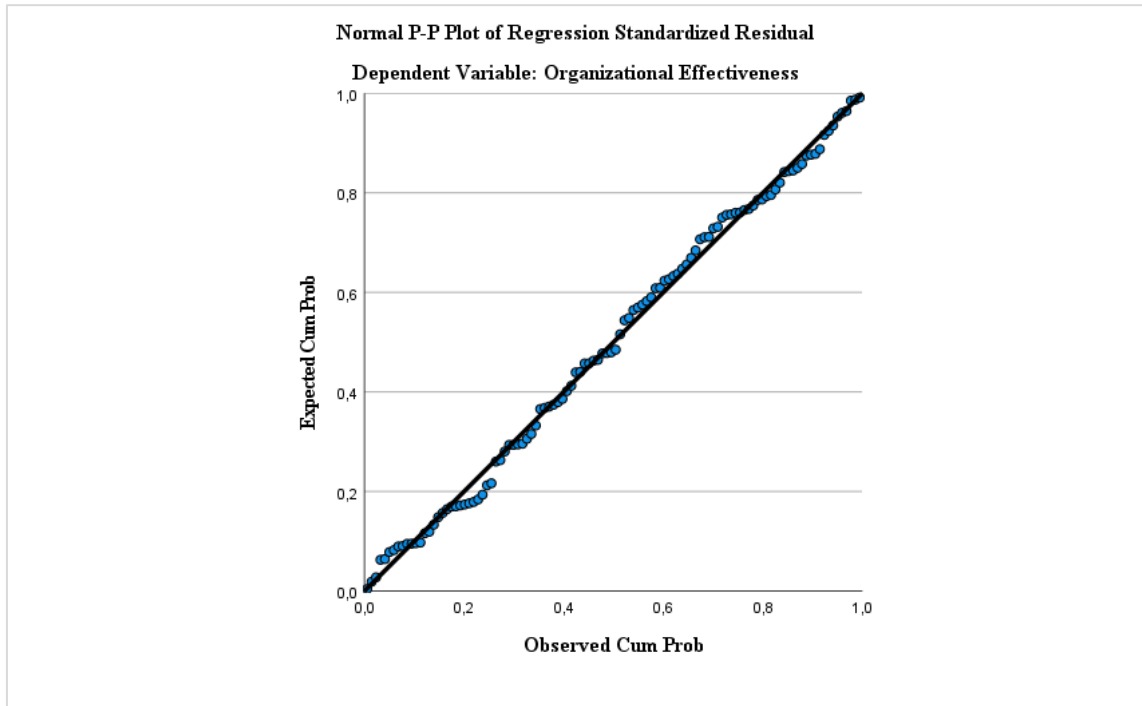


Figure 19: Normal P-P Plot of Regression Standardized Residual. Model 1. Dependent Variable: OE. Sample: German Organizations

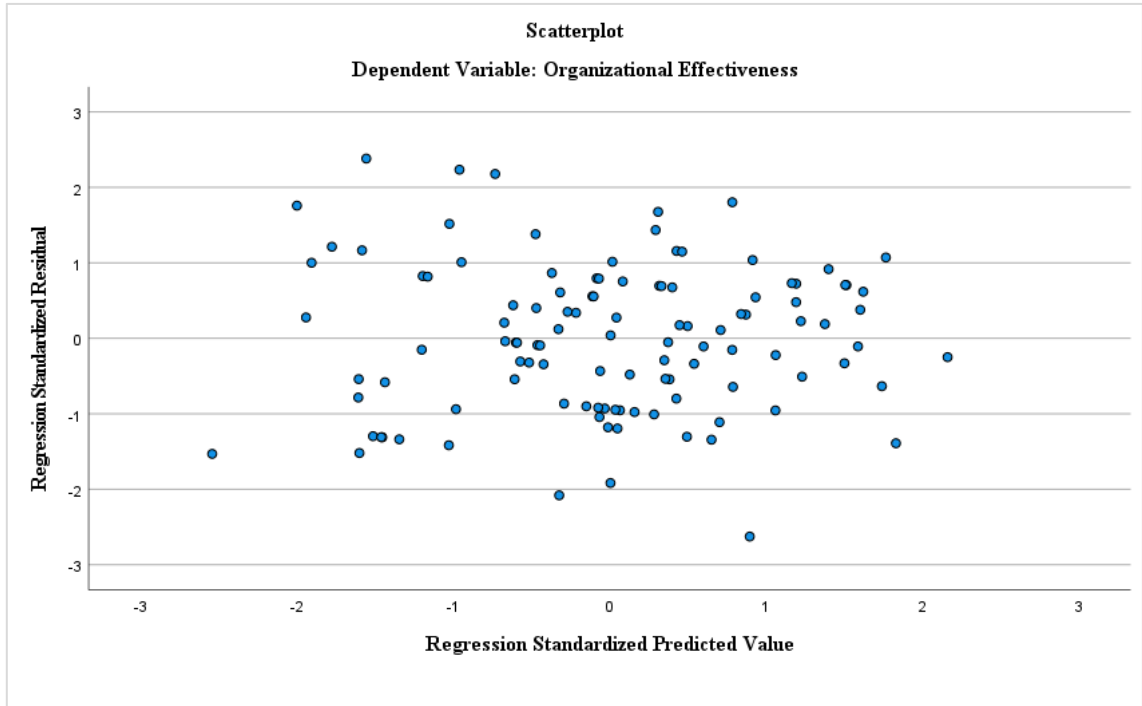


Figure 20: Scatterplot. Model 1. Dependent Variable: OE. Sample: German Organizations

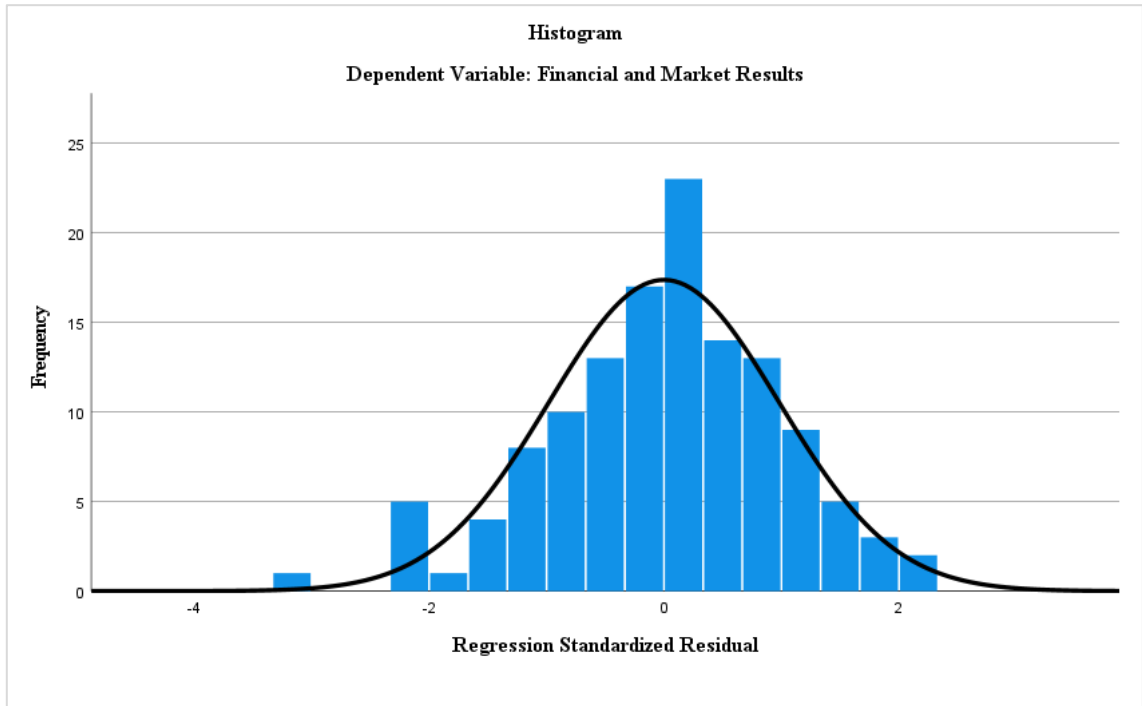


Figure 21: Histogram. Model 2. Dependent Variable: FMR. Sample: Russian Organizations

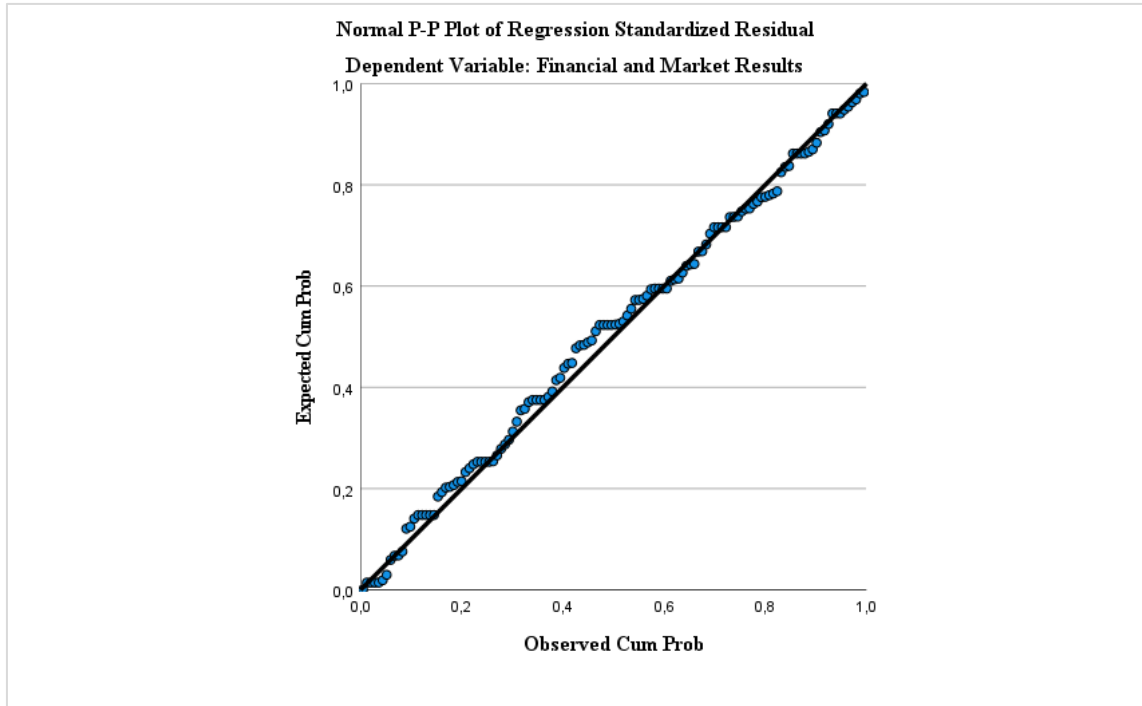


Figure 22: Normal P-P Plot of Regression Standardized Residual. Model 2. Dependent Variable: FMR. Sample: Russian Organizations

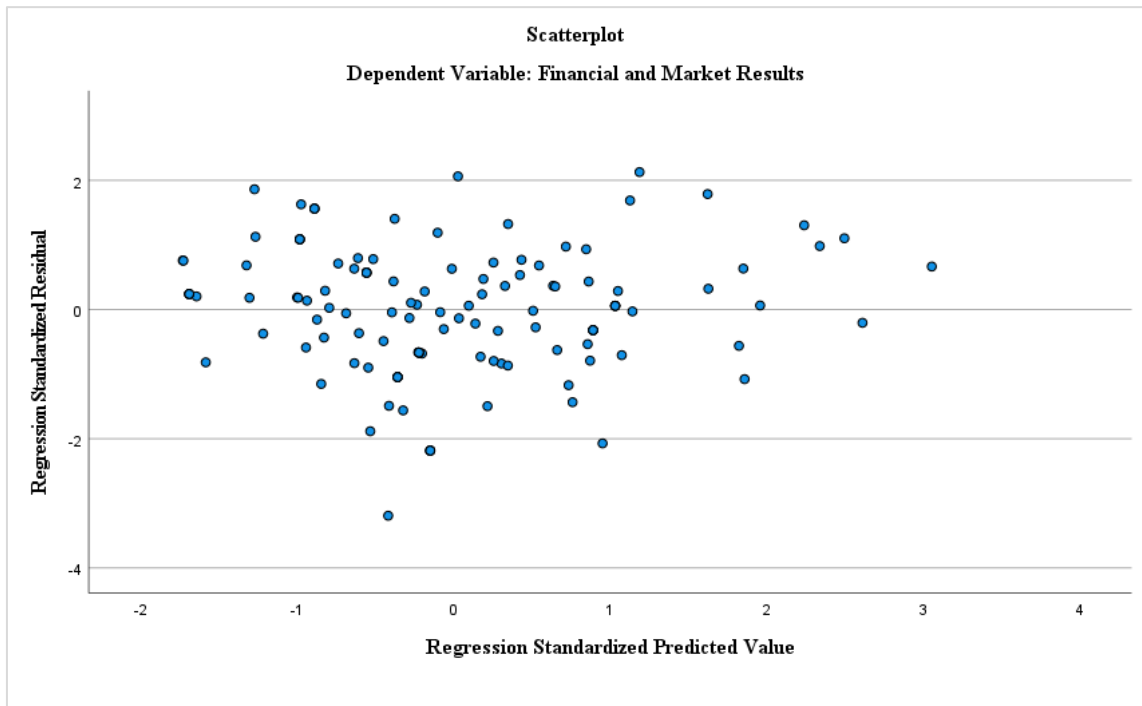


Figure 23: Scatterplot. Model 2. Dependent Variable: FMR. Sample: Russian Organizations

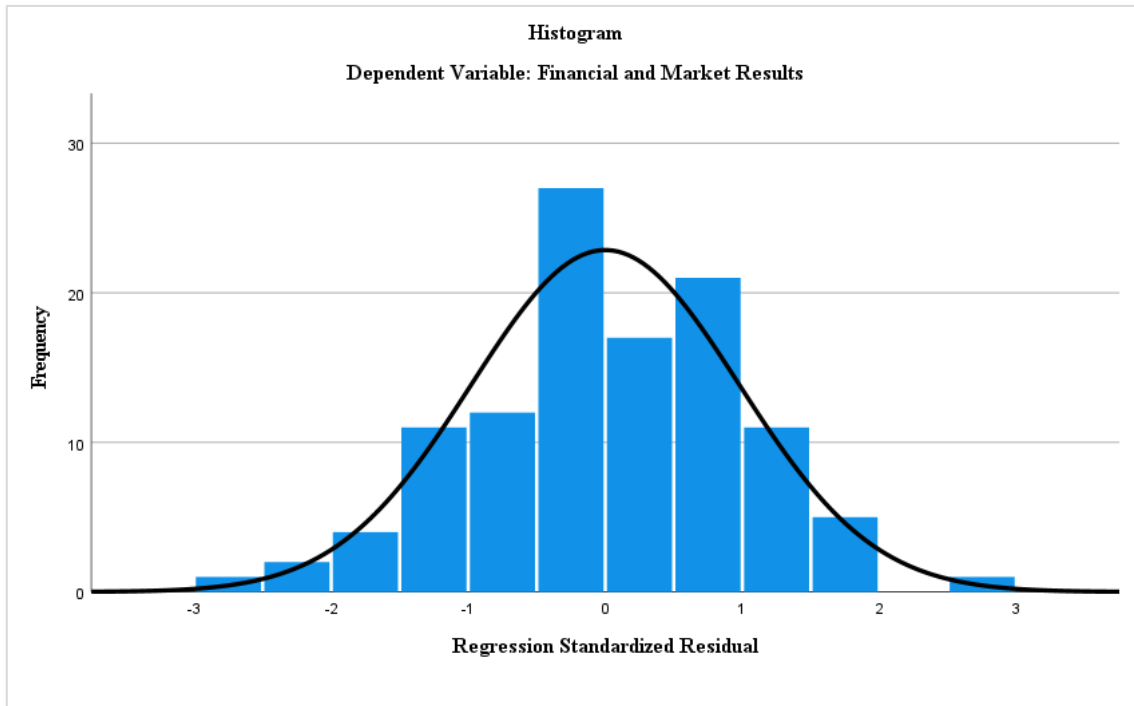


Figure 24: Histogram. Model 2. Dependent Variable: FMR. Sample: German Organizations

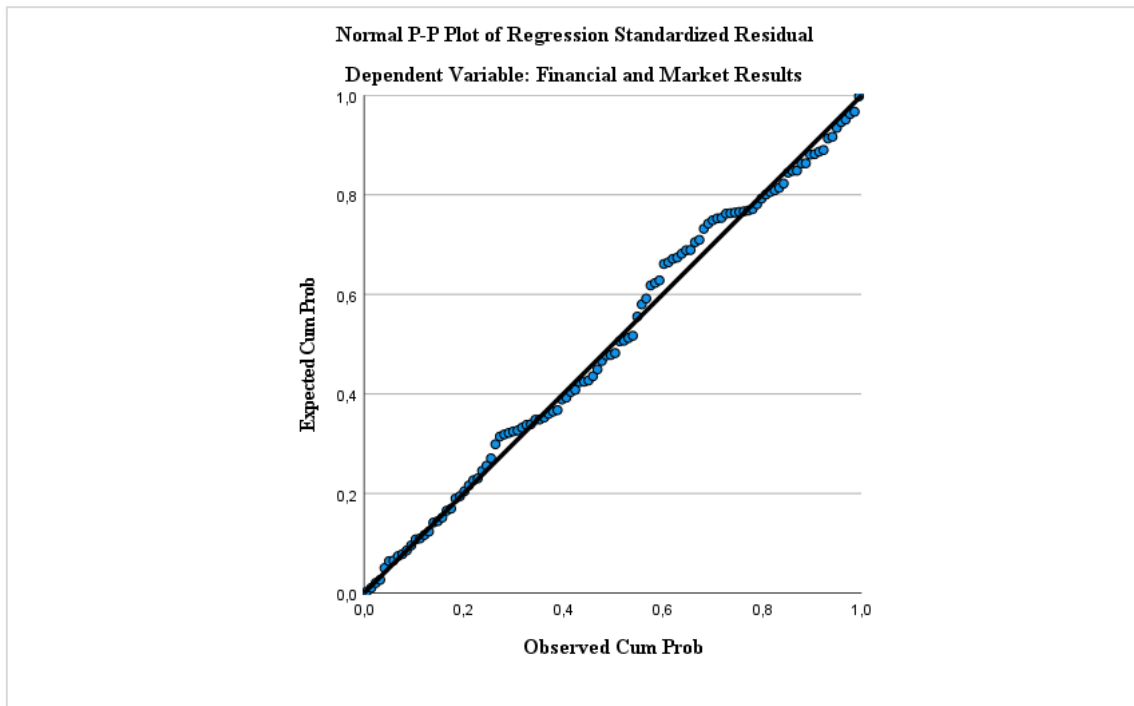


Figure 25: Normal P-P Plot of Regression Standardized Residual. Model 2. Dependent Variable: FMR. Sample: German Organizations

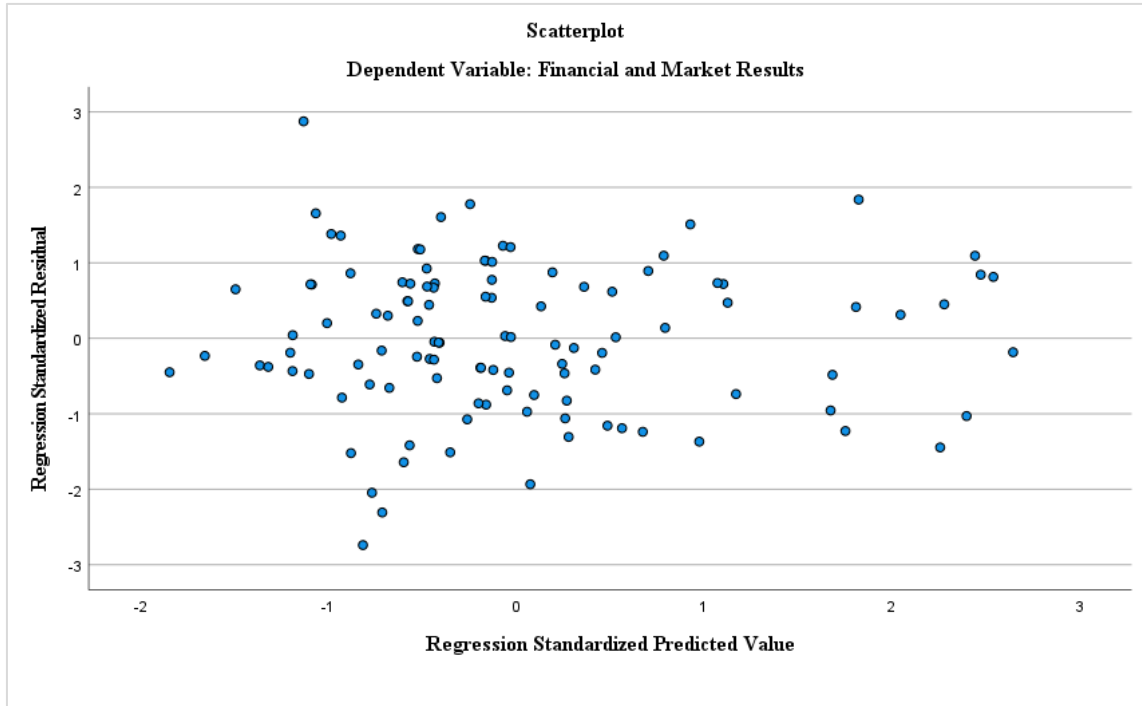


Figure 26: Scatterplot. Model 2. Dependent Variable: FMR. Sample: German Organizations

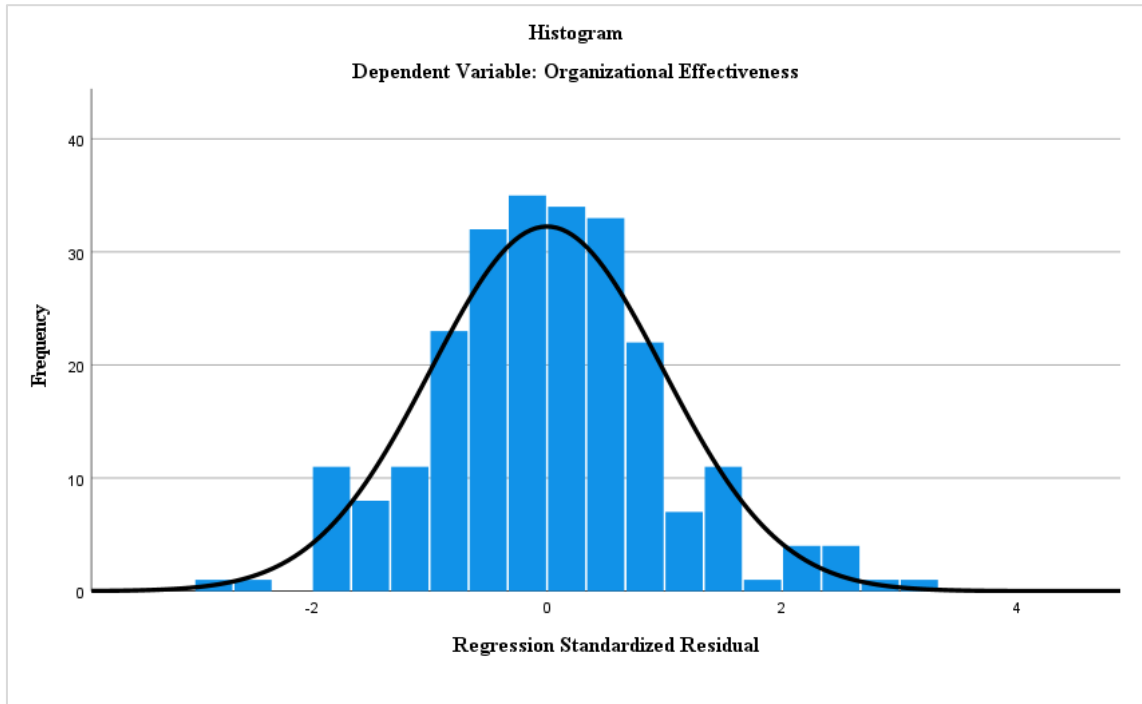


Figure 27: Histogram. Model 3a. Dependent Variable: OE. Sample: Russian and German Organizations

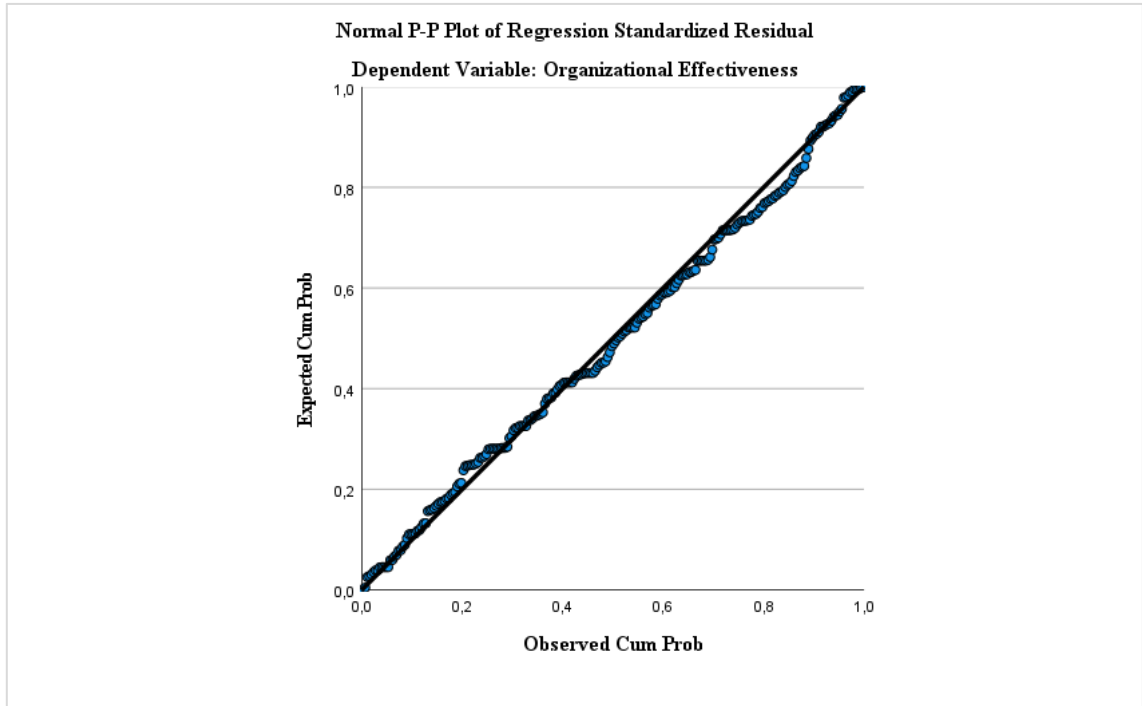


Figure 28: Normal P-P Plot of Regression Standardized Residual. Model 3a. Dependent Variable: OE. Sample: Russian and German Organizations

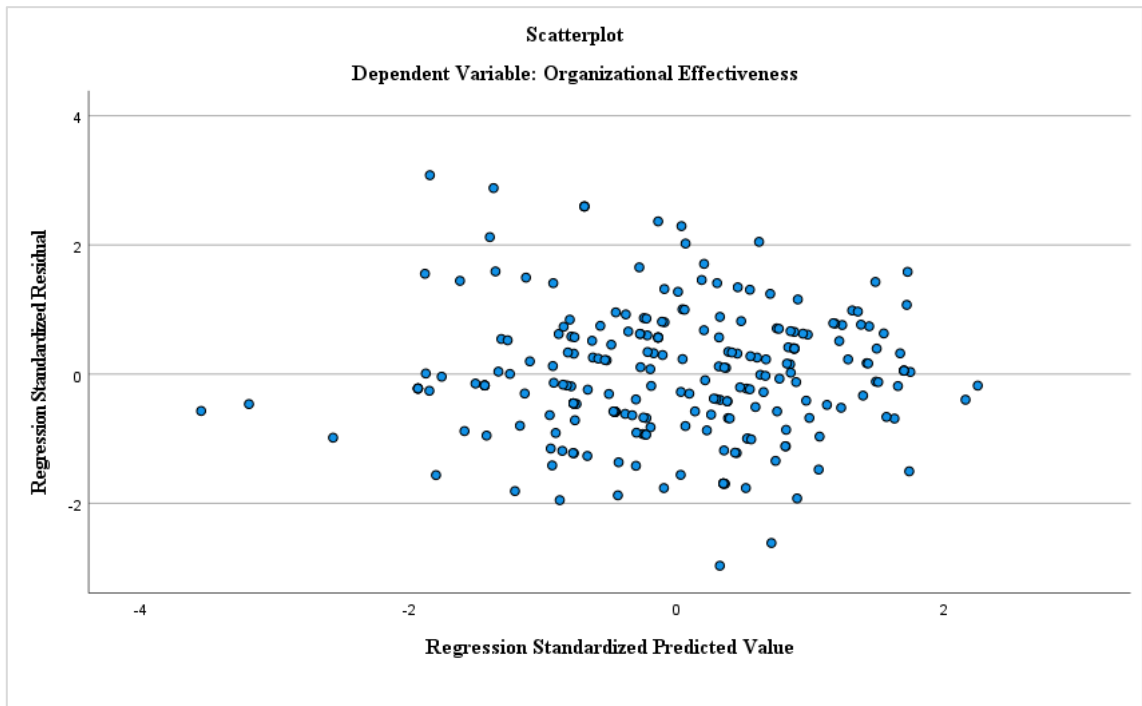


Figure 29: Scatterplot. Model 3a. Dependent Variable: OE. Sample: Russian and German Organizations

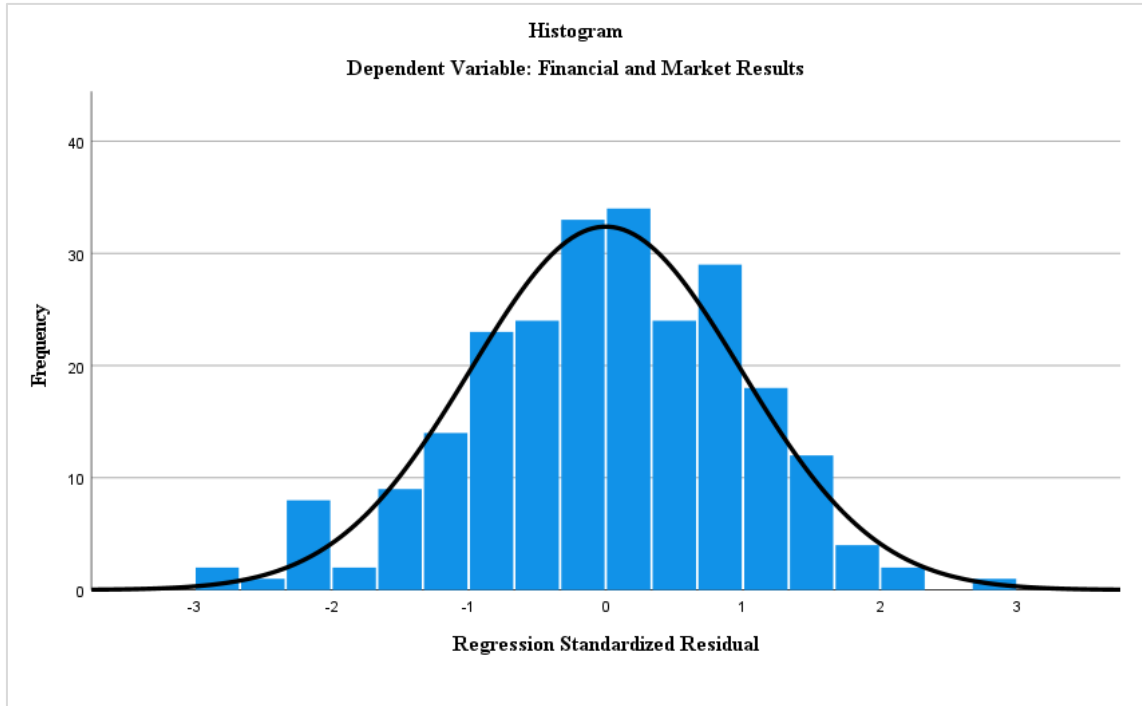


Figure 30: Histogram. Model 3b. Dependent Variable: FMR. Sample: Russian and German Organizations

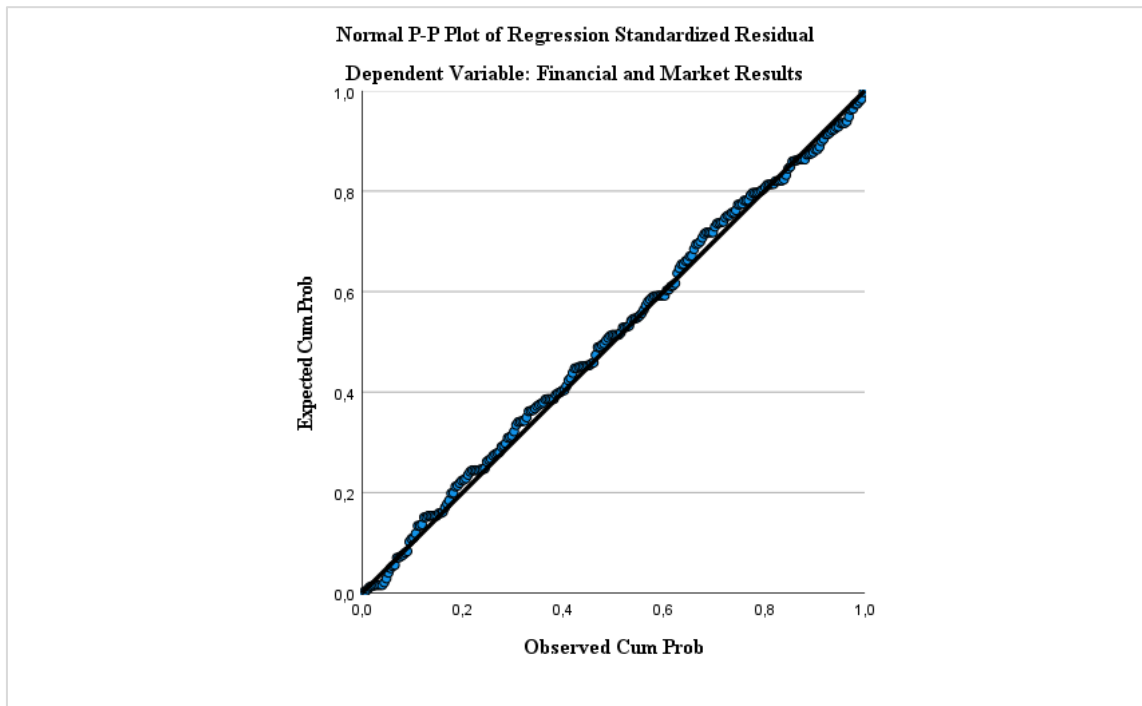


Figure 31: Normal P-P Plot of Regression Standardized Residual. Model 3b. Dependent Variable: FMR. Sample: Russian and German Organizations

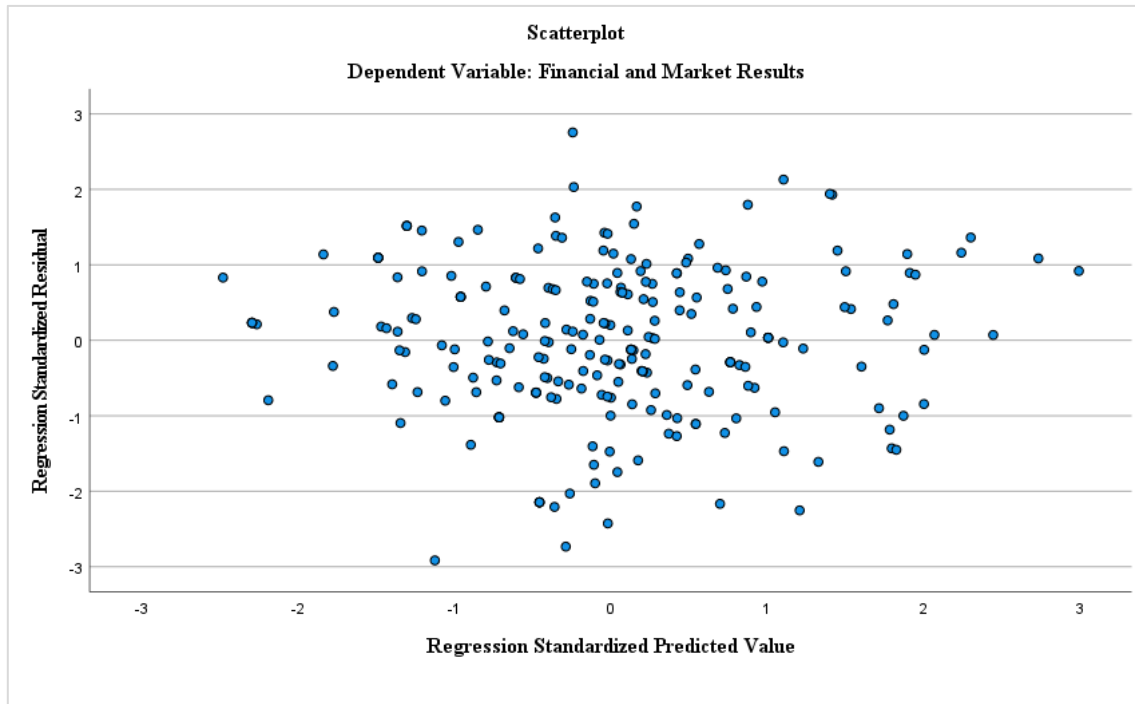


Figure 32: Scatterplot. Model 3b. Dependent Variable: FMR. Sample: Russian and German Organizations

Additional to visual tests, analytical tests have been run in SPSS 27 to confirm the assumptions of the normality.

Tables 44–48 represent the residual statistics and the results of the Shapiro Wilk test for all models. The null hypothesis, which is assumed to be true until proven wrong, is that the residuals are normally distributed. The null hypothesis can be rejected if the Shapiro-Wilk test is significant. Shapiro-Wilk tests for models 1 (German sample), 2 (Russian sample), 2 (German sample), and 3b are not significant, the null hypotheses cannot be rejected, the residuals of these models are normally distributed. Shapiro-Wilk tests for models 1 (Russian sample) and model 3a are significant and, which implies that the residuals of the regression models 1 for the Russian sample and 3a are not normally distributed. *Field* warns that the Shapiro-Wilk test can be significant in large samples (over 100) even the scores are only slightly different from a normal distribution (2018, p.253). The samples of 128 cases (Model 1 (Russian Sample) and 240 cases (Model 3a) are large enough that is why it is highly recommended to interpret the results in conjunction with histogram, P-P- and Scatterplots, and the values of skew and kurtosis (Field, 2018, p.235).

Skewness reflects the lack of symmetry when the most frequent scores are clustered at the end of the scale, and kurtosis measure the degree to which scores appear at the ends of the distribution, in other words, if the distribution is too peaked (Hair et al., 2013, p.61; Field, 2018, p.23). The values of skewness and kurtosis in SPSS in the normal distribution are 0 (the value of kurtosis of the normal distribution is normally 3, but SPSS subtracts 3 automatically). The general guidelines of the literature differ in recommendations which values of skewness and kurtosis imply the normal distribution. Scientists use the thumb rule with cut-

offs which determine which values of skewness and kurtosis imply the normal distribution. Most cut-offs for skewness are the skewness should not be greater than +1 or lower than -1 (Hair et al., 2013, p.61). The cut-off for kurtosis, which implies the normal distribution, ranges between -2 to +2 (George and Mallery, 2010) and -7 to +7 (Hair et al., 2013). The values of skewness (0.314 for model 1 (Russian sample), 0.131 for model 3a) are very close to zero and not greater than 1. The values of kurtosis (1.468 for model 1 (Russian sample), 0.481 for model 3a) are even less than 2 so that the normal distribution can also be assumed for models 1 (Russian sample) and 3a confirming the results of the visual inspection of the diagrams (Figures 15–32).

Thus, the assumption of normality has been confirmed for all models applied to all samples.

Table 44: Case Processing Models 1 and 2 for Russian Sample

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Unstandardized Residual	128	99.2%	1	0.8%	129	100.0%
Standardized Residual	128	99.2%	1	0.8%	129	100.0%

Table 45: Case Processing Models 1 and 2 for German Sample

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Unstandardized Residual	112	93.3%	8	6.7%	120	100.0%
Standardized Residual	112	93.3%	8	6.7%	120	100.0%

Table 46: Case Processing Models 3a and 3b

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Unstandardized Residual	240	96.4%	9	3.6%	249	100.0%
Standardized Residual	240	96.4%	9	3.6%	249	100.0%

Table 47: Shapiro-Wilk Tests of Normality for Models 1 and 2

Shapiro-Wilk Test	Model 1 (Russian Sample)			Model 1 (German Sample)			Model 2 (Russian Sample)			Model 2 (German Sample)		
	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	0.961	128	0.001	0.993	112	0.829	0.986	128	0.238	0.992	112	0.791
Standardized Residual	0.961	128	0.001	0.993	112	0.829	0.986	128	0.238	0.992	112	0.791

Table 48: Shapiro-Wilk Tests of Normality for Models 3a, 3b

Shapiro-Wilk Test	Model 3a			Model 3b		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	0.988	240	0.049	0.991	240	0.177
Standardized Residual	0.988	240	0.049	0.991	240	0.177

Table 49: Descriptives Models 1 and 2

		Model 1 (Russian Sample)		Model 1 (German Sample)		Model 2 (Russian Sample)		Model 2 (German Sample)		
		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	
Unstandardized Residual	Mean	0.0000000	0.06265870	0.0000000	0.07552208	0.0000000	0.07112368	0.0000000	0.07753389	
	95% Confidence Interval for Mean	Lower Bound	-0.1239903		-0.1496520		-0.1407409		-0.1536386	
		Upper Bound	0.1239903		0.1496520		0.1407409		0.1536386	
	5% Trimmed Mean	-0.0170852		-0.0068520		0.0210832		0.0076039		
	Median	-0.0177543		-0.0363867		0.0487032		-0.0416061		
	Variance	0.503		0.639		0.647		0.673		
	Std. Deviation	0.70890230		0.79925055		0.80467259		0.82054155		
	Minimum	-2.06050		-2.14741		-2.61954		-2.29970		
	Maximum	2.12041		1.94877		1.74796		2.41487		
	Range	4.18091		4.09618		4.36750		4.71457		
Interquartile Range	0.85456		1.22815		1.08686		1.14901			

		Model 1 (Russian Sample)		Model 1 (German Sample)		Model 2 (Russian Sample)		Model 2 (German Sample)		
	Skewness	0.314	0.214	0.024	0.228	-0.373	0.214	-0.126	0.228	
	Kurtosis	1.468	0.425	-0.241	0.453	0.360	0.425	0.090	0.453	
Standardized Residual	Mean	0.0000000	0.08663095	0.0000000	0.09233842	0.0000000	0.08663095	0.0000000	0.09233842	
	95% Confidence Interval for Mean	Lower Bound	-0.1714270		-0.1829747		-0.1714270		-0.1829747	
		Upper Bound	0.1714270		0.1829747		0.1714270		0.1829747	
	5% Trimmed Mean	-0.0236217		-0.0083777		0.0256801		0.0090558		
	Median	-0.0245468		-0.0444889		0.0593220		-0.0495505		
	Variance	0.961		0.955		0.961		0.955		
	Std. Deviation	0.98011730		0.97721797		0.98011730		0.97721797		
	Minimum	-2.84881		-2.62557		-3.19068		-2.73881		
	Maximum	2.93164		2.38270		2.12907		2.87597		
	Range	5.78046		5.00827		5.31976		5.61479		
	Interquartile Range	1.18150		1.50162		1.32383		1.36840		
	Skewness	0.314	0.214	0.024	0.228	-0.373	0.214	-0.126	0.228	
	Kurtosis	1.468	0.425	-0.241	0.453	0.360	0.425	0.090	0.453	

Table 50: Descriptives of the Models 3a, 3b

		Model 3a		Model 3b		
		Statistic	Std. Error	Statistic	Std. Error	
Unstandardized Residual	Mean	0.0000000	0.04861965	.0000000	0.053034	
	95% Confidence Interval for Mean	Lower Bound	-0.0957778		-.1044732	
		Upper Bound	0.0957778		.1044732	
	5% Trimmed Mean	-0.0120738		.0197578		
	Median	-0.0060511		.0293196		
	Variance	0.567		.675		
	Std. Deviation	0.75321244		.82159477		

		Model 3a		Model 3b		
	Minimum	-2.14566		-2.43106		
	Maximum	2.08926		2.29750		
	Range	4.23492		4.72855		
	Interquartile Range	0.89790		1.15604		
	Skewness	0.131	0.157	-.293	.157	
	Kurtosis	0.481	0.313	.078	.313	
Standardized Residual	Mean	0.0000000	0.06359741	.0000000	0.063597	
	95% Confidence Interval for Mean	Lower Bound	-0.1252830		-.1252830	
		Upper Bound	0.1252830		.1252830	
	5% Trimmed Mean	-0.0157933		.0236933		
	Median	-0.0079152		.0351597		
	Variance	0.971		.971		
	Std. Deviation	0.98524682		.98524682		
	Minimum	-2.80665		-2.91529		
	Maximum	2.73288		2.75513		
	Range	5.53953		5.67042		
	Interquartile Range	1.17451		1.38631		
	Skewness	0.131	0.157	-.293	.157	
	Kurtosis	0.481	0.313	.078	.313	

4.3.2.2. Homoscedasticity of Variance

Homoscedasticity or homogeneity of variance means that each level of the predictors' residual terms should have equal variance. In other words, it is assumed that the variance of the outcome variable is constant across different values of the predictor variable. If the variance is not stable, it is called heteroscedasticity. Heteroscedasticity invalidates confidence intervals and significance tests (and therefore *p*-values) (Field, 2018, pp.237,387). Homoscedasticity versus heteroscedasticity can be tested visually with the help of scatterplots (Figures 33–38). There are no apparent outliers, and the clouds of dots are evenly spaced around the line indicating homoscedasticity of variance in each model applied on each sample.

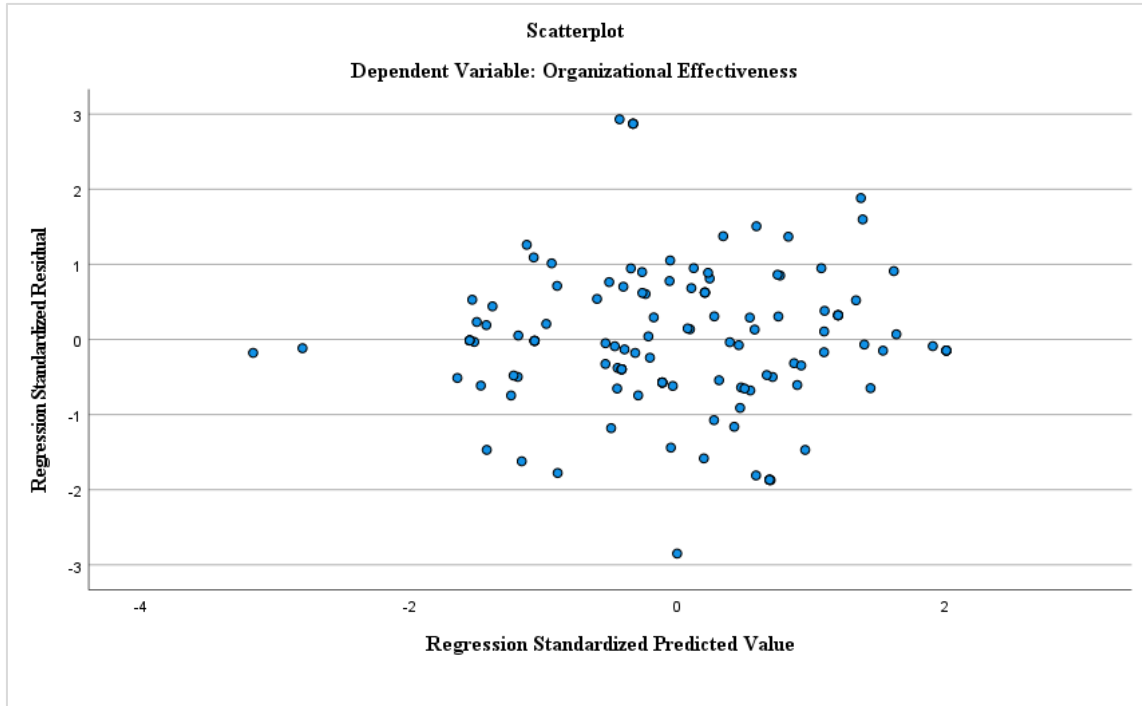


Figure 33: Scatterplot. Model 1. Dependent Variable: OE. Sample: Russian Organizations

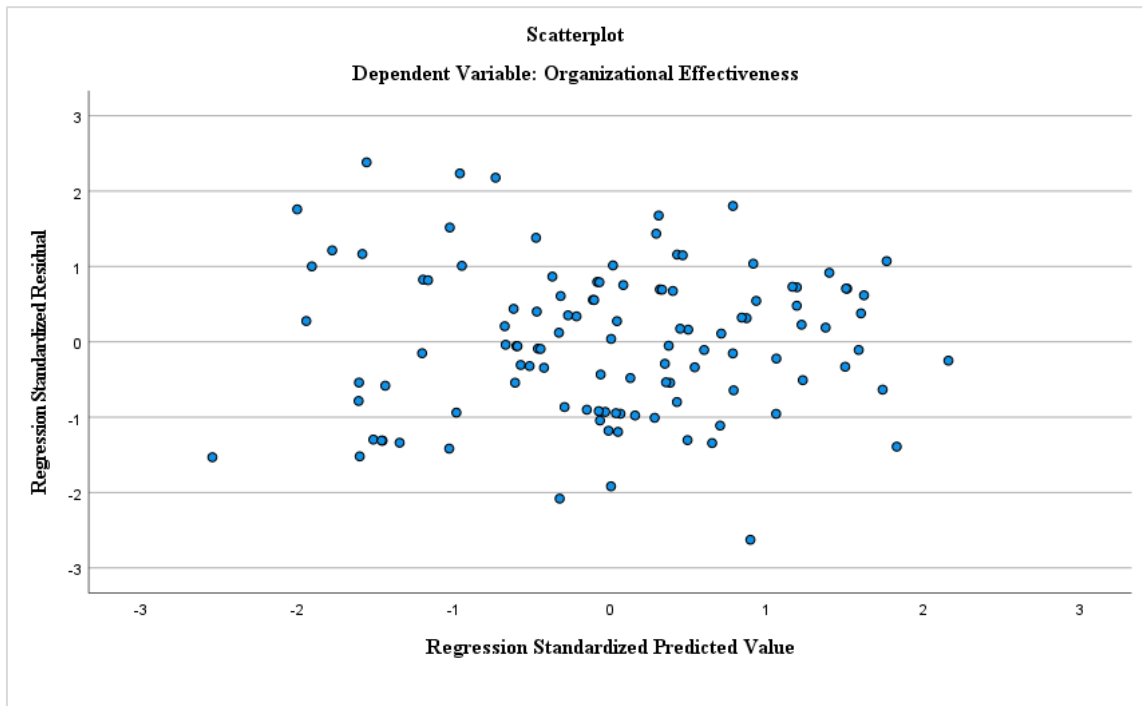


Figure 34: Scatterplot. Model 1. Dependent Variable: OE. Sample: German Organizations

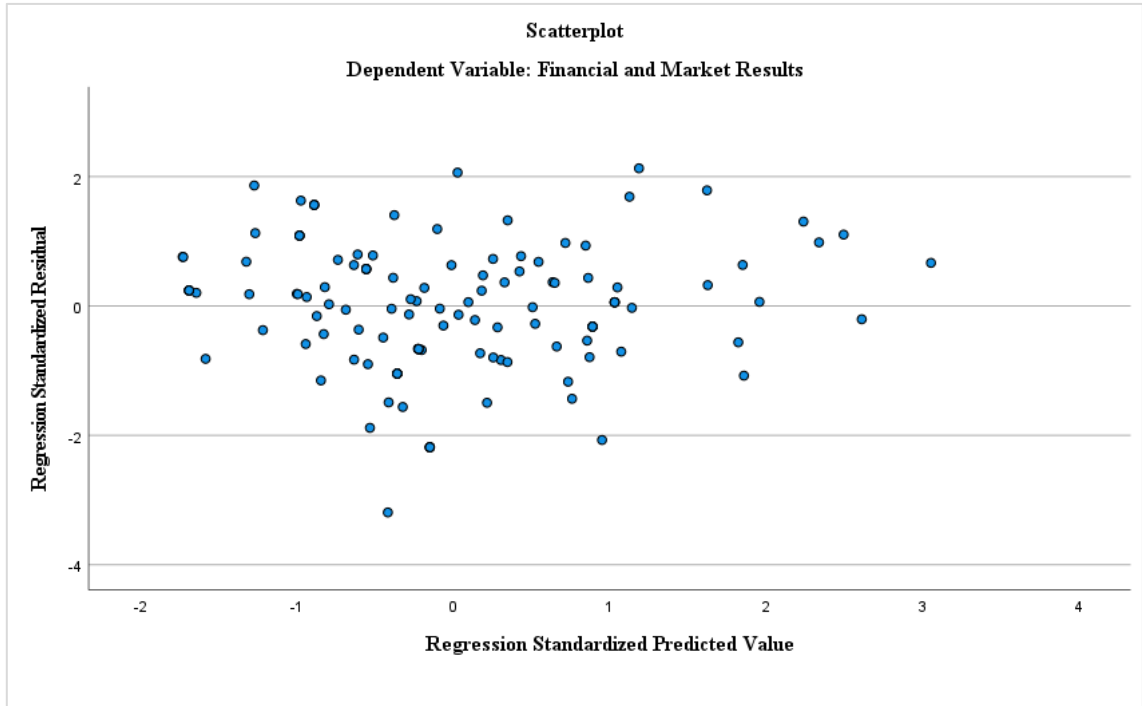


Figure 35: Scatterplot. Model 2. Dependent Variable: FMR. Sample: Russian Organizations

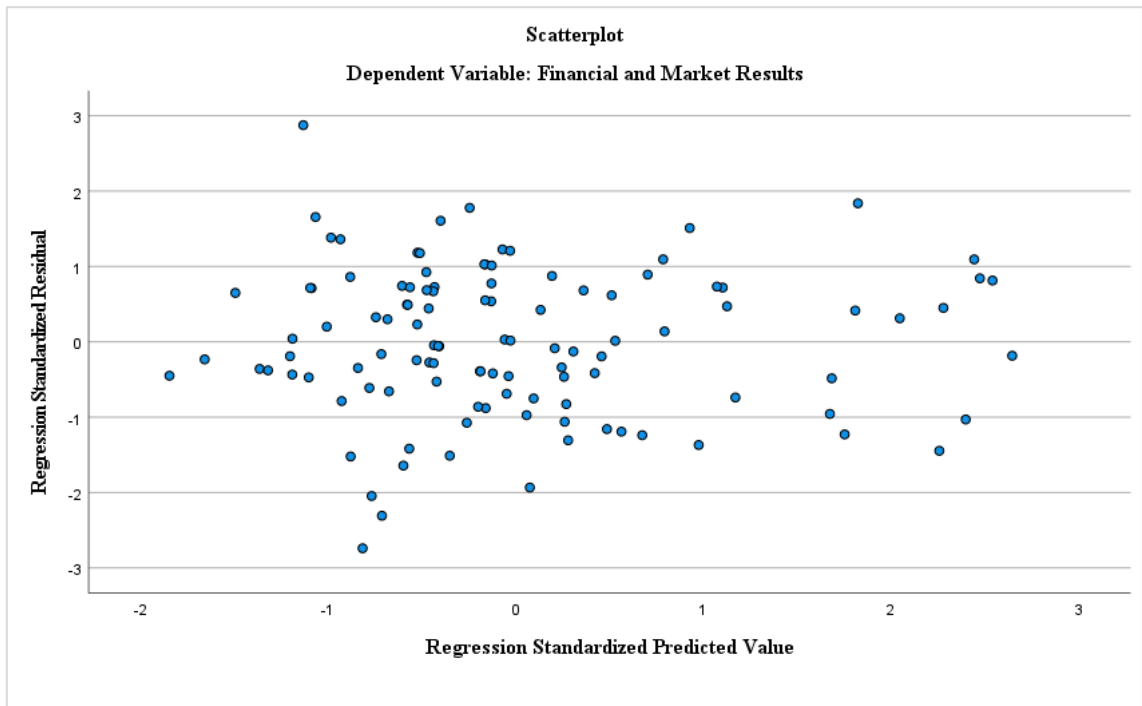


Figure 36: Scatterplot. Model 2. Dependent Variable: FMR. Sample: German Organizations

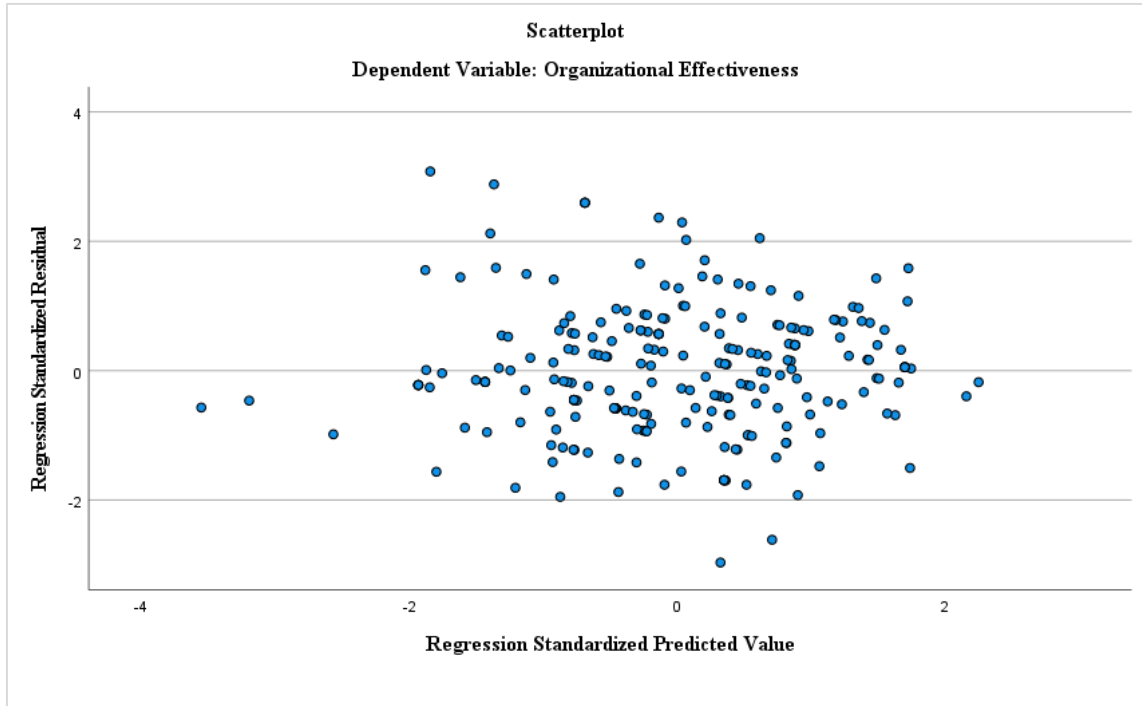


Figure 37: Scatterplot. Model 3a. Dependent Variable: OE. Sample: Russian and German Organizations

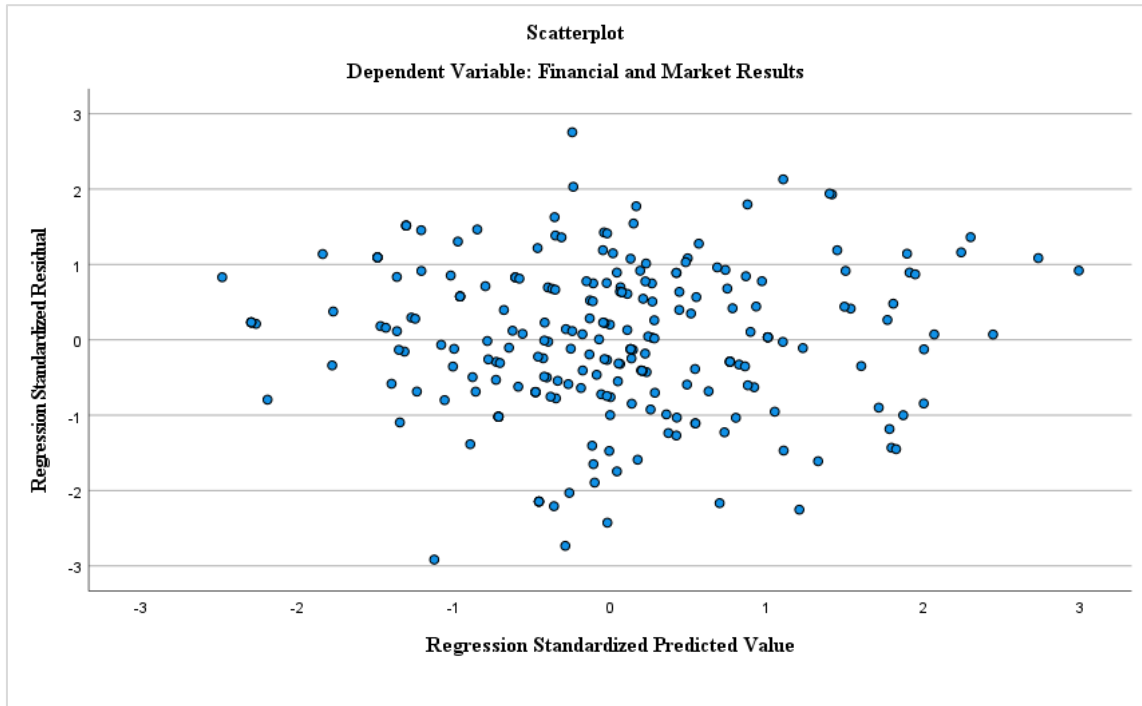


Figure 38: Scatterplot. Model 3b. Dependent Variable: FMR. Sample: Russian and German Organizations

The assumption of homoscedasticity is confirmed visually.

After the visual inspection, the assumption of homoscedasticity can be confirmed analytically with the White test or Breusch-Pagan test (or modified Breusch-Pagan test). The White test

should be only applied if the residuals of the model are not normally distributed (which would violate the assumption of normality in the linear regression) and the Breusch-Pagan test if the residuals are normally distributed.

Because the assumption of normality has been confirmed and residuals of all models are normally distributed, the Breusch-Pagan test has been run in SPSS 27 to prove homoscedasticity of variance for all models testing the null hypothesis that the variance of the errors does not depend on the values of the independent variables. The null hypothesis, which is assumed to be true until proven wrong, assumes the homoscedasticity, which in this case means that the variance of organizational effectiveness is stable across different values of predictor variables as well as the variance of financial and market results is stable across different values of predictor variables in all models. The alternative hypothesis assumes heteroscedasticity. The Breusch-Pagan tests are not significant for all models except model 1 for the German sample (Table 51). The null hypotheses cannot be rejected, and the alternative hypotheses cannot be accepted for all models except model 1 for the German sample (Table 51). Thus, the assumption of homoscedasticity has been confirmed not only visually (Figure 38) but also analytically for models 1 (Russian sample), 2 (for Russian and German sample), 3a, and 3b. Though the assumption of homoscedasticity was visually confirmed for model 1 (German sample), the Breusch-Pagan test implies that the variance of the errors does not depend on the values of the independent variables. To overcome this problem, the robust standard errors will be estimated while running the analysis of model 1 (German sample).

Table 51: Breusch-Pagan Tests for Models 1 (Russian and German Samples), 2 (Russian and German Samples), 3a, and 3b

Model	Chi-Square	df	Sig.
1 (Russian sample)	0.154	1	0.694
1 (German sample)	5.331	1	0.021
2 (Russian sample)	0.017	1	0.897
2 (German sample)	0.450	1	0.502
3a	0.171	1	0.679
3b	0.314	1	0.575

4.3.2.3. Independence

Independence means independent errors, which means that the terms of the residual should be uncorrelated. If the assumption that errors in the model are not correlated (are independent), the confidence intervals and significance tests (and therefore p -values) will be invalid (Field, 2018, p.239).

Durbin-Watson is used to analyze the independence of errors proving whether the adjusted residuals are correlated. The test statistics can vary between 0 and 4. The value of 2 means

that residuals are uncorrelated. The values less than 1 or greater than 3 should be a cause for concern (Field, 2018, p.387). Table 52 presents the results of the Durbin-Watson test for all models. The values between 1.638 and 2.061 calculated in SPSS 27 implicate that autocorrelations between residuals in all models are not significant.

Table 52: Durbin-Watson Test for Models 1 (Russian and German Samples), 2 (Russian and German Samples, 3a and 3b)

Model	Durbin Watson
1 (Russian sample)	2.061
1 (German sample)	1.997
2 (Russian sample)	2.291
2 (German sample)	1.638
3a	2.032
3b	1.995

4.3.2.4. No perfect multicollinearity

There should be no ideal linear relationship among two or more predictor variables in the multiple regression analysis as it makes it impossible to assess the individual importance of a predictor and would accordingly lead to problems to estimate regression coefficients (Field, 2018, p.402). One way to detect multicollinearity is to do a correlation analysis to calculate correlation coefficients for all pairs of variables. If the correlation coefficient is precisely +1 or -1, this is called the perfect multicollinearity. The predictor variables should not correlate at a level of 0.80 and higher (Field. 2018 p.402). The independence of each variable can also be analyzed through the variance inflation factor (VIF) based on the ordinary least squares (OLS) method. The VIF indicates whether a predictor has a strong linear relationship with the other predictor(s). According to *Field*, the VIF value of 10 or greater (Tolerance 1/VIF 0.1 or less) could indicate a serious problem, and the VIF value of 5 (Tolerance 1/VIF 0.2) is a border of concern and can indicate the potential problem (Field, 2018, p.402).

Table 53 presents the correlation coefficients of independent variables: the only ordinal control variable (number of employees), country, and TQM for the whole sample. The correlation values prove no perfect collinearity and no very high collinearity in the data, as all correlation coefficients lie under 0.80 (the highest correlation is 0.254). The values of all VIFs in all models (Table 54) are much below the border of concern of 5. No multicollinearity can be assumed.

Table 53: Correlations of Independent Variables

		Number of Employees	Country	TQM
Number of Employees	Pearson Correlation	1	-.193**	.254**
	Sig. (2-tailed)		0.003	0.000
	N	243	243	243
Country	Pearson Correlation	-.193**	1	-0.072
	Sig. (2-tailed)	0.003		0.257
	N	243	249	249
TQM	Pearson Correlation	.254**	-0.072	1
	Sig. (2-tailed)	0.000	0.257	
	N	243	249	249

***. Correlation is significant at the 0.01 level (2-tailed).*

Table 54: Collinearity Statistics for Models 1 (Russian and German Sample), 2 (Russian and German Sample), 3a, and 3b.

	Models 1 and 2 (Russian Sample)		Model 1 and 2 (German Sample)		Models 3a and 3b	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Number of employees	0.893	1.119	.824	1.214	.846	1.182
Dummy1 kind of manufacturing	0.773	1.293	.779	1.284	.761	1.315
Dummy2 kind of manufacturing	0.774	1.292	.729	1.372	.743	1.347
Dummy3 kind of manufacturing	0.673	1.486	.835	1.198	.661	1.514
TQM	0.951	1.051	.818	1.223	.356	2.812
Country					.808	1.238
TQM_c_x_country					.377	2.656

4.3.3. Linear Regression Analysis

As the assumptions of additivity and linearity, normality, homoscedasticity/homogeneity of variance, independence, and no perfect multicollinearity are not violated in all models applied on Russian and German samples with the only exception of model 1 applied on the German sample, the linear multiple regression analysis will be run in SPSS 27 for models 1 (Russian and German samples), 2 (Russian and German samples), 3a and 3b. The robust standard errors will be estimated while running the analysis of model 1 on the German sample to overcome the problem of heteroscedasticity of model 1 applied on the German sample.

Additional to parameters assessed by the regression's diagnostics in 4.3.2, the following parameters will be interpreted by the regression analysis:

- The F value and its associated significance value of p result from a test where the null hypothesis says that all regression coefficients are equal to zero. If the null hypothesis is proved to be true, the model would not have predictive power.
- R^2 (R-squared) is a statistical measure that assesses the goodness of fit of the regression model. It is a measure of how much of the variability in the outcome is accounted for by the predictors. R-squared can take a value between 0 and 1, where values closer to 0 represent a poor fit while values closer to 1 illustrate a perfect fit. Whereas R^2 explains how much of Y's variance is accounted for by the regression model from the sample, the adjusted value of R^2 shows how much variance in Y would be accounted for if the model had been derived from the entire population (Field 2018, p.389). In other words, the adjusted R^2 shows how well the model generalizes. Logically, the closer these two values, the better the model (Field, 2018, p.411). Therefore, it is essential to assess both R^2 and adjusted R^2 to be able to predict how much of the dependent variable variance of the collected sample is explained by independent variables and further on how much variance of the dependent variable is explained generalized for the entire population. The closer R^2 to 1, the more variance is explained. The minimum value of R^2 varies from research area to research area. The widely spread benchmark of Cohen (1988) is that the suggested R^2 values for endogenous latent variables are to be assessed as follows: 0.26 (substantial), 0.13 (moderate), 0.02 (weak) (Field. 2018. p.391). Kutner warns that the meaning of the R^2 score is overestimated: even if R^2 and adjusted R^2 are weak, a real relationship between the significant predictors and the response variable still may exist. It only must be kept in mind that the dependent variable's explained variance is accordingly low (Kutner, 2005, pp.74–75).
- The beta value β_0 is the intercept, and the beta values $\beta_1 - \beta_i$ are the individual coefficients that indicate the contribution of each predictor to the model. The size of β shows the degree to which each predictor impacts the dependent variable if the effects of all other predictors are held constant (Field, 2018, p.414). On the graphics, the gradient of the regression line is formed through the beta value, as it measures the strength of the relationship between a predictor and the dependent variable (Field, 2018, p. 397). To indicate the degree of predictors' effect on the dependable variable, the β should be significantly different from 0, which means that the predictor and outcome relationship is other than 0. The associated significance value of p shows the significance of each predictor in the model.

4.3.3.1. Model 1

Model 1 will be applied to Russian and to German samples separately.

$$(1): OE = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM) + C.$$

The analysis of model 1 will be conducted in two steps for each sample:

- step 1: only the control variables will be added to the regression equations to show the role of the control variables in the models,
- step 2: the variable *TQM* will be added to the regression equations.

Table 55 represents the step 1 and step 2 results of the multiple linear regression analysis for model 1 (Russian and German samples).

F values of Step 1 are not significant for Russian and German samples, meaning that the step 1 models have no predictive power.

F value of Step 2 is significant for the Russian sample and is not significant for the German sample, meaning that model 1 has no predictive power if applied to the German sample.

Model 1 has predictive power for Russian organizations situated and operating in Russia. The value of R^2 at step 2 is 0.261 and of adjusted R^2 0.231, which means that 26,1% of the variance of organizational effectiveness in the collected sample and 23,1% of organizational effectiveness in all manufacturing organizations with no foreign capital in Russia are explained through TQM implementation. The intercept β_0 and the individual coefficient of TQM β_5 are highly significant. Indicating the significant influence of TQM on OE in the Russian sample. Durbin Watson Test and VIF statistics values have been explained in 4.3.2 in detail.

Model 1 for the Russian sample:

$$OE \text{ (for Russian Sample)} = 2.533 - 0.14^* \times employee + 0.065 \times dummy1_Kind_of_Manufacturing + 0.009^* \times dummy2_Kind_of_Manufacturing + 0.051^* \times dummy3_Kind_of_Manufacturing + 0.501 \times TQM.$$

**Coefficients are not significant (Table 55).*

Table 55: Linear Regression Diagnostics of Model 1 (for German Sample with Robust Standard Errors)

	Russian Sample					German Sample				
	Step 1 (Controls)		Step 2 (Model 1)			Step 1 (Controls)		Step 2 (Model 1)		
	β	p	β	p	VIF	β	p	β	p	VIF
Intercept β_0			2.533	0.000						
Number of employees			-0.14	.757	1.119					
Dummy1_kind_of_manufacturing (metal industries).			0.065	.773	1.293					
Dummy2_kind_of_manufacturing (high technology industries).			0.009	.965	1.292					
Dummy3_kind_of_manufacturing (food and textile industries).			0.051	.748	1.486					
TQM			0.501	0.000	1.051					
Model Features										
R ²			0.261							
Adjusted R ²			0.231							
Delta of Adj. R ² (%)										
F-statistic	0.162	Not sign (0.957)	8.614	Sign. 0.000		0.823	Not sign (0.514)	1.357	Not sign. (0.246)	
Durbin-Watson test			2.061							

4.3.3.2. Model 2

Model 2 will be applied to Russian and to German samples separately.

$$(2): FMR = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM) + C.$$

The analysis of model 2 will be conducted in two steps for each sample:

- Step 1: only the control variables will be added to the regression equations to show the role of the control variables in the models,
- Step 2: the variable *TQM* will be added to the regression equations.

Table 56 represents the step 1 and step 2 results of the multiple linear regression analysis for model 2 (Russian and German samples).

F values of Step 1 and Step 2 are significant for model 1 applied to the Russian as well as to the German samples. All models have predictive power.

Model 2 for the Russian sample:

The value of R^2 at step 1 for model 2 on the Russian sample is 0.225 and of adjusted R^2 0.200. The intercept β_0 and the individual coefficient of β of Number of employees and *dummy2_kind_of_manufacturing* (high technology industries) are significant, indicating their significant influence on FMR in the Russian sample. Through these two control variables, 22.5% of the variance of FMR in the Russian sample and 20% of FMR in all manufacturing organizations with no foreign capital in Russia are explained. Adding of *TQM* variable at step 2 increases adjusted R^2 at 16.4%, which is a lot of additional variances, explained through *TQM*. The value of R^2 at step 2 for model 2 on the Russian sample is 0.389 and of adjusted R^2 0.364, meaning that 38.9% of the variance of FMR in the collected sample and 36.4% of FMR in all manufacturing organizations with no foreign capital in Russia are explained through *TQM* implementation. The intercept β_0 and the individual coefficients β of number of employees, *dummy2_kind_of_manufacturing* (high technology industries), and *TQM* are significant, indicating their significant influence on FMR in the Russian sample.

Durbin Watson Test and VIF statistics values have been explained in 4.3.2 in detail.

Model 2 for the Russian sample:

$$(2) FMR (for Russian Sample) = 1.564 + 0.236 \times employee - 0.209^* \times dummy1_kind_of_manufacturing - 0.485 \times dummy2_kind_of_manufacturing - 0.239^* \times dummy3_kind_of_manufacturing + 0.502 \times TQM.$$

*Coefficients are not significant (Table 56).

Model 2 for the German sample:

The value of R^2 at step 1 for model 2 on the Russian sample is 0.157 and of adjusted R^2 0.126. The intercept β_0 and the individual coefficient of β of number of employees are significant, indicating their significant influence of number of employees on FMR in the German sample. Through the number of employees, 15.7% of the variance of financial and market results in the German sample and 12.6% of financial and market results in all manufacturing organizations with no foreign capital in Germany are explained. Adding of TQM variable at step 2 has not increased the adjusted R^2 and the individual coefficients β of TQM is not significant, indicating no linear influence of TQM on FMR in the German sample.

Durbin Watson Test and VIF statistics values have been explained in 4.3.2 in detail.

Table 56: Linear Regression Diagnostics of Model 2

	Russian Sample					German Sample				
	Step 1 (Controls)		Step 2 (Model 2)			Step 1 (Controls)		Step 2 (Model 2)		
	β	p	β	p	VIF	β	p	β	p	VIF
Intercept β_0	4.069	0.000	1.564	0.001	1.119	4.201	0.000	3.691	0.000	1.214
Number of employees	0.279	0.000	0.236	0.000	1.293	0.176	0.00	0.162	0.002	1.284
Dummy1_kind_of_manufacturing (metal industries).	-0.310	0.282	-0.209	0.416	1.292	-.032	.875	-0.024	0.905	1.372
Dummy2_kind_of_manufacturing (high technology industries).	-0.566	0.025	-0.485	0.031	1.486	.211	.293	0.223	0.269	1.198
Dummy3_kind_of_manufacturing (food and textile industries).	-0.365	0.070	-0.239	0.185	1.051	-.203	.555	-0.117	0.745	1.223
TQM			0.502	0.000	1.119			0.105	0.392	1.214
Model Features										
R^2	0.225		0.389			0.157		0.163		
Adjusted R^2	0.200		0.364			0.126		0.124		
Delta of Adj. R^2 (%)			16.4%					-0.2%		
F-statistic	8.922	Sign. (0.000)	15.560	Sign. (0.000)		4.990	Sign. (0.001)	4.130	Sign. (0.002)	
Durbin-Watson test	2.263		2.291			1.662		1.638		

4.3.3.3. Model 3a

Model 3a will be analyzed on the whole sample (Russian and German organizations together).

$$(3a): OE = (\beta_0 + \beta_1 \times employee + \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM + \beta_6 \times country + \beta_7 \times TQM_c \times country) + C.$$

The analysis of models 3a will be conducted in three steps:

- step 1: only the control variables will be added to the regression equations to show the role of the control variables in the models,
- step 2: the variable *TQM* will be added to the regression equations,
- step 3 variables *country* and the interaction term of *TQM_c* \times *country* will be included in the regression equations.

Tables 57 represent the step 1, step 2, and step 3 results of the multiple linear regression analysis for model 3a.

F value of Step 1 is not significant, meaning that the step 1 model has no predictive power.

F values of Step 2 and Step 3 are significant, meaning that models of step 2 and step 3 (equal to model 3a) have predictive power.

The intercept β_0 and the individual coefficient β of TQM are highly significant. Indicating the significant influence of TQM on OE in the whole sample. The value of R^2 at step 2 is 0.152 and of adjusted R^2 0.134, which means that 15.2% of the variance of organizational effectiveness in the collected sample and 19.1% of organizational effectiveness in all manufacturing organizations in Russia and Germany are explained through TQM implementation.

At the final step 3, country and the interaction term of country and TQM has been added to the Step 2 model. The interaction term of TQM and country is significant, meaning that there is a significant difference in the OE between Russian and German organizations, explained through TQM. Adding the interaction term *TQM_c* \times *country* increased the explained variance by 3.1%. The value of R^2 at step 3 is 0.190 and of adjusted R^2 0.165, which means that 19% of the variance of organizational effectiveness in the collected sample and 16.5% of the variance of organizational effectiveness in all manufacturing organizations with no foreign capital in Russia and Germany are explained through the interaction of TQM and country of origin and operating.

Durbin Watson Test and VIF statistics values have been explained in 4.3.2 in detail.

Model 3a:

$$(3a): OE = 4.180 - 0.013 \times \text{employee} - 0.110 \times \text{dummy1_kind_of_manufacturing} + 0.063 \times \text{dummy2_kind_of_manufacturing} + 0.010 \times \text{dummy3_kind_of_manufacturing} + 0.239 \times TQM - 0.283 \times \text{country} + 0.255 \times TQM_c \times \text{country}.$$

*Coefficients are not significant (Table 57).

Figure 39 represents model 3a graphically.

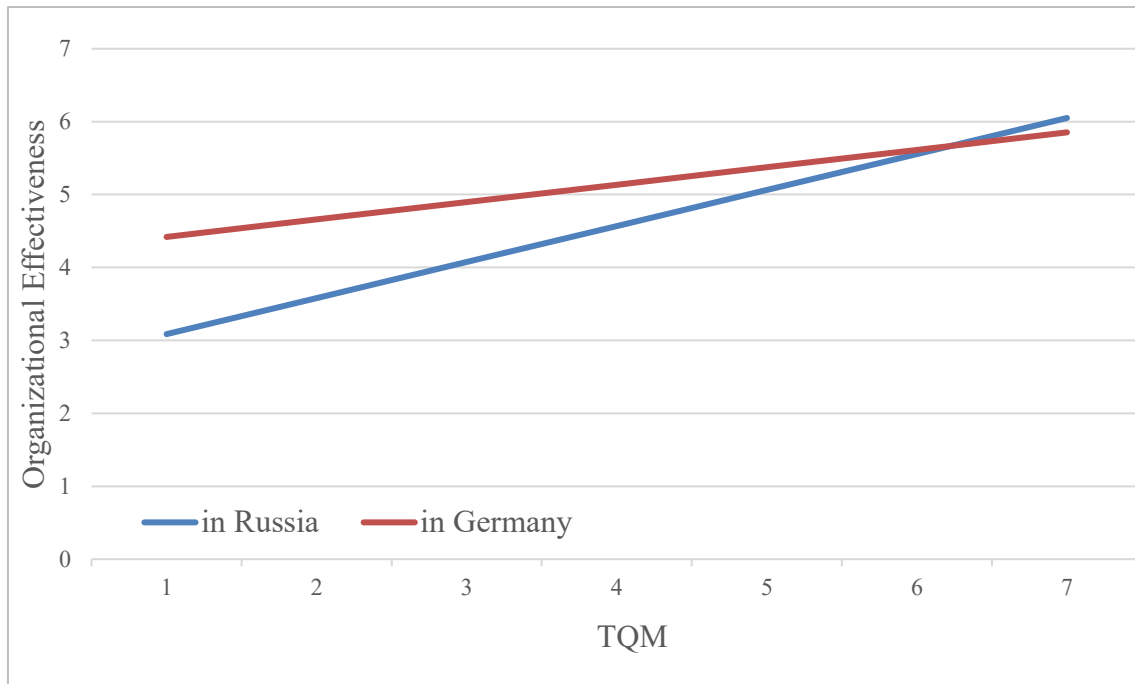


Figure 39: Interaction Effect of Country and TQM on the Organizational Effectiveness in Russia and Germany (Model 3a)

Table 57: Linear Regression Diagnostics of Model 3a (Russian and German samples as a whole sample)

	Step 1. Only Controls.		Step 2. Controls and TQM.		Step 3. Model 3a.		
	β	p	β	p	B	p	VIF
Intercept β_0			3.226	.000	4.180	0.000	1.182
Number of employees			-.010	.772	-.013	.693	1.315
Dummy1_kind_of_manufacturing (metal industries).			-.070	.633	-.110	.448	1.347
Dummy2_kind_of_manufacturing (high technology industries).			.082	.550	.063	.644	1.514
Dummy3_kind_of_manufacturing (food and textile industries).			-.098	.476	.010	.942	2.812
TQM			.396	.000	.239	.023	1.238
Country					-.283	.011	2.656
Interaction of country and TQM					.255	.050	1.182
Model Features							
R ²			0.152		0.190		
Adjusted R ²			0.134		0.165		
Delta of Adj. R ² (%)					3.1%		
F-statistic	1.405	Not sign. (0.223)	8.419	Sign. (0.000)	7.769		Sign. (0.000)
Durbin-Watson test			1.961		2.032		

4.3.3.4. Model 3b

Model 3b will be analyzed on the Russian and on German samples.

$$(3b) FMR = (\beta_0 + \beta_1 \times employee + \beta_2 \times \beta_2 \times dummy1_kind_of_manufacturing + \beta_3 \times dummy2_kind_of_manufacturing + \beta_4 \times dummy3_kind_of_manufacturing + \beta_5 \times TQM + \beta_6 \times country + \beta_7 \times TQM_c \times country) + C.$$

The analysis of model 3b will be conducted in three steps for the whole sample (Russian and German organizations):

- step 1: only the control variables will be added to the regression equations to show the role of the control variables in the models,
- step 2: the variable *TQM* will be added to the regression equations,
- step 3 variables *country* and the interaction term of *TQM_c* × *country* will be included in the regression equations.

Tables 58 represent the step 1, step 2, and step 3 results of the multiple linear regression analysis for model 3b.

F values of step 1, step 2, and step 3 models are significant, indicating that all models have predictive power.

The control variable, the number of employees, has a significant influence on FMR, explaining 19% of the variance in the collected sample (R^2 0.190, adjusted R^2 0.176). Adding TQM to the model at step 2 increases adjusted R^2 at 7.3% (R^2 0.265, adjusted R^2 0.249). The intercept β_0 and the individual coefficient β of the number of employees and TQM are significant.

At the final step 3, country and the interaction term of country and TQM has been added to the Step 2 model. The interaction term of TQM and country is significant, meaning that there is a significant difference in the FMR between Russian and German organizations, explained through TQM. Adding the interaction term increased the explained variance by 2.7%. The value of R^2 for model 3b is 0.297 and of adjusted R^2 0.276, which means that 29.7% of the variance of financial and market results in the collected sample and 27.6% of the variance of FMR in all manufacturing organizations with no foreign capital in Russia and Germany are explained through the number of employees and the interaction of TQM and country of origin and operating.

Durbin Watson Test and VIF statistics values have been explained in 4.3.2 in detail.

Model 3b:

$$(3b) FMR = 3.797 + 0.207 \times employee - 0.133^* \times dummy1_kind_of_manufacturing - 0.098^* \times dummy2_kind_of_manufacturing - 0.150^* \times dummy3_kind_of_manufacturing + 0.083^* \times TQM - 0.126^* \times country + 0.433 \times TQM_c \times country.$$

**Coefficients are not significant (Table 58).*

Figure 40 represents model 3b graphically.

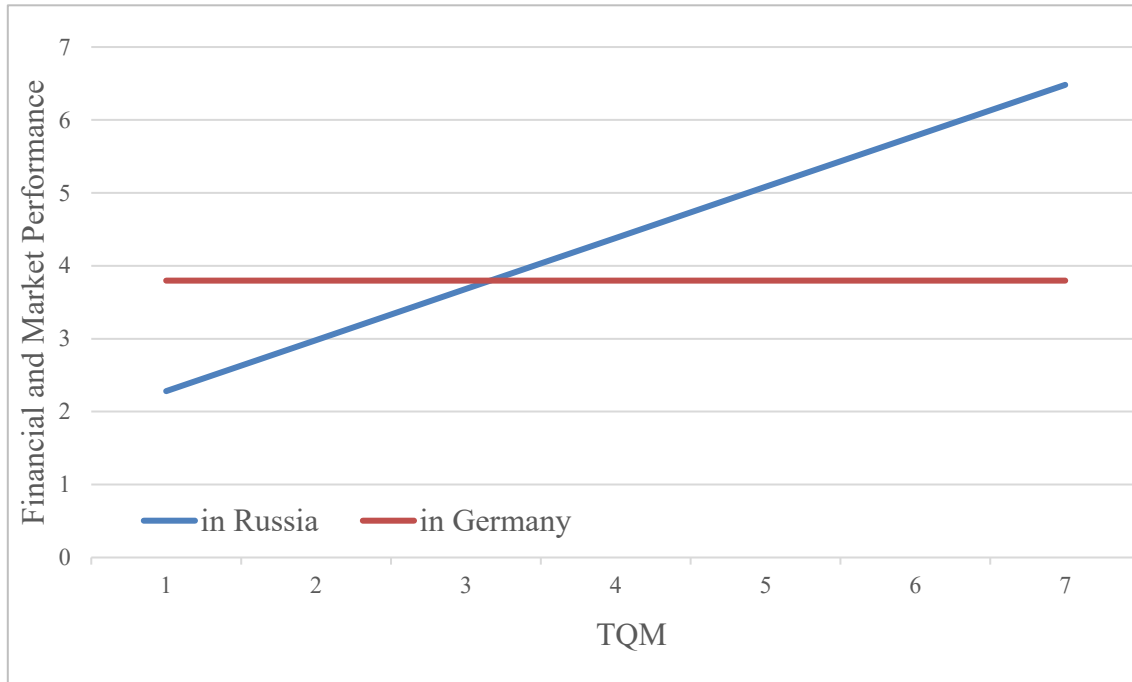


Figure 40: Interaction Effect of Country and TQM on the financial and market results in Russia and Germany (Model 3b)

Table 58: Linear Regression Diagnostics of Model 3b (Russian and German Samples as a Whole Sample)

	Step 1. Only Controls.		Step 2. Controls and TQM.		Step 3. Model 3b.		
	β	p	β	p	B	p	VIF
Intercept β_0	4.103	.000	2.362	.000	3.797	.000	1.182
Number of employees	.239	.000	.199	.000	.207	.000	1.315
Dummy1_kind_of_manufacturing (metal industries).	-.165	.325	-.127	.427	-.133	.399	1.347
Dummy2_kind_of_manufacturing (high technology industries).	-.140	.372	-.100	.507	-.098	.506	1.514
Dummy3_kind_of_manufacturing (food and textile industries).	-.308	.047	-.202	.176	-.150	.328	2.812
TQM			.354	.000	.083	.467	1.238
Country					-.126	.294	2.656
Interaction of country and TQM					.433	.002	1.182
Model Features							
R ²	0.190		0.265		0.297		

	Step 1. Only Controls.		Step 2. Controls and TQM.		Step 3. Model 3b.	
Adjusted R ²	0.176		0.249		0.276	
Delta of Adj. R ² (%)			7.3%		2.7%	
F-statistic	13.74 2	Sign. (0.000)	16.872	Sign. (0.000)	14.023	Sign. (0.000)
Durbin-Watson test	2.014		1.983		1.995	

4.4. Consolidation of Results

The current study investigates the role of German and Russia culture in the efficacy of TQM, namely, how effective TQM will be if implemented in German and in Russian organizations situated and operating in Germany and in Russia, comparing the efficacies of TQM in organizations in these two countries with each other. The study contributes to the discussion in the scientific literature on whether national culture plays a significant role in the level of TQM's efficacy or whether TQM is a universal management tool that can be successfully applied in organizations all over the world.

The study uses the theoretical model given in Figure 41, where:

- TQM is the mean of the seven observable TQM practices: Leadership, Strategic Planning, Customer Focus, Information and Analysis, Human Resource Management, Process Management, and Supplier Management.
- Organizational effectiveness (OE) is the mean of supplier performance, customer retention, reliability, and timely delivery of products, quality, and productivity.
- Financial and market results (FMR) is the mean of market share, the number of successful new products, profit, return on total assets (ROA), overall competitive position.

Table 59 and Figure 41 consolidate the results of hypotheses testing.

Table 59: Consolidation of Results of Hypotheses Tests.

Hypothesis Number	H1 (Russia)	H1 (Germany)	H2 (Russia)	H2 (Germany)	H3(a)	H3(b)
Hypothesis	TQM positively influences the organizational effectiveness in Russian organizations situated and operating in Russia	TQM positively influences the organizational effectiveness in German organizations situated and operating in Germany	TQM positively influences the financial and market results in Russian organizations situated and operating in Russia	TQM positively influences the financial and market results in German organizations situated and operating in Germany	TQM positively influences the organizational effectiveness of Russian organizations stronger than the organizational effectiveness German organizations	TQM positively influences the financial and market results of Russian organizations stronger than the financial and market results of German organizations
Result	Supported	Not supported	Supported	Not supported	Supported	Supported
R ²	0.261		0.389		0.190	0.297
Adjusted R ²	0.231		0.364		0.165	0.276

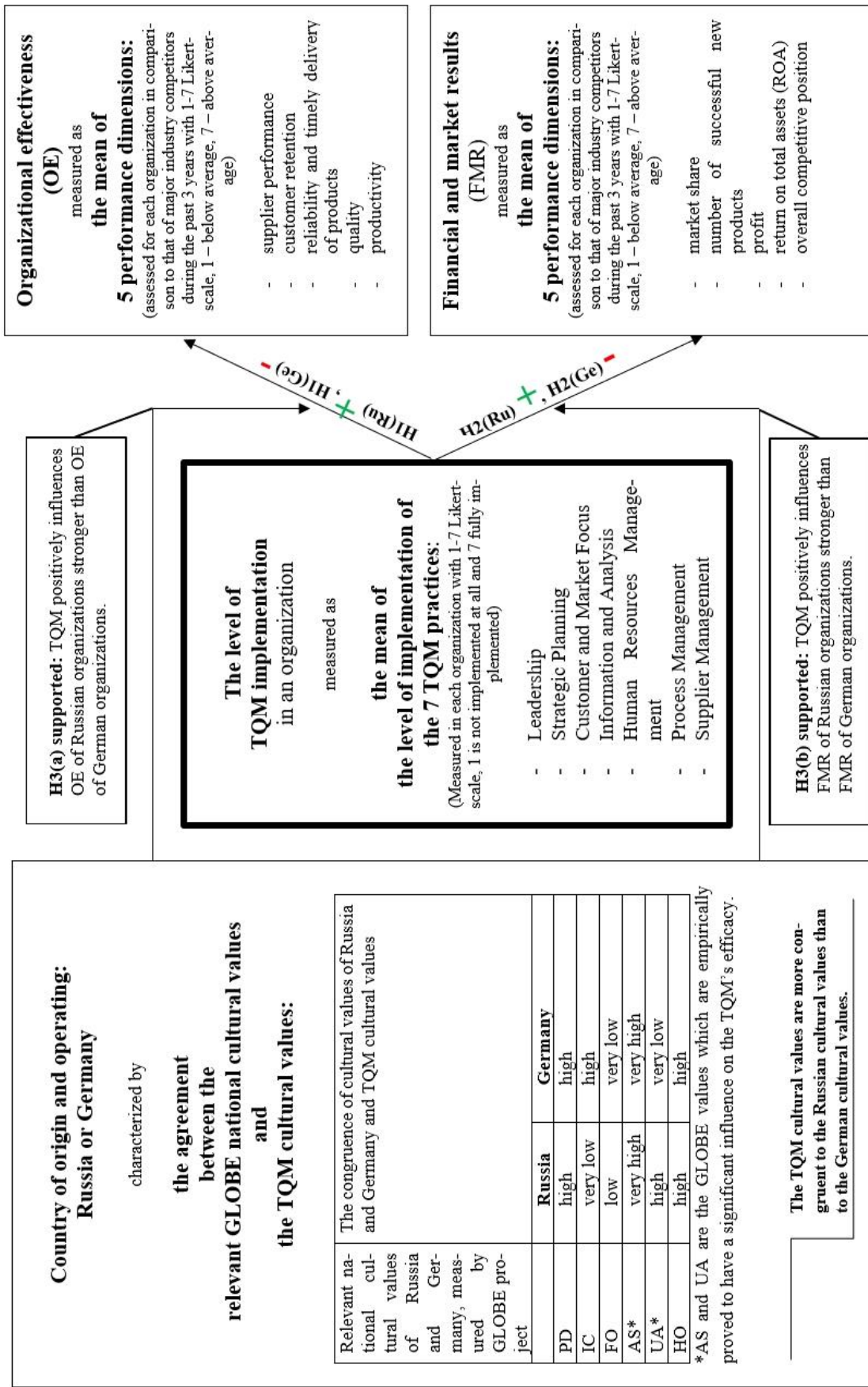


Figure 41: Consolidation of Results

The main finding of this research is that both non-financial and financial organizational performance measures, organizational effectiveness and financial and market results, in all manufacturing organizations with no foreign capital in Russia are to 23,1% and 36,4% accordingly explained through TQM management method whereas nor organizational effectiveness nor financial and market results in German organizations are directly explained by TQM system even some of TQM practices are implemented to the higher extend in Germany as in Russia: the empirical results of the Independent Samples t-Test found the evidence that TQM practices Strategic Planning, Process Management, and Supplier Management are implemented in German organizations to the higher extend as in Russia ($p < 0.05$) whereas TQM practices Customer Management and Information and Analysis are more implemented in Russian organizations as in German ones ($p < 0.10$ for CM and $p < 0.05$ for IA).

Research results give clear answers to all three research questions:

- TQM, implemented in Russian manufacturing organizations situated and operating in Russia, has a strong positive causal effect on organizational effectiveness and financial and market results.
- TQM, implemented in German manufacturing organizations situated and operating in Germany, has no strong positive causal effect on organizational effectiveness and financial and market results.
- TQM in Russian and German organizations situated and operating accordingly in Russia and Germany do not have the same efficacy. The efficacy of TQM in Russia is higher than in Germany.

Additionally, this study finds that the control variables of organization size (number of employees) and kind of manufacturing do not significantly change the level of organizational effectiveness, whether in Russia or in Germany. This result is supported even when country and the interaction term of country and TQM are included in the estimate. As for the influence of the control variables on the financial and market results in Russia and Germany, the number of employees measuring organization size has a significant positive correlation with financial and market results in Russia and in Germany before and after including the country and of the interaction term of country and TQM in the estimate meaning that bigger organization have better financial and market results in comparison to other organizations in their branches. Kind of manufacturing is only significant for the Russian sample for the dummy2_kind_of_manufacturing, meaning that organizations of high-technology industries in Russia (automotive industry, machinery and computer equipment, electronic and electric equipment) have better financial and market results in comparison to organizations from chemical and construction materials industries (chemical and allied products, construction materials and allied products, rubber and plastic products).

5. Conclusion

5.1. Discussion

The growing interdependence of the world's economies is an integral part of the globalization process, which is, without a doubt, the trend of the 21st century. Offering incredible chances for companies, it is, at the same time, a great challenge for them as organizations are forced to continually optimize production processes and to develop new products to stay competitive in the global market.

TQM has proved itself first in Japan and then in the USA to be a management system which can increase the competitiveness of the organizations. However, it is not clear yet whether TQM is a highly effective management system for organizations in all countries over the world or whether its efficacy differs depending on the national culture of the organization. The effectiveness of TQM in cultures different from American and Japanese cultures has been actively explored in recent years, but very little is known about quality management practices within this cross-cultural context of Germany and Russia despite Russia's significant importance for German economics (until 24.02.2022). The current study investigates the efficacy of TQM, if implemented in German and Russian organizations, and compares these efficacies with each other, providing at the same time an empirically proved guideline on how the cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically regardless of which countries it refers to.

The hypotheses have been derived directly from the assumption of Detert et al. (2000, p.858) that the more coherence between TQM values and cultural values exists, the more effective TQM is. Kull and Wacker followed the theory of Detert et al. (2000) and proved empirically that only two cultural dimensions, Assertiveness and Uncertainty Avoidance, have a significant influence on the efficacy of TQM (2010, p.236). Russian cultural values of Assertiveness and Uncertainty Avoidance match the TQM values to a very high and high extent. The Assertiveness value of German national culture matches the TQM value to a very high extent, but at the same time, Uncertainty Avoidance matches the TQM value to a very low extent. Thus, the theoretical analysis of the Russian and German national cultures has revealed that Russian cultural values are closer to the TQM values than German cultural values, which means that TQM's efficacy should be higher in Russia than in Germany. The empirical results of the current study confirm that TQM, implemented in Russian manufacturing organizations situated and operating in Russia, has a significant positive causal effect on organizational effectiveness and financial and market results and does not have a significant causal effect on organizational effectiveness and financial and market results if implemented in German manufacturing organizations, situated and operating in Germany.

Empirical results support the theory of Detert et al. (2000, p.858) that TQM is more effective if implemented in a country with national culture that is closer to the TQM values. The results of the research are also consistent with the results of Kujala and Lillrank (2004, pp 52–53), Flynn and Saladin (2006, p.599), Jung et al. (2008, p.631), Vecchi and Brennan (2009, p.155), Wehnert (2009, p.152), Zhang and Wu, (2014, p.99) who all argued that TQM's

efficacy is different in diverse cultural environments. However, the conclusion of the current study about the relationships between TQM and financial and market results is not supported by Sila (2018). Both studies lean on the same TQM-performance model of Sila (2007) and follow the call to conduct cross-country studies to “shed more light on whether the convergence hypothesis also holds for the TQM practices and TQM—performance relationships of companies operating across different country boundaries” (Sila, 2007, p.103). Sila (2018) concluded that countries of origin and operating, Turkey and North Cyprus, had no moderating effects on the relationships between TQM and financial and market results (Sila, 2018, p.1116). To explain the difference in the results of these two comparative studies (Germany-Russia and Turkey-North Cyprus), first, the GLOBE national cultural dimensions of Turkey and North Cyprus, which influence the efficacy of TQM, should be compared to each other to find out if they are different or similar.

5.2. Limitations

It is important to view this study in the context of its limitations.

First, current research follows the theory that national culture dominates organizational culture (Brodbeck and Frese, 2007, p.156; Schein, 2006, p.60; Hofstede et al., 2010) and even organizational culture can be trained effectively, the national culture remains always a part of the environmental context (Stein et al., 2014, p.39).

Second, in the theory development, the GLOBE cultural values for West Germany and Russia have been adopted, neglecting all subcultures that co-exist inside Russia. In contrast, cross-cultural researchers argue that most variation in cultural values resides within countries rather than between countries (Blut et al., 2022, p.351). However, this does not impact the empirical results of the current study as not cultural values, but interactions of country and TQM have been included in the estimations.

The third limitation, connected with the cultural component of the study, is that country and not national cultural values have been included in the interaction term. It cannot be excluded that aside from cultural values, other characteristics of heterogeneity, such as the institutional and development levels of countries, cause the differences in TQM efficacy. For future research, capturing and measuring cultural values with a survey instrument should be considered.

The next limitation is that the results cannot be generalized for the service industries as only manufacturing organizations have been interviewed in the study.

The statistical part of the study also has some limitations, which are common to survey studies. First, the study uses perceptual data by measurement of TQM implementation and organizational performance. Secondly, because Russian organizations are not used to participating in such studies, it cannot be excluded that the data given by various respondents are not objective. To overcome this in future studies, for example, to measure organizational performance, not only perception data but also externally reported information data should be used. Thirdly, most questionnaires have been answered by a single informant. Interviewing a single respondent in a company or organization can result in a so-called single informant

bias, which leads to decreasing validity of the data collected (Kaya, 2007, p.55). Although every attempt was made to discern which person knows the answers to all questions, and the questionnaire was sent in advance to give the possibility for the interviewees first to consult with other people within their organizations, the data can still introduce bias, which can impact generalizability, reliability, and validity. For future research, the approach of multi-person surveys within a company is proposed. Finally, as only the random sample and not all Russian and German organizations took part in the study, it can never be definitively determined whether a hypothesis is correct or not. Making mistakes is, therefore, never excluded (Biemann et al., 2007, p.153).

5.3. Theoretical Implications

The current dissertation addresses the literature gaps in the topic of the universal cross-cultural applicability and efficacy of TQM and represents the theory-driven empirical research based on the data gathered from German and Russian organizations situated and operating in Germany and Russia. The research results contribute to the important debate in the operations management literature related to the convergence versus divergence or culture-free versus culture-bound argument in TQM implementation, supporting the divergence hypothesis by providing empirical evidence from manufacturing organizations situated and operating in Germany and Russia that the positive effect of TQM on organizational performance is dependent on the country and its deep-rooted national culture. Furthermore, the current dissertation is an empirically proven guideline of how a cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically, regardless of which countries it refers to. It is very important that scientists continue researching this topic, as understanding cultural differences is an essential prerequisite for managers of headquarters operating in countries characterized by different cultural values than their subsidiaries. Scientists should give these managers answers if TQM can be successfully transferred to their subsidiary and stay effective under the influence of another national culture.

The choice of Germany and Russia as countries for comparison addresses the gap in the scientific literature that most studies have been conducted in the USA, Australia, Western Europe (Spain), and Asia (García-Fernández et al., 2022, p.12), and there is a need for more research about the influence of TQM on organizational performance in developing countries (Singh, 2010, p.13; Sila and Walczak, 2017, p.367; Shafiq et al., 2019, p.32). Because of the sparsity of studies addressing the efficacy of TQM under the influence of German and especially Russian national cultures, I believe this study contributes to bridging this gap by providing empirical evidence from less researched countries.

The collection of empirical data in Russia became one of the challenges of the current dissertation and enriched the international scientific literature due to the known difficulty in assessing the sensible organizational data from Russian organizations because people, remembering the history, are suspicious about attempts to learn about their views and assessments (Savin, 2005, p.190; Grachev et al., 2012, p.810; Anghel, 2012, p.34; Kobernyuk, 2014, p.473). Because of the recent situation and anti-Russian sanctions released in 2022 upon the Russian invasion of Ukraine, it can be expected that it will not be possible or maybe later

very difficult to collect sensible empirical data from Russian organizations. That's why the data collected for the current study is of additional scientific value.

A very important implication for scientists is the clear need to further explore the role of TQM in its influence on organizational performance in Germany. The empirical analysis did not confirm the direct linear impact of TQM on OE and FMR in Germany, but at the same time, the results of the Independent Samples t-Test (Table 32) revealed that TQM practices SP, PM, and SM are significantly more implemented in German organizations than in Russian organizations, and organizational performance (OE and FMR) of German organizations is significantly higher than of Russian organizations (Table 32). Researchers should therefore look for a scientific explanation for this finding. For example, scientists have already started exploring the mutual relationship between the conventional TQM and Industry 4.0 (Beard-Gunter et al., 2019; Sader et al., 2019; Asif, 2020; Chiarini, 2020; Babatunde, 2021; Akhmatova et al., 2022; Kashif and Satirenjit, 2022; Sader et al., 2022, Saha et al., 2022). Babatunde speaks about the “mutually beneficial relationship” between Industry 4.0 and TQM influencing the operational performance of organizations (2021, p.897). Sader et al. assume that the interplay of TQM and I4.0 would support organizations by reaching an outstanding position of business excellence, effectiveness, and efficiency (Sader et al., 2019, p.139). Kashif and Satirenjit also argue that TQM in I4.0 help organizations to increase their competitiveness and to gain and maintain market share (Kashif and Satirenjit, 2022, p.1646). Akhmatova et al. propose that “coordination of TQM and digital solutions may contribute to improving overall business results” (Akhmatova et al., 2022, p.1516). These suggestions of scientists imply that even though the empirical results of the current research did not prove the direct influence of conventional TQM on OE and FMR in German organizations, TQM can still influence organization performance by its interplay with Industry 4.0 and organizational performance. As Germany belongs to the leading nations of the fourth industrial revolution, it is of great relevance for scientists to investigate the interplay between TQM, Industry 4.0, and performance (Saha et al., 2022, p.499).

5.4. Managerial Implications

In the era of globalization and economic slowdown when high product quality, along with low cost, timely delivery, and best service, belongs to average expectations of customers, it has become a real challenge for managers to guarantee the survival and competitiveness of their organizations (Singh, 2010, p.1). To stand the challenge, managers pay attention to the implementation of TQM (Singh, 2010, p.1). TQM is a complex management system that requires many resources to be invested in its implementation. Every organization has limited resources, and the right decisions on how the resources should be invested decide the success of the organization and its competitiveness. The current study proves that national culture mediates the efficacy of TQM, implying that TQM is not the universal management system that will bring the same benefits to organizations all over the world. Managers should be aware of it, taking culture into account in their decisions, as “some OM practices are altered or precluded by a culture, while others are more effective in some cultures than in others” (Metters et al., 2010, p. 178).

The research results of the current study are critical to practitioners in Germany and Russia. The findings of the study provide confidence to the manufacturing organizations in Russia that the allocating of resources to the TQM implementation will, with high probability, increase the organizational effectiveness and financial and market results of manufacturing organizations in Russia. Additionally, this study finds that the control variables of organization size (number of employees) and kind of manufacturing do not significantly change the level of organizational effectiveness in Russia even when country and the interaction term of country and TQM are included in the estimate. Kull and Wacker also proved empirically that quality management brings benefits to small and large organizations regardless of the size of organizations (Kull and Wacker, 2010, p.235). Managers of Russian manufacturing organizations, regardless of the size and branches of organizations, should focus on the implementation of TQM as an integrated management system to increase organizational effectiveness and financial and market results and, accordingly, to improve the competitiveness of their organizations.

The same recommendation is valid for German firms and organizations from other countries that collaborate with Russian partner organizations or have subsidiaries or joint ventures in Russia. As they are situated and operating in Russia, and it is assumed that national culture dominates organizational culture (Brodbeck and Frese, 2007, p.156; Schein, 2006, p.60; Stein et al., 2014, p.39), the TQM implementation in the Russian organization is expected to increase their organizational effectiveness and financial and market results.

Research results imply that German manufacturing organizations would get a high probability of fewer benefits from the implementation of conventional TQM than Russian organizations. The empirical evidence provided by this study also indicates that even though German organizations have significantly higher organizational effectiveness and financial and market results than Russian ones, they are not explained directly by the conventional TQM explored in this study. However, German managers should not interpret the results as if TQM is not beneficial to German organizations. In fact, empirical results prove that TQM practices SP, PM, and SM are significantly more implemented in German organizations than in Russian organizations, and organizational performance (OE and FMR) of German organizations is significantly higher than that of Russian organizations (Table 32). The current research draws the attention of German managers to the fact that it is probably not enough to implement and support only the conventional TQM in German organizations to improve organizational performance, but there should be some other factors, systems, and approaches influencing organizational results. Stein and Scholz argue that the source of increasing effectiveness lies in the combination of humans and automation (Stein and Scholz, 2020, p.400). Indeed, the past decade for German organizations is characterized by the new trend of improving manufacturing industry productivity, the fourth industrial revolution, often known as Industry 4.0 (I4.0), first introduced in Germany in 2011 (Kashif and Satirenjit, 2022, p.1625). Scientists assume that the interplay of TQM and Industry 4.0 creates an “ecosystem capable of uniting technology, quality, and people” (Souza et al., 2022), which leads to success in terms of organizational competitiveness and sustainability performance (Saha et al., 2022, p.499). Germany, with one of the most competitive manufacturing industries in the world, has an

immense potential to belong to the leading Industry 4.0 nations (Kagermann et al., 2013, pp.4,66). Further scientific investigations of the mutual relations between TQM, Industry 4.0, and organizational performance are needed to provide important input for German managers. A better knowledge of the of TQM - I4.0 relations will assist German managers in establishing appropriate expectations during the implementation process and help their organization “in obtaining a competitive advantage that distinguishes them from their competitors and improves their market presence” (Saha et al., 2022, p.506).

5.5. Future research

The general conclusion emerging from this study is that TQM’s efficacy in Germany and Russia is not the same, providing one more argument for the divergence hypothesis that conventional TQM is not a universal instrument for increasing the organizational performance and competitiveness of organizations in all countries all over the world at the same way. More cross-country research is needed to understand deeper which cultural differences between countries determine the higher and lower efficacy of TQM.

Researchers have already been studying the mediating role of organizational culture on the efficacy of TQM (Al Zoubia, 2020). Another important topic for future research is to measure organizational cultural values by the survey instrument and to include them and not the variable country in the statistical estimations. Adding not only national cultural values but the interplay between national and organizational cultural values would give the possibility to make constellations of different national and organizational cultural values and estimate in advance if TQM would be effective in this country or within different areas of one country.

The current dissertation is a pioneer study in the comparison of TQM’s efficacy between Russia and Germany, whereas quality management requires longitudinal research over time (Schröder et al., 2005, p.477; Zhang et al., 2012, p.20). A better profound understanding of the nature of the interaction between national culture and TQM’s efficacy in Russia and Germany can only be achieved through further longitudinal studies and a more detailed examination of TQM’s efficacy in these two countries as well as in other countries of the world. This could shed light if organizations adapt and adjust their quality systems over time.

“The quality system that made an organization successful today may not be the same system that will make it successful in the future” (Zhang et al., 2012, p.20). The research of the transformation and further development of the conventional TQM into Quality 4.0, as well as the interplay of TQM, Industry 4.0, and organizational performance in German organizations, is an important research field for the next years.

Finally, the current dissertation is a scientific, theory-driven empirical research, providing a “blueprint” for further research on how a cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically, regardless of which countries it refers to. More studies for other closely cooperating countries should be conducted.

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Appendix

Questionnaire in German Language

Telefonischer Anruf:

Guten Tag. Ich heie (Name). Ich arbeite an der Universitt Siegen in einem Projekt, in Rahmen von dem eine internationale vergleichende Studie angestrebt wird, die die Frage beantworten soll, wie die Landeskulturen von Russland und Deutschland die Effektivitt von den TQM-Praktiken in diesen zwei Lndern beeinflussen. Wir versprechen uns von dieser Studie wichtige neue Erkenntnisse ber die Effektivitt von TQM in Russland und Deutschland und sind berzeugt, dass die gewonnenen Einsichten fr die Praxis groen Nutzen bringen knnen.

Fr die empirische Untersuchung mchten wir jeweils 130 produzierende Unternehmen aus Russland und 130 produzierende Unternehmen aus Deutschland telefonisch interviewen. Wir bieten Ihrem Unternehmen an, an der wissenschaftlichen Studie teilzunehmen. Es ist keine Voraussetzung, die implementierten Quality Management Praktiken im Unternehmen zu haben, um an der Studie teilzunehmen. Jedes Interview wird etwa 30 Minuten Ihrer Zeit in Anspruch nehmen. Ideale Kontaktpersonen im Unternehmen wren der Geschftsfhrer, der Qualittsmanager, der Vertriebsleiter oder der Produktionsleiter (bzw. alle anderen Personen, die sich in Firmenprozessen gut auskennen und unsere Fragen beantworten knnen).

Bitte beantworten Sie die folgenden Fragen ehrlich. Es gibt keine richtigen oder falschen Antworten. Einzig und allein Ihre ehrliche Meinung bezglich aller Themen, die der Fragebogen umfasst, fhrt zu verlsslichen Forschungsergebnissen. Die Informationen werden in aggregierter Form und ausschlielich fr akademische Zwecke verwendet. Die von Ihnen zur Verfgung gestellten Informationen werden stets privat und vertraulich behandelt. Weder Sie noch Ihr Unternehmen werden namentlich in den Berichten, die auf Grundlage dieser Umfrage erstellt werden, genannt.

An unserer Befragung in Deutschland drfen ausschlielich 100% deutsche produzierende Unternehmen teilnehmen. Handelt es sich bei Ihrem Unternehmen um ein solches? Wenn dann lassen Sie uns bitte die Befragung starten.

Fragenbogen:

In welchem Bereich ist Ihr Unternehmen ttig?

Produktion	Dienstleistungen	Bitte, geben Sie an, was Ihr Unternehmen produziert:
	Keine Teilnahme mglich	

Welchen Umsatz hat Ihr Unternehmen im Jahr 2010 erwirtschaftet? (In Mio. US-Dollar)

0–1	2–10	11–20	21–50	51–100	101–500	501–1000	> 1000
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Gemessen am Gesamtumsatz Ihres Unternehmens: wie hoch ist der Exportanteil?

0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	> 60%
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Wie viele Mitarbeiter hat Ihr Unternehmen im Jahr 2010 beschäftigt?

0-20	21-100	101-500	501-1000	1001-2500	2501-5000	> 5000
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Wie alt ist der Geschäftsführer Ihres Unternehmens?

jünger als 30	30-39	40 - 49	50 - 59	älter als 60
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Bitte schätzen Sie das Durchschnittsalter der Unternehmensleitung:

jünger als 30	30-39	40 - 49	50 - 59	älter als 60
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Bitte schätzen Sie das Durchschnittsalter der Mitarbeiter:

jünger als 30	30-39	40 - 49	50 - 59	älter als 60
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Wie alt sind Sie?

jünger als 30	30-39	40 - 49	50 - 59	älter als 60
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Wie lautet Ihre Berufsbezeichnung?

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Sind Sie männlich oder weiblich?

männlich	weiblich
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Ist Ihr Unternehmen nach der ISO-9000 zertifiziert und falls ja, seit wann?

ja, seit:	nein
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TQM-Praktiken

Bitte beantworten Sie alle Fragen anhand der Skala von 1 bis 7 (1 - "stimme überhaupt nicht zu", 4 - "neutral", 7 - „stimme voll und ganz zu“).

115 Leadership							
115.1 Die Unternehmensspitze:	1 stimme über- haupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a) übernimmt Verantwortung für die qualitativen Leistungen des Unternehmens							
b) sieht Qualitätsverbesserungen als Möglichkeit. höhere Gewinne zu erzielen							
c) setzt Anreize zur Erreichung der Qualitätsziele							
d) stellt sicher, dass jedes neue Produkt und Dienstleistung die Erwartungen der Kunden erfüllt							
e) legt mehr Wert auf Qualität als auf Kosten							
115.2 Die Vorgesetzten:	1 stimme über- haupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
f) versuchen das Vertrauen der Mitarbeiter zu gewinnen							
g) überwachen und kontrollieren die Mitarbeiter, z.B. mit Videokameras und/oder Kontrollen, wenn sie das Unternehmen am Feierabend verlassen*							
h) sind verantwortlich für die Qualitätsverbesserung							
i) fördern die Kundenzufriedenheit							
j) sehen Veränderung als Teil unserer Unternehmenskultur							

116 Strategic Planning	1 stimme über- haupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
k) bei unserer Mission steht Qualität klar im Vordergrund							
l) bei der Erreichung unserer Ziele verfolgen wir einen langfristigen Ansatz							
m) die Festlegung und Überprüfung unserer kurz- und langfristigen Ziele erfolgt durch einen umfassenden Planungsprozess							
n) wir stellen ausreichend Ressourcen für die erfolgreiche Umsetzung von Strategien zur Verfügung, die auf Qualität abzielen							
o) wir verfügen über ein übergreifendes Leistungsmessungssystem, das sämtliche Schlüsselbereiche und Anspruchsgruppen umfasst.							
p) auf verschiedenen Unternehmensebenen sind Teams benannt, deren Aufgabe ist es, Ziele festzulegen und Maßnahmenpläne zu entwickeln.							
q) Wir setzen unsere Ressourcen ein, um die Anforderungen und Bedürfnisse folgender Zielgruppe zu erfüllen:	1 stimme über- haupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a. Kunden							
b. Mitarbeiter							
c. Lieferanten							

117 Customer and Market Focus	1 stimme über- haupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
r) Wir befragen unsere Kunden zu unseren Produkten/ Dienstleistungen, um umgehend brauchbares Feedback zu erhalten							
s) Wir verbinden Kundenzufriedenheit mit innerbetrieblichen Kennzahlen							
t) Wir bestimmen die Zufriedenheit unserer Kunden relativ zur Zufriedenheit der Kunden mit Konkurrenzunternehmen und/oder anderen Benchmarks							
u) Mitarbeiter sehen sich in erster Linie verantwortlich dafür, die Kundenzufriedenheit zu gewährleisten							
v) Wir wenden verschiedene Methoden an, um Beziehungen zu unseren Kunden aufzubauen, sie stärker zu binden und positive Empfehlungen zu erhalten							
w) Die Mitarbeiter werden über die Anforderungen der Kunden informiert							
x) Wir nutzen Kundenbeschwerden, um unsere Arbeitsabläufe zu verbessern							
y) Wir verändern unsere Standards sobald sich die Bedürfnisse und Erwartungen unserer Kunden ändern							
z) Informationen von unseren Kunden erhalten wir u.a. auf folgenden Wegen:	1 stimme über- haupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a. umfassende Forschung im Bereich unserer Branche							

b. Beobachtungen unserer Mitarbeiter bezüglich der Präferenzen der Kunden							
c. Schriftliche oder gezielte mündliche Befragung von Kunden, die kürzlich unsere Produkte gekauft und unsere Leistungen in Anspruch genommen haben							
d. bestehende Mechanismen, die es den Kunden ermöglichen, Empfehlungen, Lob und Beschwerden an das Unternehmen zu richten, ohne darum gebeten zu werden							
118 Information and Analysis	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
aa) Wir sammeln und analysieren Informationen zur Unternehmensleistung und Kostendaten, um Verbesserungspotenzial zu erkennen und zu erschließen							
bb) Wir untersuchen kundenbezogene Daten/ Marktdaten, um Prioritäten zu Verbesserungsanstrengungen festzulegen							
cc) Wir überprüfen unsere Arbeit kontinuierlich, um sicherzustellen, dass die Wünsche der Kunden zu jeder Zeit termingerecht erfüllt werden							
dd) Unsere Software- und Hardware-Systeme sind verlässlich und benutzerfreundlich							
ee) Wir passen unsere Informationstechnologie zeitnah an veränderte Geschäftserfordernisse an							

ff)	Wir führen formale Benchmarks zu Best-Practice-Standards und Leistungen anderer Branchen durch							
gg)	Wir erhalten Qualitätsdaten rechtzeitig							
hh)	Qualitätsdaten, wie beispielsweise Fehlerquoten und Ausschussraten, sind zugänglich für:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
	a. Führungskräfte							
	b. Mitarbeiter							
ii)	Wir führen formale Vergleiche (Benchmarking) mit unseren Wettbewerbern hinsichtlich folgender Bereiche durch:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
	a. Produkte / Dienstleistungen							
	b. Prozesse							
	c. Produktivität							
jj)	Wir entwickeln Verfahren zur Überwachung von Schlüsselkennzahlen:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
	a. Standortleistung							
	b. Leistung von Wettbewerbern							
	c. Kundenzufriedenheit							
kk)	Wir nutzen das Internet, um hochwertige Daten und Informationen zugänglich zu machen für:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
	a. Mitarbeiter							
	b. Lieferanten							
	c. Kunden							

ll) Wir nutzen wissenschaftliche Instrumente und Methoden, wie beispielsweise Gantt-Diagramme, Checklisten etc., um eine Qualitätsverbesserung zu erreichen:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a. täglich, bei sämtlichen Arbeitsbläufen							
b. für die strategische Planung							
119 Human Resources Focus	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
mm) Mitarbeiter auf Stundenbasis/ Mitarbeiter ohne leitende Position entscheiden mit über Qualitätsfragen							
nn) Wir stellen stets sicher, dass Mitarbeiter mit Qualitätsfragen des Betriebs vertraut sind							
oo) Wir erwarten von unseren Mitarbeitern, dass sie sich in kontinuierliche Verbesserungsprozesse aktiv einbringen							
pp) Wir erkennen und belohnen Mitarbeiter für herausragende Qualitätsperformance							
qq) Wir setzen bereichsübergreifende Teams ein							
rr) Barrieren zwischen einzelnen Abteilungen sind beseitigt							
ss) Kommunikationsprozesse finden in unserem Betrieb nicht nur „top-down“ (von oben nach unten) sondern auch „bottom-up“ (von unten nach oben) statt							
tt) Personalmanagementstrategien sind auf die Qualitäts-/Leistungspläne des Betriebs abgestimmt							

uu) Wir schulen Mitarbeiter auf Stundenbasis/Mitarbeiter ohne leitende Position bezüglich der Fähigkeiten, die sie für die Ausübung ihrer Tätigkeit benötigen (z.B. technische und berufsspezifische Fähigkeiten)							
vv) Alle Mitarbeiter erhalten qualitätsbezogene Schulungen							
ww) Mitarbeiter werden regelmäßig formell befragt, um ihre Zufriedenheit zu ermitteln.							
xx) Mitarbeiter werden regelmäßig formell befragt, um festzustellen, in welchem Umfang sie mit unseren Qualitätsstandards vertraut sind							
yy) In unserem Betrieb werden die Gesundheit und Sicherheit unserer Mitarbeiter gewährleistet							
120 Process Management	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
zz) Die Spezifikationen für unsere Dienstleistungen und Produkte sind eindeutig							
aaa) Wo immer erdenklich haben wir sichergestellt, dass die Prozesse fehlervermeidend so gestaltet sind, dass das Risiko von Fehlern durch unsere Mitarbeiter verringert ist							
bbb) Wir befragen unsere Mitarbeiter bevor wir neue Produkte/Dienstleistungen einführen oder bestehende Produkte/Dienstleistungen verändern							
ccc) Wir nutzen statistische Methoden, um die Prozessabläufe zu kontrollieren							

ddd) Die Mitarbeiter führen eigenständig Kontrollen durch							
eee) Wir zielen darauf ab, sämtliche Design- und Marketingtätigkeiten sowie alle betrieblichen und rechtlichen Aktivitäten während jedes Projekts aufeinander abzustimmen							
fff) Wir nutzen fortwährend interne und externe Audits, um die Qualität unserer Produkte und Dienstleistungen sicherzustellen							
ggg) Die Mitarbeiter erhalten klare, einheitliche Arbeits- und Verfahrensanweisungen							
hhh) Die kontinuierliche Qualitätsverbesserung wird für alle Arbeitsvorgänge betont							
iii) Unsere Unternehmenskultur fördert Innovationen bei allen Aspekten unserer Prozesse							
121 Supplier Management	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
jjj) Die Einkaufsabteilung übernimmt die Verantwortung für die Qualität der beschafften Produkte/Dienstleistungen							
kkk) Bei der Wahl unserer Lieferanten spielt Qualität eine größere Rolle als preisliche oder terminliche Aspekte							
lll) Wir ziehen langfristige Beziehungen mit wenigen Lieferanten vor							
mmm) Unseren Lieferanten geben wir klare Spezifikationen							
nnn) Wir erwarten von unseren Lieferanten, dass Sie unsere Anstrengungen unterstützen,							

selbst wenn diese nicht vertraglich festgelegt sind,							
ooo) Die Qualität unserer Lieferanten ist durch folgende Organisation zertifiziert:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a. unseren Betrieb							
b. andere Organisationen							
ppp) Wir streben eine aktive Beteiligung unserer Lieferanten in folgenden Bereichen an:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a. Prozessdesign							
b. Entwicklung neuer Produkte							
c. Planungsprozesse zur Qualität unserer Produkte/Dienstleistungen							
qqq) Wir arbeiten mit unseren Lieferanten zusammen, um sie bei der Verbesserung folgender Bereiche zu unterstützen:	1 stimme überhaupt nicht zu	2 stimme nicht zu	3 stimme eher nicht zu	4 neutral	5 stimme eher zu	6 stimme zu	7 stimme voll und ganz zu
a. Flexibilität							
b. Qualität							
c. Kosten							
d. Durchlaufzeit							

Geschäftsergebnisse im Vergleich zu anderen Wettbewerbern

Bitte beantworten Sie alle Fragen bezüglich der Unternehmensleistung in den vergangenen 3 Jahren, verglichen mit der Leistung der wesentlichen Wettbewerber in der Branche anhand der folgenden Skala von 1 bis 7 (1 - "unterdurchschnittlich", 4 - "durchschnittlich", 7 - "überdurchschnittlich").

	1	2	3	4	5	6	7
Mitarbeiterfluktuation <i>Achtung: wenn dieser Indikator grösser oder höher ist als durchschnittlich beim Wettbewerb dann ist es auf diese Skala 1,2 oder 3 (bedeutet unter dem Durchschnitt)</i>							
Krankheitsrate von Mitarbeitern <i>Achtung: wenn dieser Indikator grösser oder höher ist als durchschnittlich beim Wettbewerb dann ist es auf diese Skala 1,2 oder 3 (bedeutet unter dem Durchschnitt)</i>							
Anzahl der Vorschläge seitens der Mitarbeiter							
Arbeitsleistung der Mitarbeiter							
Leistung der Lieferanten							
Kundenbindung							
Verlässlichkeit und pünktliche Lieferung von Produkten/ Dienstleistungen							
Anzahl erfolgreicher neuer Produkte/Dienstleistungen							
Marktanteil							
Qualität							
Produktivität							
Durchlaufzeiten <i>Achtung: wenn dieser Indikator grösser oder höher ist als durchschnittlich beim Wettbewerb dann ist es auf diese Skala 1,2 oder 3 (bedeutet unter dem Durchschnitt)</i>							
Fehler- und Mängelanzahl <i>Achtung: wenn dieser Indikator grösser oder höher ist als durchschnittlich beim Wettbewerb dann ist es auf diese Skala 1,2 oder 3 (bedeutet unter dem Durchschnitt)</i>							
Kosten <i>Achtung: wenn dieser Indikator grösser oder höher ist als durchschnittlich beim Wettbewerb dann ist es auf diese Skala 1,2 oder 3 (bedeutet unter dem Durchschnitt)</i>							
Gewinn							
Gesamtkapitalrendite							
Allgemeine Wettbewerbsposition							

Vielen Dank, dass Sie an unserer Umfrage teilgenommen haben. Falls Sie Interesse an den Studienergebnissen haben, geben Sie bitte Ihre E-Mail-Adresse an.

E-Mail:

Questionnaire in Russian Language

Телефонный звонок:

Здравствуйте, меня зовут (имя). Я работаю в Университета города Зиген в Германии над проектом на тему успешного внедрения принципов всеобщего управления качеством (Total Quality Management) и влияния TQM на результаты деятельности фирм в России и Германии. Мы надеемся, что это исследование даст нам понимание эффективности TQM в России и Германии, и убеждены, что полученные новые знания могут быть очень полезны для предприятий.

В рамках эмпирического исследования мы хотели бы провести телефонные интервью со 130 производственными предприятиями из каждой исследуемой страны, и предлагаем Вам внести свой вклад в данное научное исследование со стороны России. Чтобы участвовать в опросе, совсем необязательно иметь какую-либо систему менеджмента качества на Вашей фирме. Интервью по телефону будет длиться около 30 мин. Идеальными контактными персонами для интервью являются директор, менеджер по качеству, руководитель отдела продаж, руководитель производства или другой сотрудник, который хорошо разбирается в процессах на Вашем предприятии.

Отвечайте, пожалуйста, на вопросы искренне. Не существует правильных или неправильных ответов. Только Ваше честное мнение по задаваемым в анкете вопросам гарантирует надежность результатов исследования.

Данный опрос полностью конфиденциальный. Полученная информация будет использована в обобщенном виде только в строго научных целях. С предоставленной Вами информацией все время будут обращаться как с частной и конфиденциальной, она будет надежно сохранена в безопасном месте. Ваше имя или название организации не будут фигурировать ни в каких докладах или отчетах, касающихся настоящего исследования. В данном опросе в России могут принимать участие только 100% российские производственные предприятия. Ваше предприятие является таковым? Тогда давайте приступим к опросу.

Анкета:

Основное направление деятельности Вашей организации:

Производство	Услуги	Пож-та, уточните отрасль производства:
	Участие в опросе невозможно	

Оборот Вашей организации в 2010 году составил (в миллионах долларов США):

0–1	2–10	11–20	21–50	51–100	101–500	501–1000	более 1000
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Какова доля экспорта в обороте Вашей организации?

0%	1–10%	11–20%	21–30%	31–40%	41–50%	51–60%	более 60%
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Количество сотрудников Вашей организации в 2010 году составило:

0–20	21–100	101–500	1001–2500	2501–5000	более 5000
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Сколько лет генеральному директору Вашей организации?

до 30	30–39	40 - 49	50 - 59	старше 60
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Каков средний возраст топ-менеджмента Вашей компании?

до 30	30–39	40 - 49	50 - 59	старше 60
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Каков средний возраст сотрудников Вашей организации?

до 30	30–39	40 - 49	50 - 59	старше 60
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Сколько Вам лет?

до 30	30–39	40 - 49	50 - 59	старше 60
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Назовите, пожалуйста, Вашу должность:

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Назовите, пожалуйста, Ваш пол?

мужской	женский
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Обладает ли Ваша организация сертификатом ISO-9000? и если да, то с какого года?

да, с	нет
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Практики TQM (Всеобщего Менеджмента Качества)

Пожалуйста, ответьте на все вопросы, используя следующую шкалу для своих ответов: шкала от 1 до 7, где 1 - "абсолютно не согласен", 4 - "нейтрально" и 7 - "абсолютно согласен".

115 Лидерство							
115.1 Топ-менеджмент:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
a) несет ответственность за качество							
b) рассматривает улучшение качества как способ увеличения прибыли							
c) мотивирует для достижения целей по качеству							
d) гарантирует, что каждый новый продукт и услуга отвечает ожиданиям клиентов							
e) уделяет больше внимания качеству, чем расходам							
115.2 Руководители:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
f) пытаются завоевать доверие сотрудников							
g) наблюдают и контролируют сотрудников, к примеру, с помощью видеокамер и/или с помощью контроля, когда сотрудники уходят							

с работы в конце рабочего дня*							
h) несут ответственность за продвижение идей качества							
i) обеспечивают работу над повышением удовлетворенности клиентов							
j) рассматривают изменения как часть культуры нашей организации							
116 Стратегическое планирование	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
к) Наша миссия имеет четкую направленность на качество							
l) Мы имеем ясное долгосрочное видение, как достичь наши цели							
m) Мы закладываем и пересматриваем наши краткосрочные и долгосрочные цели в процессе комплексного всестороннего планирования							
n) Мы выделяем достаточные ресурсы для успешной реализации стратегий, нацеленных на качество							

о) У нас есть комплексная система показателей деятельности, охватывающая все ключевые области деятельности предприятия, а также интересы акционеров предприятия							
р) На различных управленческих уровнях предприятия определены команды, задачей которых является определять цели и разрабатывать пути их достижения							
<p> ч) Мы направляем ресурсы на требования и потребности наших: </p> <p> а) Клиентов </p> <p> б) Сотрудников </p> <p> в) Поставщиков </p>	<p>1</p> <p>Абсолютно не согласен</p>	<p>2</p> <p>Не согласен</p>	<p>3</p> <p>Немного не согласен</p>	<p>4</p> <p>Нейтрально</p>	<p>5</p> <p>Немного согласен</p>	<p>6</p> <p>Согласен</p>	<p>7</p> <p>Абсолютно согласен</p>
117 Фокусирование на клиентах и рынке	<p>1</p> <p>Абсолютно не согласен</p>	<p>2</p> <p>Не согласен</p>	<p>3</p> <p>Немного не согласен</p>	<p>4</p> <p>Нейтрально</p>	<p>5</p> <p>Немного согласен</p>	<p>6</p> <p>Согласен</p>	<p>7</p> <p>Абсолютно согласен</p>
г) Мы опрашиваем наших клиентов по нашим продуктам и услугам, чтобы получать оперативную обратную связь, на которую можно реагировать							

s)	Мы связываем показатели удовлетворенности клиентов с внутренними показателями							
t)	Мы определяем удовлетворенность клиента по сравнению с удовлетворенностью клиентов конкурентов и/или на основе бенчмаркинга							
u)	Сотрудники несут основную ответственность за обеспечение удовлетворенности клиентов							
v)	Мы используем различные методы, чтобы строить отношения с клиентами и увеличить количество повторных сделок и положительных отзывов							
w)	Требования клиентов доведены до сведения сотрудников							
x)	Жалобы клиентов используются в качестве входных данных для улучшения наших процессов							
y)	Мы модифицируем наши стандарты всегда, когда потребности и ожидания потребителей изменяются							

z) Информация о клиентах собирается несколькими способами, включая:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
a) обширные исследования в нашей отрасли							
b) наблюдения наших сотрудников о предпочтениях клиентов							
c) письменные или целевые устные опросы клиентов, которые недавно использовали наши продукты и услуги							
d) существующие каналы коммуникации для клиентов, посредством которых они могут вносить свои предложения, подавать жалобы или высказывать благодарность даже если их не просят сделать это							

118 Информация и анализ	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
aa) Мы собираем и анализируем информацию о деятельности организации и данные о затратах для определения и разработки мер по улучшению							
bb) Мы изучаем информацию, связанную с клиентами и рынком, для разработки приоритетов для улучшения							
cc) Мы проверяем, что наши клиенты вовремя получают то, что они хотят							
dd) Наше оборудование и программное обеспечение надежно и удобно для пользователей							
ee) Мы обновляем наши информационные технологии по мере изменения потребностей бизнеса							
ff) Мы сравниваем лучшие практики и показатели других отраслей в установленном порядке							
gg) Мы своевременно получаем данные о качестве							

hh)	Данные о качестве, такие как процент ошибок и дефектов, доступны для:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
	а) руководителей							
	б) сотрудников							
ii)	Мы сравниваем себя с прямыми конкурентами в установленном порядке по:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
	а) продуктам/услугам							
	б) процессам							
	в) производительности							
jj)	Мы разрабатываем процедуры для мониторинга ключевых показателей:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
	а) эффективность подразделения филиала							
	б) эффективность конкурентов							
	в) удовлетворенность клиентов							
kk)	Мы используем интернет для того, чтобы обеспечить высококачественными данными и информацией:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
	а) сотрудников							
	б) поставщиков							
	в) клиентов							
ll)	Мы используем научные инструменты и методы, к примеру, брэйнсторминг, диаграммы Ганта,	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен

чек-листы и другие для достижения улучшения качества:							
а) в любом процессе на ежедневной основе							
б) для стратегического планирования							
119 Фокусирование на человеческих ресурсах	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
mm) Сотрудники, труд которых оплачивается повременно, и сотрудники неруководящих должностей принимают участие в решениях по качеству							
nn) Мы постоянно отслеживаем, что работники осведомлены о вопросах качества в нашем подразделении филиале							
oo) Мы ожидаем от наших сотрудников, что они будут активно вносить вклад в процесс непрерывного улучшения							
pp) Мы оцениваем и вознаграждаем сотрудников за превосходное качество работы							

qq)	Мы используем кросс-функциональные команды						
rr)	Барьеры между отделами устранены						
ss)	Коммуникационные процессы в нашем подразделении на нашем филиале идут не только сверху вниз, но снизу вверх						
tt)	Кадровая политика управления выстраивается в соответствии с требованиями плановых показателей качества на нашем подразделении филиале						
uu)	Мы обучаем специфическим навыкам работы (например, техническим или профессиональным) сотрудников, труд которых оплачивается повременно и сотрудников на неруководящих должностях						
vv)	Обучение по качеству предоставляется всем сотрудникам						
ww)	Сотрудники опрашиваются официально и регулярно для определения						

уровня их удовлетворенности							
xx) Сотрудники опрашиваются официально и регулярно для определения их уровня понимания наших стандартов качества							
yy) Наш филиал заботится об охране здоровья, защите и безопасности наших сотрудников							
120 Процесс менеджмент	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
zz) Спецификации по нашим продуктам/услугам ясны							
aaa) Все было перепроверено до мелочей, чтобы дизайн процесса был безотказным, снижая тем самым возможность ошибки сотрудника							
bbb) Мы собираем рекомендации сотрудников прежде, чем освоить новые продукты или выполнить модификацию продуктов							
ccc) Мы используем статистические методы для управления процессами							

ddd) Сотрудники осуществляют самоконтроль							
eee) Мы стремимся скоординировать друг с другом все действия по дизайну, маркетингу, внутрифирменным и правовым процессам.							
fff) Мы постоянно используем внутренний или внешний аудит, чтобы убедиться в качестве наших продуктов и услуг							
ggg) Мы даем ясную стандартизированную работу или инструкции по процессу сотрудникам							
hhh) Мы подчеркиваем необходимость непрерывного повышения качества всех процессов							
iii) Наша организационная культура поощряет инновации во всех аспектах наших процессов							

121 Менеджмент поставщиков	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
jjj) Отдел закупок несет ответственность за качество поступающих продуктов / услуг							
kkk) Обычно мы выбираем наших поставщиков, основываясь на качестве, а не ценах или графиках							
lll) Мы предпочитаем долгосрочные отношения с несколькими поставщиками							
mmm) Мы даем четкие спецификации для наших поставщиков							
nnn) Мы ожидаем от наших поставщиков, что они будут поддерживать наши усилия даже если это не оговорено в условиях договора							
ooo) Наши поставщики имеют сертификат качества, выданный:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
а) нашей организацией							
б) другими организациями							

ppp) Мы ищем активное участие наших поставщиков в:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
а) выстраивании процессов							
б) процессе развития новых продуктов и услуг							
с) процессе поддержания качества продуктов и услуг							
qqq) Мы сотрудничаем с нашими поставщиками, чтобы помочь им улучшить их результаты по:	1 Абсолютно не согласен	2 Не согласен	3 Немного не согласен	4 Нейтрально	5 Немного согласен	6 Согласен	7 Абсолютно согласен
а) гибкости							
б) качеству							
с) расходам							
д) времени обработки заказа							

Результаты деятельности организации в сравнении с конкурентами

Пожалуйста, ответьте на все вопросы об уровне показателей деятельности организации в течение последних 3 лет по сравнению с основными отраслевыми конкурентами путем указания следующих пунктов по шкале от 1 до 7 где 1 - "хуже, чем в среднем по конкурентам", 4 - "средний" и 7 - "лучше, чем в среднем по конкурентам".

	1	2	3	4	5	6	7
Текучка кадров <i>Внимание: если показатель выше, чем в среднем по конкурентам, значит, показатель хуже, чем в среднем по рынку!</i>							
Отсутствие персонала на работе по болезни <i>Внимание: если показатель выше, чем в среднем по конкурентам, значит, показатель хуже, чем в среднем по рынку!</i>							
Количество предложений от сотрудников							
Эффективность сотрудников							
Показатели поставщиков							
Удержание клиентов							
Надежность и своевременность доставки товаров/услуг							
Количество успешно выведенных на рынок новых продуктов и услуг							
Доля рынка							
Качество							
Производительность							
Длительность производственного цикла <i>Внимание: если показатель выше (больше), чем в среднем по конкурентам, значит, показатель хуже, чем в среднем по рынку!</i>							
Количество ошибок и дефектов <i>Внимание: если показатель выше (больше), чем в среднем по конкурентам, значит, то показатель хуже, чем в среднем по рынку</i>							
Затраты <i>Внимание: если показатель выше (больше), чем в среднем по конкурентам, значит, то показатель хуже, чем в среднем по рынку!</i>							
Прибыль							
Рентабельность активов (ROA)							
Конкурентоспособность в целом							

Большое спасибо за участие в опросе. Если Вы хотели бы получить результаты данного исследования, пожалуйста, предоставьте нам Ваш электронный адрес.

E-Mail:

Questionnaire in English Language

Is your company native or foreign?

Attention: In the event your company is a foreign company, please end this survey now. This study is intended only for domestic firms.

Native	Foreign
--------	---------

The major business function of my company is:

Manufacturing	Service	Please, specify, what kind of manufacturing:
---------------	---------	--

Attention: In the event your company is a service company, please end the survey now. This study is intended only for manufacturing companies.

The organization's turnover (in millions of dollars) in the year 2010 was:

0-1	2-10	11-20	21-50	51-100	101-500	501-1000	Over 1000
-----	------	-------	-------	--------	---------	----------	-----------

What is the export share in the turnover of your company?

0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	Over 60%
----	-------	--------	--------	--------	--------	--------	----------

Number of employees in the company in the year 2010 was:

0-20	21-100	101-500	501-1000	1001-2500	2501-5000	Over 5000
------	--------	---------	----------	-----------	-----------	-----------

How old is the general manager of the company?

Under 30	30-39	40 - 49	50 - 59	Older than 60
----------	-------	---------	---------	---------------

Please estimate the average age of the top management of the company:

Under 30	30-39	40 - 49	50 - 59	Older than 60
----------	-------	---------	---------	---------------

Please estimate the average age of employees:

Under 30	30-39	40 - 49	50 - 59	Older than 60
----------	-------	---------	---------	---------------

What is your age?

Under 30	30-39	40 - 49	50 - 59	Older than 60
----------	-------	---------	---------	---------------

Please, tell us your job title:

--

Are you male or female?

Male:	Female:
-------	---------

Does your company have an ISO-9000 certificate and if “yes”, since when?

Yes, since:	no
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TQM Practices

Please answer all the questions through indicating the following items on a scale of 1 to 7, where 1 is “Strongly disagree”, 4 is “Neutral” and 7 is “Strongly agree”.

115 Leadership							
115.1 Top Management:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a) takes responsibility for quality performance							
b) views improvement in quality as a way to increase profits							
c) offers incentives to achieve quality goals							
d) ensures that each new product and service meets customer expectations							
e) places more emphasis on quality than cost							
115.2 Supervisors:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
f) try to obtain the trust of employees							
g) supervises and checks on employees, e.g., with video cameras and inspections when they leave the company after official workhours*							

h) are held responsible for the promotion of quality							
i) promote customer satisfaction							
j) embrace change as part of our company's culture							
116 Strategic Planning	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
k) our mission has a clear focus on quality							
l) we take a clear long-term view on how to achieve our goals							
m) we set and review our short- and long-term goals through a comprehensive planning process							
n) we allocate sufficient resources for the successful implementation of strategies focused on quality							
o) we have an overall performance measurement system that covers all key deployment areas and stakeholders							
p) at different levels of the company, teams are assigned to set objectives and devise action plans							
q) We direct resources to meet the requirements and needs of our:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a. Customers							
b. Employees							
c. Suppliers							

117 Customer and Market Focus	1	2	3	4	5	6	7
	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
r) We follow up with customers on products/services to receive prompt and actionable feedback							
s) We link customer satisfaction with internal indicators							
t) We determine our customers' satisfaction relative to customers' satisfaction with competitors and/or benchmarks							
u) Employees assume the major responsibility for ensuring customer satisfaction							
v) We use various methods to build relationships with customers and to increase repeated business and positive referrals							
w) We communicate customer requirements to employees							
x) We use customer complaints as input to improve our processes							
y) We modify our standards whenever customer needs and expectations change							
z) Customer information is gathered in several ways including:	1	2	3	4	5	6	7
	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
a. extensive research done on our industry							
b. our employees' observations of customer preferences							
c. orally or in writing surveying customers who have recently bought our products and have used our services							

d. existing mechanisms for customers to offer suggestions, compliments, and complaints without being solicited							
118 Information and Analysis	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neu- trality	5 Slightly Agree	6 Agree	7 Strongly Agree
aa) We collect and analyze organizational performance and cost data to identify and develop improvements							
bb) We examine customer-related/market data to develop priorities for improvement efforts							
cc) We continuously check our work to ensure that customers receive what they want on time every time							
dd) Our hardware systems and software are reliable and user friendly							
ee) We timely update our information technology with changing business needs and directions							
ff) We formally benchmark the best practices and performances of other industries							
gg) We obtain quality data timely							
hh) Quality data such as error rates and defect rates are available to:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a. Managers							
b. Employees							
ii) We formally benchmark direct competitors?	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a. products/ services							
b. processes							
c. productivity							

jj)	We develop procedures to monitor key indicators of	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
	a. site performance							
	b. competitor performance							
	c. customer satisfaction							
kk)	We use the internet to provide high-quality data and information to:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
	a. employees							
	b. suppliers							
	c. customers							
ll)	We use scientific tools and methods such as Gant charts, check lists or others to achieve quality improvement	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
	a. in every process daily							
	b. for strategic planning							
119 Human Resources Focus		1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
mm)	Hourly/non-supervisory employees participate in quality decisions							
nn)	We constantly ensure that employees are aware of quality issues in our site							
oo)	We expect from our employees that they are actively involved in continuous improvement processes							
pp)	We recognize and reward our employees for superior quality performance							
qq)	We use cross-functional teams							
rr)	Barriers between departments are eliminated							
ss)	The communication processes in our site are not only *top-down* but *bottom-up* as well							

tt) Human resource management policies are aligned with site quality/performance plans							
uu) We give specific work skills training (e.g., technical, or vocational) to hourly/ non-supervisory employees							
vv) Quality-related training is given to all employees							
ww) Employees are surveyed formally and regularly to determine their level of satisfaction							
xx) Employees are surveyed formally and regularly to determine their level of understanding of our quality standards							
yy) Our site safeguards the health, safety, and security of our employees							
120 Process Management	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
zz) Our product/service specifications are clear							
aaa) Every attempt has been made to ensure that our process design is fail-safe so that the possibility of employee errors is reduced							
bbb) We seek employee input before we introduce new products/services or change products/services							
ccc) We use statistical techniques to control processes							
ddd) Employees engage in self-inspection							
eee) We strive to streamline all design, marketing, operations, and legal functions throughout each project							
fff) We continually use internal or external audits to ensure the							

quality of our products and services							
ggg) We give clear, standardized work or process instructions to employees							
hhh) We emphasize the continuous improvement of quality in all work processes							
iii) Our organizational culture encourages innovation in all aspects of our processes							
121 Supplier Management	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
jjj) The purchasing department assumes responsibility for the quality of incoming products/services							
kkk) We usually select our suppliers based on quality rather than price or schedule							
lll) We prefer long-term relations with a few suppliers							
mmm) We give clear specifications to our suppliers							
nnn) Our suppliers are expected to support our efforts, even when necessary services are not codified in our contract							
ooo) Our suppliers are certified for quality by:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a. our site							
b. other organizations							
ppp) We seek the active involvement of suppliers in our:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a. process design							
b. new product development process							
c. product/service quality planning process							

qqq) We cooperate with our suppliers to help them improve their:	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
a. flexibility							
b. quality							
c. cost							
d. lead time							

Business results, compared to competitors

Please answer all the questions about the level of the organizational performance during the past 3 years compared to that of major industry competitors through indicating the following items on a scale of 1 to 7, where 1 is “Below Average”, 4 is “Average” and 7 is “Above Average”.

	1	2	3	4	5	6	7
Employee turnover rate <i>Attention: If this performance indicator is higher or bigger as the competitors' average, it means, that it is worse as by competitors or below Average (answer 1, 2 or 3)</i>							
Employee sickness related absenteeism <i>Attention: If this performance indicator is higher or bigger as the competitors' average, it means, that it is worse as by competitors or below Average (answer 1, 2 or 3)</i>							
Number of employee suggestions received							
Employee job performance							
Supplier performance							
Customer retention							
Reliability and timely delivery of products/ services							
The number of successful new products/services							
Market share							
Quality							
Productivity							
Cycle times <i>Attention: If this performance indicator is higher or bigger as the competitors' average, it means, that it is worse as by competitors or below Average (answer 1, 2 or 3)</i>							
Number of errors and defects <i>Attention: If this performance indicator is higher or bigger as the competitors' average, it means, that it is worse as by competitors or below Average (answer 1, 2 or 3)</i>							
Cost							

<i>Attention: If this performance indicator is higher or bigger as the competitors' average, it means, that it is worse as by competitors or below Average (answer 1, 2 or 3)</i>							
Profit							
Return on total assets							
Overall competitive position							

Thank you very much for participating in the study.

If you would like to get the results of the research, please tell us your email.

E-Mail:

Affidavit / Eidesstattliche Erklärung

Ich, Natalia Mašľan, geb. Gubkina, erkläre hiermit an Eides statt, dass ich die vorliegende Dissertation ohne unzulässige Hilfe Dritter und ohne Benutzung anderer, nicht angegebener Hilfsmittel angefertigt habe. Die aus anderen Quellen direkt oder indirekt übernommenen Daten und Konzepte sind unter Angabe der Quelle gekennzeichnet.

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Natalia Mašľan

TQM, the management method focused on quality leading to business success, is regarded to be critical in maintaining the competitive advantages of organizations in today's rapidly globalizing world. Having started its success story first in Japan and then in the USA, TQM is now a world-renowned management system. However, it is not clear yet whether the efficacy of TQM depends on the national culture of the organization.

The current study investigates the efficacy of TQM in German and Russian organizations. The findings of the study imply that the implementation of TQM in Russian manufacturing organizations, regardless of their size and branches, would increase organizational effectiveness and financial and market results of these organizations with high probability. In comparison, German manufacturing organizations would get fewer benefits from the implementation of conventional TQM than Russian organizations.

Finally, the current dissertation is scientific theory-driven empirical research, providing a "blueprint" for how a cross-cultural comparison of the efficacy of TQM can be approached and answered scientifically, regardless of which countries it refers to.

Natalia Mašlan graduated from the Peoples' Friendship University of Russia (PFUR) in industrial engineering, and then worked successfully for seven years in a management position in a German-Russian company in Moscow. The impulses and daily challenges of working at an international company have awakened her interest in scientific research related to international management. She was able to implement this at the University of Siegen, where she also completed her Ph.D.