HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES

DOCTORAL SCHOOL OF ECONOMIC AND REGIONAL SCIENCES

LEADERSHIP IN THE GERMAN BANKING SECTOR

How Digitalization Changes the Way of Leading

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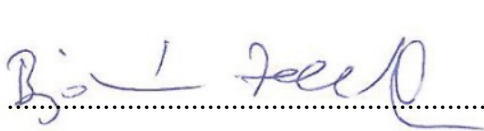
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Table of Contents

List of Figures

List of Tables

List of Abbreviations

AI	Artificial Intelligence
BDA	Big Data Analytics
COVID-19	Corona Virus Disease 2019
e.g.	For example
E-leadership	Electronic leadership
FinTech	Financial Technology
IT	Information Technology
KYC	Know Your Customer
KYD	Know Your Data
RegTech	Regulatory Technology
WFH	Work-from-Home

1 Research Backgrounds and Objective

Rapid digital transformation is omnipresent and can be intriguing, compelling, awesome, and overall life-changing. For most people, it is important to receive guidance through change. It does not matter if you look at private life, where a grandchild explains to their grandparent how the new Apple Watch works and students receive writing aid from AIs, or in the working world where start-up companies revolutionize whole sectors and data is gold. Thanks to digital transformation, past crises, and changes, the leadership in most sectors needs to be adjusted to different and new expectations, requirements, and fields of action. Traditional sectors, like the banking and financial service industries, have to change drastically to stay competitive and survive.

In academic research, it may not be forgotten that leadership is real. It is of utmost importance and therefore this work's focus lies on digitalization and its impact on leadership in the German banking sector. The attempt to combine the existing work experience, their challenges, and previous academic knowledge of finding answers in the academic literature and my empirical research motivated this work strongly.

To know which leadership style or traits are important to lead digitally, effectively, and prosperously in the German banking sector, this work's goal is to present current challenges, expectations, and previous research, evaluate existing research gaps, and work empirically to gain new insights into contemporary leadership traits. As guidance for the research aims, the research questions presented in Table 1 and the hypotheses presented in Table 2 were formulated.

The main goals of this work's empirical contribution are:

1. Highlight the needed leadership skills

2. Compare them to the existing research

3. Try to carve out contemporary characteristics of leadership in the German banking sector and

4. Formulate leadership expectations for digital leadership in the German banking sector

5.

Table 1: Research Questions

RQ1.1	Is leadership still needed in the German banking sector?
RQ1.2	Is management alone sufficient?
RQ1.3	Do we just need leadership so someone has the responsibility?
RQ2.1	Do employees of the banking sector see the importance of digital transformation?
RQ2.2	Do employees transform that importance into expectations regarding their company and supervisor?
RQ3.1	Do different expectation levels from new or old working generations towards leadership exist?
RQ3.2	Do GenZ employees rate the importance of digital leadership and AI higher than other employees?
RQ3.3	Does the pace of digital transformational implementation impact fulfilled expectations?
RQ4.1	What leadership skills are emerging?
RQ4.2	How different are executives' views of leadership within one organization?
RQ4.3	Is there a relationship between the importance of digital leadership and digital leadership skills?

Table 2: Overview of the Hypotheses

Literature Review	Number	Hypotheses
Part 1 – Digital Transformation	H1	To handle digital transformation is important for a digital leader.
	H2	Major technological affinity impacts digital leadership positively.
	H3	WFH influences digital leadership strongly.
Part 2 – Expectation Management	H4	Management's attitude towards digital transformation affects employees positively.
	H5	Followers' age affects their acceptance of digital leadership negatively.
Part 3 - Leadership	H6	Executives and employees weigh the importance of specific leadership skills equally.
	H7	Employees believe that AI complements or replaces their direct supervisor shortly.

2 Materials and Methods

In the initial phase of the research, a literature review was conducted to understand and present the current status of leadership and its challenges in the German banking sector. Through this first methodological step, research gaps have been identified and resultant hypotheses were formulated to be included in the following two methodological steps of the dissertation. Because of the process of building both methods, the already identified hypotheses and research questions were formulated. To receive a thorough answer to hypotheses and research questions it is important to have an all-round view of the topic. Firstly, an expert interview was conducted to gain the opinion and point of view of executives, to then create an online survey to receive the opinion of the employees, to attain both perspectives and discuss the results. These two methodological choices, procedures, measures, analyses, and results are thoroughly explained and presented in the dissertation and summarized in the following chapters.

2.1 Literature Review

To present an impactful literature review that focuses on and summarizes the state of the art of the regarded subject field and leads to research propositions and methodologies, the academic literature is reviewed and will be enriched in the process of the dissertation by selected professional literature and web sources.

Databases used for this literature review were JSTOR, Scopus, Google Scholar, and Semantic Scholar. These databases were selected because of their broad range of scholarly research fields and they are state of the science. In numbers, the author has read more than 700 article abstracts and 271 full articles for this literature review.

Table 3 represents the used keywords, terms, and variants of phrases according to the three-pillared literature review. At this point, only a summary of each pillar is presented.

Table 3: Keyword Synopsis of the Literature Review

I			II			III	
Current Transformation in the German Banking Sector			Expectation Management			Leadership	
Financial Crises	+ (German) Banking Sector	+ Leadership	Management Expectation	+ (German) Banking Sector	+ Leadership	Leadership	+ (German) Banking Sector
Digital transformation			Employer Expectation			Management	
Digital Change			Employee Expectation			Transformational Leadership	
COVID-19			Customer Expectation			E-Leadership	
Competitors						Digital Leadership	
						AI	
						Substitutes for Leadership	

2.1.1 Current Transformation in the German Banking Sector

The German banking sector is transforming constantly and the demand for financial services has undergone significant change. It is of utmost importance that companies realize these changes and adapt their organizationally-driven programs towards these forces (Shah et al., 2017) and adapt the needed values such as creativity, flexibility, and individuality that the office infrastructure can influence (Andelfinger & Hänisch, 2017). The latest global financial crisis and the ongoing debt crisis, caused by financial institutions, was the latest in financial history. The financial crisis ensured that further constraints, such as cultural change, bank mergers, zero interest rate policy, and regulatory forces evolved and/or reinforced. Another recent work-altering crisis has been the Corona Virus Disease 2019 (COVID-19) which has impacted most vital sectors worldwide and

public organizations and companies were forced to adopt a new way of working and managing human resources (Daraba et al., 2021).

Digital transformation as part of digitalization can be defined as a continual process that increases the extent of digitalization and leads to disruptive changes in all business structures. Digital transformation as part of leadership and management is inevitable. It is considered to be a key challenge for top management and leadership. Named examples in the banking industry are big data, mobile apps, AI, and cloud computing. Evolving trends are based on regulatory, strategic, technological, organizational, and social aspects.

Fintech promises to reshape the financial sector by improving the quality of financial services, cutting costs, and building a more stable and diverse financial landscape (I. Lee & Shin, 2018). RegTech represents more than efficiency tools for the financial sector and is rather a paradigm shift in regulation to transition from a KYC to a KYD approach. AI combines aspects of cognitive and engineering science (Peifer et al., 2022). Titareva (2021) summarizes key terms of AI to be: automation, big data, Industry 4.0, and machine learning and lists the fields AI is used in to be: accounting, agriculture, e-commerce, education, entertainment, finance, healthcare, and other service industries.

The above-presented current transformations in the German banking sector are simultaneously leadership challenges. Nowadays most companies are creating new digital business strategies to stay competitive. But if they do not understand the importance of leadership in this process poor business performances will result from the lack of digital leadership (Araujo et al., 2021). According to Andelfinger & Hänisch (2017), reliance on management is crucial. If it is nonexistent digital leadership cannot blossom.

2.1.2 Expectation

The basis of effective expectation management is a clear vision of what one tries to achieve (Westerman et al., 2014). Management or employer expectations might be the most simplistic expectation of the three expectations viewed because employer's expectations are mainly concerned with the company's well-being. A company's competitive success is mainly achieved through its people so they expect their customers to buy and stay loyal and their employees to work willingly and hard, to nurture the company's well-being and to stay loyal.

Employee expectation is very complex because the ideals, motivation, morals, inducement, and emotions of employees differ drastically in their emphases. Next to the complexity of employees Gardner et al. (2005) highlight another importance of employees because they are constantly the people in a company at the bottom of the traditional hierarchy and therefore know the most about vendors, implementations (e.g. technology or change), variations in performance, customers, or changes in markets.

Customer expectations of leadership are to undergo the best possible customer experience. Almsalam (2014) describes customer expectation as pretrial beliefs about a service or product. Customers have many different sources of information that lead to certain expectations about an upcoming purchase or service encounter with a company. Bank-specific literature on customer expectations focuses on service quality because financial institutions are part of the service industry. High service quality leads to positive word-of-mouth, lessens complaint tendencies and the bank-customer relationship continues (Almsalam, 2014).

2.1.3 Leadership

Leadership is never merely academic because leadership can be found in every aspect of our lives. The definition of leadership is as broad as the

field of research on leadership. Leadership does not only affect leaders and its definition does not only concentrate on its various characteristics and parameters but leadership focuses on work context and setting, the organization's culture, peers, supervisors, and followers (Avolio et al., 2009). The part 'Current Transformation in the German Banking Sector' reflects the need for leadership development. Conger & Benjamin (2000) already wrote about the problem that many leaders are not capable of leading change because they are i.e. ill-prepared or rely on top-down command. Leaders must have the competence to form a new strategy and lead change. Agreeing with Sims et al. (2009) the use of styles is worthwhile because it helps to develop and maintain a quick way to think about leadership. To structure the viewed literature on leadership styles the idea of a concept map was conducted for the dissertation in which thirty different leadership styles are sorted alphabetically and defined. Thanks to that collection of leadership styles and other research results, such as Dinh et al.'s (2014) and Thompson & Vecchio's (2009) work, authentic leadership, charismatic leadership, followership, management, substitutes for leadership, transformational leadership, and technologically dependent leadership, including E-leadership, digital leadership, and virtual teams leadership, have been focused on in the dissertation.

The latest leadership challenge is probably the possible influence of AI on leadership. The field of research on this topic is relatively new and, compared to the research on leadership in general, rare. The breakneck speed AI proceeds with will further increase. In short, humans will be replaced by AI algorithms in any banking process a human can learn that does not require dependencies on social cues (King, 2019). The current literature on AI distinguishes between three main directions: (I) AI enhances existing leadership, (II) AI evolves into a substitute for

leadership, and (III) AI is an overrated trend (Titareva, 2021). The direction (III) is not further highlighted in this work.

Digitalization affects not only employees but most notably leadership and management. Transformational leadership is often used as a specific leadership style to guide technological changes within an organization (Stana et al., 2018). But those leaders also need to have the ability to manage (1) the new emerging digital organization and (2) the digital transformation process (Klein, 2020).

Table 4: Digital Leadership Skills

Source: Author's elaboration, adapted from Andelfinger & Hänisch (2017), Klus & Müller (2021), Antonopoulou et al. (2021), Wilson III et al. (2004), Araujo et al. (2021)

Strong communication skills	Organization skills	Technological skills	Personal skills/traits	
Effective communication via different channels	Policy commitment	Subject-specific knowledge (e.g. increasing IT-skills)	Self-reflection	Exhilarant
Foreign language skills	Monitoring and benchmarking	Technological affinity	Flexibility	Open-mindedness
Motivational skills	Stakeholder coordination	Computer knowledge	Changeable/ adaptable	Calmness
Social Media	Research and Training	Continuously updating one's knowledge	Courageous/ self-confident	Visionary
Transparent		BDA	Creativity	Empathy
Mobilize one's social network (to gain knowledge)	Disruption	Cloud Computing	Intellectual curiosity	Diversity and cultural intelligence
		Innovation	Multi-task	

Professional isolation, caused by COVID-19, boosted new technological work settings, WFH, and virtual teams. Although the pandemic is overcome, new work environments will never be as they once were. This

situation asked for a different kind of leadership; electronic leadership or E-leadership, that entails the development of abilities to strengthen organizational functioning in remote and virtual work conditions (Contreras et al., 2020). Digital leaders need a special, new skill set to be able to effectively and successfully guide organizations through their digital transformation, which might be dynamic and uncertain (Araujo et al., 2021). Table 4 shows particularly relevant leadership skills in times of rapid technological change for digital leaders (Klus & Müller, 2021).

2.2 Research Focus

Araujo et al. (2021) describe traditional leaders leading digital transformation as having significant deficiencies in process management and technology dominance, compared to digital leaders and conclude by stating the need for more academic and empirical studies on digital leadership styles and traits. Klein (2020) highlights that only a few researches report on implemented cases and rather predict visionary requirements for digital leadership so far. Andelfinger & Hänisch (2017) focus on the much-needed change and development of leadership and employees' expectations regarding leadership during the current transformation. P. K. C. Lee et al. (2011) focus on leadership in the banking sector and although they state, that not one single leadership style is universally applicable in every circumstance, banking managers still have to adopt an appropriate style. By selecting a specific leadership style, managers need to take the environment into account.

Next to the gathered rather broad research gap concerning various empirical research on digital leadership, the existing academic literature, and empirical research focusing on digital leadership and one specific market in one country is even less existent. In addition to the formulated

research questions, summarized in Table 1, and the shown research gaps, Table 2 summarizes the identified hypotheses of the literature review.

2.3 Expert Interview

From the literature review, all three key themes guided the questions that have been included in the expert interviews. Because the main focus of this proceeding was to include the experts' insights in the quantitative empirical research part, the questions focus strongly on transformations and leadership traits. The conducted expert interviews are possibly not representative because the experts work all in the same organization, but it was chosen on purpose to be able to show possible differences that already exist in the same organization. The expert interview was conducted with eleven group executive managers from a German multinational bank between 11. November 2022 and 02. December 2022. Their area of responsibility is mainly customer and sales management in various areas, e.g. private clients, private banking, wealth management, fund management, corporate banking, banking advise centers, business customers, and digital banking.

2.4 Online Survey

The online survey website SoSci Survey (https://www.soscisurvey.de) was used as a tool to help with the questionnaire preparation, design, distribution, reporting, and storing of data (Nayak & Narayan, 2019). The author sent the survey to over 400 different German bank employees and asked them to forward the survey to other bank employees. After the survey period had been finished, 137 people clicked on the survey. 77 participants started the survey, 4% were excluded by the security question because they are not bank employees and another 20% did not finish the survey out of reasons that are unreproducible. Resultingly the data set is n=59. Answering types used in the questionnaire were especially single-choice

and Likert's Scale. The collected and edited opinion statements were given to the respondents to rate the statements on a four-point continuum (Arul & Misra, 1977). To be able to tell if this survey is relatively representative, the gender and age of German bank employees, shown in Table 5, are compared with the gender and age of the respondents of this online survey.

Table 5: Age and Gender Distribution in the German Three Top Banks
Source: Author's elaboration, adapted from Commerzbank AG (2023), Deutsche Bank AG (2023), DZ Bank (2023)

German Top Banks	Average Age	Gender Distribution	
		Female	Male
Commerzbank AG	46.6	50.8	49.2
Deutsche Bank AG	42.5	46.4	53.6
DZ Bank	46.0	46.0	54.0
Total	45.0	47.7	52.3

The average age of the participants is 42.2, and 45.8% of the participants are female and 54.2% male. The survey's results seem relatively representative according to the comparison of age and gender distribution.

2.5 Summary

To reduce complexity and to be able to visualize the whole concept of this work, including research questions, hypotheses, and main topics of the literature review, Figure 1 shows the developed conceptual model. Mylopoulos (1992) describes conceptual modeling as the purpose of understanding, that requires the adoption of formal notations, captures relevant aspects, communicates a common view, and supports inferential and structuring facilities.

The applied software used for the data analysis is SPSS Statistics Version 29.0.1.1. To be able to analyze the data set first, the data was converted from SoSci Survey's website into an Excel sheet, the variables were

checked, redundant and unnecessary variables deleted, and imported to SPSS. In SPSS the process to check the variables restarted. Variables received labels, values were added, the right measure (scale, ordinal, nominal) was chosen, and new variables were computed.
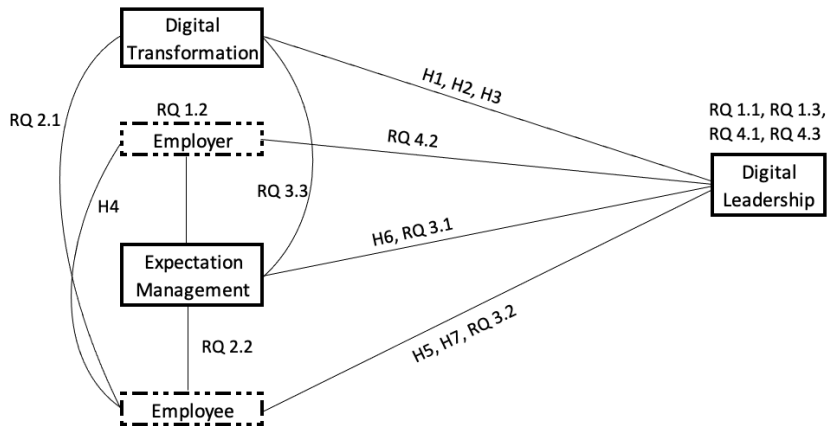

Figure 1: Conceptual Model

First, it is important to gain an extensive understanding of the data set. Different univariate statistics help to understand the characteristics and specificities of the selected data. Without limitation frequencies, the range, variance, minimum, maximum, mean, median, quartiles, quantiles, distribution, including kurtosis and skewness, and the test of normality have been utilized. Second, bivariate statistics analyze the possible connection of two variables and their intensity if existing. The bivariate correlation of the two variables explains their interdependent characteristics. Lastly, multivariate statistics analyze three or more variables. Next to the bivariate correlation, partial correlation measures the correlation of two variables, which is adjusted by a third variable or for which it is checked.

3 Results and Discussion

This survey was answered by banking employees. The average age is 42.2 years. 54.2% of the questioned banking employees are male and 45.8% are female. The distribution of education among the participants shows 44.1% having an apprenticeship, 37.3% a Master's or Diploma degree, 16.9% a Bachelor's degree, and 1.7% a PhD. They have an average work experience of 22.4 years varying from 3 to 41 years. 66.1% state to have leadership experience and 33.9% are currently in a leadership position. The mean of WFH is at 40% of the working hours. At the same time, testing univariate descriptive statistics the normal distribution for all variables was tested.

According to the experts, the most current and biggest transformations in the German banking sector are digitalization (6x), changing customer behavior (4x), sustainability, generation/demographic change, and geopolitical issues.

Table 6: The most important Characteristics of a Leader

Characteristics	Characteristics	Characteristics
Ability to motivate others	Capacity to take criticism	Capacity to take conflicts
Communicative (4x)	Competence to listen	(cheerful) Composure
Confidence	Content perspective	Convincement
Cooperative	Courage (2x)	Curiosity
Decisiveness	Empathy (7x)	Enthusiasm
Expert know-how	Fairness	Goal orientation
Highest performance commitment	Inspiration	Intrigued
Optimism	Overview of the workflow	Personnel belief
Personnel interest	Personnel work	Reliability
Resilience (2x)	Robustness	Strong determination
Truthfulness	Visionary	Well organized
Willingness to compromise		

Representative to the gained insights, Table 6 shows the most important leadership traits alphabetically in the opinion of all experts and to be

empathic, communicative, resilient, and courageous are the most common ones. This table's insights have been an important part of the elaboration of various answering options in the online survey. As most obsolete leadership manners within their company, the experts mentioned hierarchy (4x), hierarchy-related decision-making processes, status symbols, setting constraints, closed doors, HR methods (i.e. salary ranges), missing approachability and transparency, only thinking within your area of responsibility, and outdated forms of communication.

At the end of the interview, each expert was asked to mention the most important aspect of leadership that has not been mentioned yet. The high impact and importance of direct leadership have been explained by the interaction between people, the discovery and development of talent, and encouraging people. As well as the importance that leadership personality needs to evolve and develop on-the-job, to be able to solve, learn, and grow interpersonally and professionally. Furthermore, respect, appreciation (2x), trust, approachability, and fun (2x) were mentioned next to the challenge to bind talents to the company in the long term in an increasingly competitive job market (2x).

The results as to whether the research questions and hypotheses could be verified, falsified, or not answered at all, will be evaluated, interpreted, and answered in chapters '3.1 Research Questions' and '3.2 Hypotheses'.

3.1 Research Questions

RQ1.1: Digital Leadership has a mean of 3.4 out of 4, while the AI's mean manifests at 1.8. The acceptance of Digital Leadership's importance and the question if AI will complement or replace the direct supervisor in the next five years are ordinal variables and their correlation was measured with Spearman's rho. They show a positive significant correlation at the 0.05 level. The correlation coefficient is 0.239.

RQ1.1 can be confirmed. The results of Method I and Method II underline the current importance of leadership in the German banking sector.

RQ1.2: The AI's mean manifests at 1.8, and only 13.6% of the participants believe mostly or completely in the replacement of the direct supervisor. Whereas 49.2% of the participants believe in a partial complement or replacement and 37.3% think that it will not happen at all in the next five years.

RQ1.2 cannot be supported. The experts clarify the importance of leadership in comparison and addition to management.

RQ1.3: In summary, the respondents ranked the technological affinity of their own as strongest, followed by their company, and executive(s), whereas their supervisor and colleagues are rated weakest. The respondents' expectations towards their supervisor are strongly fulfilled concerning 'Individual Responsibility', 'Integration into the Organization Culture', and 'Receiving Praise' and least fulfilled in 'Salary Increase Opportunities', 'Career Growth', and 'Work-Life Balance'.

RQ1.3 cannot be confirmed. As answered by the experts management has the overall responsibility. The results indicate that although leadership is not needed for taking responsibility, it is needed for the employees.

RQ2.1: The respondents rated 'Digitalization's' impact as the strongest current transformation in the German banking sector, followed by 'Regulatory Forces', 'Cost Efficiency', and 'Competitors (esp. FinTechs)'. The lowest impact has 'Ageism', 'Bank Mergers', and 'Geopolitical Issues'. The average value of the thirteen mean values is 2.52 and the mean of 'Digitalization' is 2.51.

RQ2.1 can be supported because first, the experts named digitalization most frequently with six times as the most current and biggest transformation in the German banking sector. Second, the respondents also

rate 'Digitalization' as the strongest current transformation in the German banking sector.

RQ2.2: To measure the importance of digital transformation in connection with the expectations regarding supervisor and company, a partial correlation has been conducted. To be able to correlate the variables, the variables of 'Expectation Supervisor' and 'Expectation Company' have been transformed into a new target variable computing the means and have been named 'MEAN Expectation Supervisor' and 'MEAN Expectation Company'.

RQ2.2 cannot be supported. The variable 'Digitalization' impacts the correlation between the two tested variables insignificantly. To check if other variables of the question 'Impact of Change' might correlate with the expectation variables, it was also measured and stayed insignificant. Digitalization and digital transformation are not in connection with expectations toward their supervisor and company. While testing the RQ2.2, a correlation between EW01MEAN and EW02MEAN with a correlation coefficient of 0.494 with a 2-tailed significance of $<0.001 < 0.05$ has been identified. SPSS does not indicate this correlation as significant.

RQ3.1: To test this hypothesis the following zero hypothesis has been formulated:

H_0: The correlation between SD03_01 and EW01MEAN is zero.

The correlation is -0.340 and the 2-tailed significance is $0.008 < 0.05$.

H_0 needs to be rejected.

To build a valid regression model, the variables need to be normally distributed.

$H_0 1$: SD03_01 is normally distributed.

The Shapiro-Wilk test displays a significance of $0.018 < 0.05$.

H_01 needs to be rejected.

H_02: EW01MEAN is normally distributed.

The Shapiro-Wilk test displays a significance of $0.049 < 0.05$.

H_02 needs to be rejected.

RQ3.1 can be confirmed because of the significant correlation with a correlation coefficient of -0.340. A low negative correlation is indicated and implies growing expectations towards the supervisor with falling age which means the younger the employee the higher the expectations. For further testing, a linear regression model was calculated. To validate the model, the variables were tested for normal distribution and the hypotheses had to be rejected because they are not normally distributed. This is visualized in Figure 2. The Scatterplot and integrated linear fit line show most of the values being far away from the line. The R^2 displayed in Figure 2 is not satisfactory and validates only 11.6% of the cases. The calculated significance of the p-value of the ANOVA test significant is $0.008 < 0.05$. However, the significantly low negative correlation indicates a connection between age and expectations toward their supervisor, a regression model is not tenable.
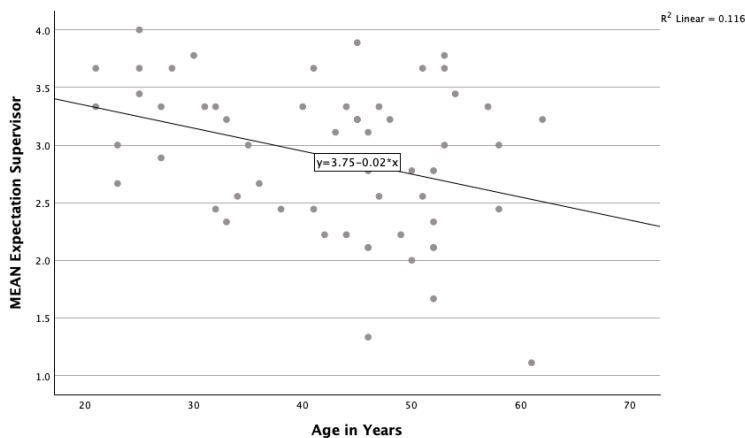

Figure 2: Scatterplot of Age and Expectation

RQ3.2: The variable 'Age' was recorded into different variables to be able to differ between the generations and the variable SD01_03_GEN has been conducted. Figure 3 illustrates the distribution of the newly created age groups. The histogram shows that the distribution is not normally distributed. The graph indicates a skewness. The distribution is skewed to the left and steep to the right. The numbers confirm the visual indication. 16.9% of the respondents are born as Generation Z, 45.8% as Generation Y, and 37.3% as Generation X. Table 7 presents the results of the acceptance of Digital Leadership and AI by the newly conducted age groups.
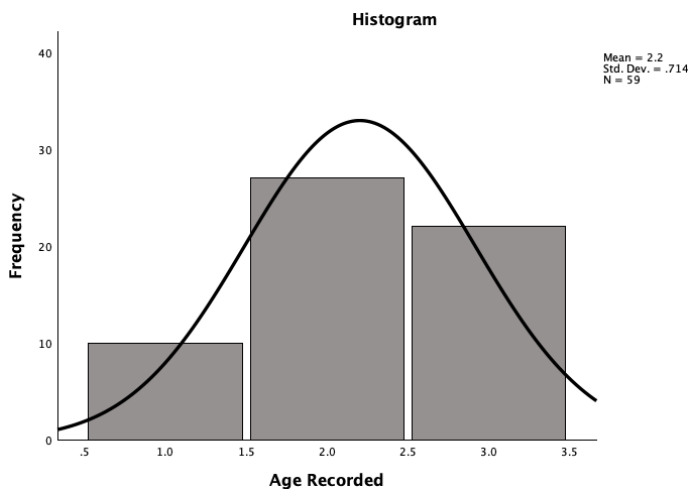

Figure 3: Histogram of the Distribution of Generations

RQ3.2 cannot be supported. As shown in Table 7 Generation Z has a strong and important acceptance of digital leadership but is selected within AI 'partly' most frequently. GenY employees rated the importance of digital leadership and AI higher than the other two generations.

Table 7: Age Groups and How They Rate Digital Leadership and AI

				Age Recorded		
				14-29	30-46	47-63
Artificial Intelligence will complement or replace your direct supervisor in the next five years.	not at all	Acceptance of DL	not important	0%	1.7%	0%
			partly important	0%	5.1%	3.4%
			important	1.7%	6.8%	3.4%
			very important	0%	6.8%	8.5%
	partly	Acceptance of DL	not important	0%	0%	0%
			partly important	0%	0%	1.7%
			important	5.1%	10.2%	5.1%
			very important	8.5%	8.5%	10.2%
	mostly	Acceptance of DL	not important	0%	0%	0%
			partly important	0%	0%	0%
			important	1.7%	0%	0%
			very important	0%	1.7%	3.4%
	completely	Acceptance of DL	not important	0%	0%	0%
			partly important	0%	0%	1.7%
			important	0%	0%	0%
			very important	0%	5.1%	0%

RQ3.3: To measure the impact of digital transformational implementation pace on fulfilled expectations, a partial correlation has been conducted. The control variable 'Digitalization' (DT03_04) has no significant impact on the correlation of the two variables ('MEAN Expectation Company' and 'MEAN Expectation Supervisor') but their correlation is insignificant. The significant correlation of the two variables is already known from RQ2.2. Including the control variable, the significant correlation changes from about -0.005 points to 0.489. Computing the whole question concerning the experienced digital transformation (DT03) into a new variable 'MEAN experienced DT', does change the outcome slightly because the new

control variable alters the significant correlation about -.050 points to 0.454. The correlations between each expectation variable and the control variable are insignificant.

RQ3.3 cannot be confirmed. The variable 'Digitalization' impacts the correlation between the two tested variables insignificantly. To check if other variables of the question 'Experienced Digital Transformation' might correlate with the expectation variables, it was also measured and stayed insignificant.

RQ4.1: According to the respondents of Method II, Table 8 exemplifies the emergence of leadership skills by ranking each mean. Additionally the computed variable 'MEAN Digital Leadership Change of Skills' indicates the average mean of all answers to question DF02.

Table 8: Emerging Leadership Skills ranked by Means

Leadership Skills	Mean	Ranking
Adaptable	3.12	2
Innovative	3.05	4
Technological Affinity	3.29	1
Social Network	2.59	10
Disruptive	2.25	16
Resilient	2.83	5
Willingness to Compromise	2.46	12
Performance Commitment	2.47	11
Convincing	2.64	9
Decisive	2.66	8
Motivational	2.81	6
Strong Communication Skills	3.10	3
Monitoring the Workflow	2.00	19
Enthusiastic	2.20	17
Composed	2.17	18
Courageous	2.37	13
Empathic	2.46	12
Intrigued	2.32	15
Visionary	2.71	7
Continuously growing Know-How	2.34	14
MEAN Digital Leadership Change of Skills	2.59	-

RQ4.1 can be supported because leadership skills are emerging. Every skill above a mean of 2.00 is emerging. Therefore just the leadership skill 'Monitoring the Workflow' does not change and is therefore not emerging. The four skills with the highest means >3.00 are closest to the strongest focus. They are 'Technological Affinity', 'Adaptable', 'Strong Communication Skills', and 'Innovative'. The total mean is 2.59.

RQ4.2: Table 6 highlights the most important characteristics of a leader according to the questioned experts in Method I. Each expert specified five characteristics. Out of 49 possible single answers, 34 are presented in the table. 31.9% are overlapping values represented by 'Empathy', 'Communicative', 'Courageous', and 'Resilience'. 68.1% of the named characteristics are single answers.

RQ4.2 can be confirmed by the variety of answers given by the executives. Although they often agree very much in the areas of digital transformations, agile working methods, and corporate strategy, there are numerous mentions and therefore differences when it comes to the topic of leadership.

RQ4.3: The acceptance of Digital Leadership and the computed variable 'MEAN Digital Leadership Skills' have a significantly low positive correlation at the 0.05 level.

RQ4.3 can be supported because of the significant correlation. The low positive correlation indicates a relationship between the importance of Digital Leadership and Digital Leadership skills which means the more important Digital Leadership is the higher the skills are rated. For further testing and the creation of a regression model, the variables have been tested if they are normally distributed. Whereas the Acceptance of Digital Leadership is not normally distributed, the variable 'MEAN Digital Leadership Skills' is normally distributed. The scatterplot visualizes the answering option of DF03 and thereby the nonexistent normal distribution.

Additionally, the low R^2 value and the p-value significance of ANOVA with $0.759 \nless 0.05$ add to the fact that a linear regression model is not tenable.

3.2 Hypotheses

<u>H1</u> cannot be supported. The 2-tailed significance between DT01MEAN and DF03 is $0.959 \nless 0.05$ ($H_0 1$) and between DT01MEAN and DF01MEAN is $0.697 \nless 0.05$ ($H_0 2$). $H_0 1$ and $H_0 2$ need to be accepted. There is no connection between DT01MEAN and DF03 and between DT01MEAN and DF01MEAN. There can be no evidence of the correlation between the importance of managing digital transformation and digital leadership. Handling digital transformation is not in connection with a digital leader.

<u>H2</u> can be confirmed. The 2-tailed significance between DF01_03 and DF01MEAN is $<0.001 < 0.05$. $H_0 1$ needs to be rejected. There is a moderate positive correlation between 'Technological Affinity (DF01_03)' and 'Digital Leadership Skills (DF01MEAN)'. For further testing and the creation of a regression model, the variables have been tested if they are normally distributed. Whereas the variable 'Technological Affinity' is not normally distributed, the variable 'MEAN Digital Leadership Skills' is normally distributed. To be able to compare the 'Current Digital Leadership skills importance (DF01)' with the 'Digital Leadership change of skills (DF02)' $H_0 2$ has been tested. The 2-tailed significance is $0.206 \nless 0.05$. $H_0 2$ needs to be accepted. There is no correlation between 'Technological Affinity (DF02_03)' and the 'Digital Leadership change of skills (DF02MEAN)'.

<u>H3</u> must be rejected. Although the contingency table indicates an almost constant emphasis on the acceptance of digital leadership and WFH, this cannot be confirmed by a correlation test. The 2-tailed significance

between SD19 and DF03 is 0.156 ≮ 0.05 (H_01) and between SD19 and DF01MEAN is 0.167 ≮ 0.05 (H_02) and both zero hypotheses need to be accepted. There is no correlation between SD19 and DF03 and between SD19 and DF01MEAN. There can be no evidence of the connection between or influence of WFH and digital leadership. As well as the correlation, does the percentage distribution of WFH not indicate a strong influence of digital leadership. However, is the general acceptance of digital leadership selected as 'important' or 'very important' about all percentage distributions very high and implies a very high acceptance of digital leadership.

<u>H4</u> cannot be supported. The 2-tailed significance between DT02_02 and EW02MEAN is 0.719 ≮ 0.05 (H_01) and between DT02_01 and EW02MEAN is 0.066 ≮ 0.05 (H_02). H_01 and H_02 need to be accepted. There is no connection between DT02_02 and EW02MEAN and between DT02_01 and EW02MEAN. There can be no evidence of the correlation between the management's or the company's attitude toward digital leadership and the expectations toward the company. The management's, as well as the company's attitude toward digital transformation, is not connected with employees' expectations toward their company, and neither a negative nor positive affection could be derived.

<u>H5</u> cannot be supported. The 2-tailed significance between SD03_01_GEN and DF03 is 0.850 ≮ 0.05 (H_01), between SD03_01 and DF03 is 0.765 ≮ 0.05 (H_02), and between SD16_01 and DF03 is 0.821 ≮ 0.05 (H_03). H_01, H_02, and H_03 need to be accepted. There is no correlation between SD03_01_GEN and DF03, SD03_01 and DF03, and between SD16_01 and DF03. There can be no evidence between followers' age or followers' work experience and the acceptance of digital leadership. These results show that age, as well as work experience, does not have a connection with the

acceptance of Digital Leadership. The follower's age does not affect their acceptance of Digital Leadership negatively.

H6 cannot be supported. The 2-tailed significance between SD17 and DF01MEAN is 0.332 ≮ 0.05. H_0 needs to be accepted. There is no correlation between SD17 and DF01MEAN. There can be no evidence between leadership experience and digital leadership skills.

H7: The graph in Figure 4 indicates a skewness. The distribution is skewed to the right and steep to the left. This skewness is confirmed by the mean (1.83). 49.2% of the participants believe in a partial complement or replacement and only 13.6% of the participants believe in a mostly or complete replacement or complement through AI. H7 does not request bivariate or multivariate statistics but the interpretation of the univariate statistical results.
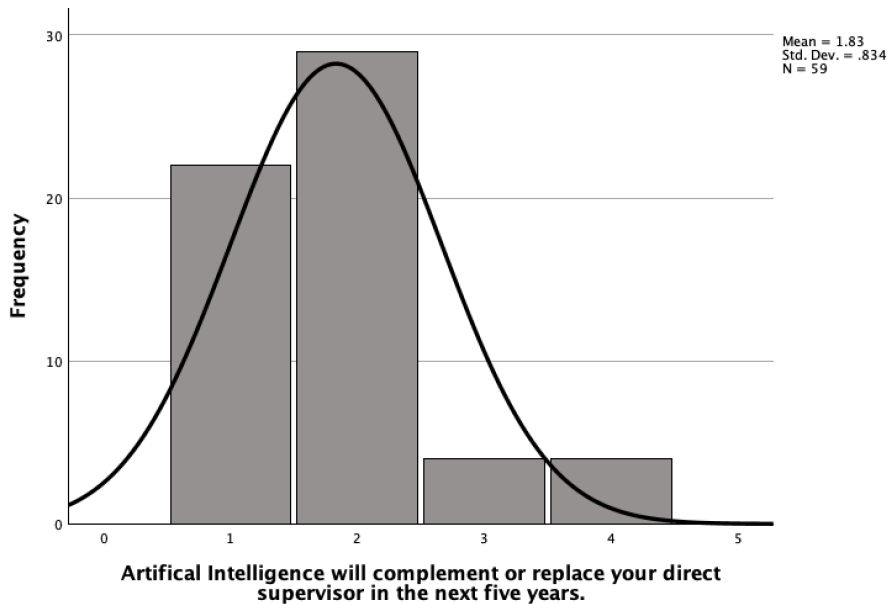
Graph

Figure 4: Histogram of the Distribution of AI complementing Leadership

Figure 4 as well as the percentage distribution clarifies that the employees do primarily not believe that AI will complement or replace their direct supervisor shortly (within the next five years). As discussed in the literature review is the idea of AI as a substitution for leadership still at the very beginning.

3.3 Summary

This work's problem formation evolved in the literature review, was taken into account for the questionnaires, and the gained results have been evaluated, interpreted, and formulated into answers in this chapter previously. Summarized, Figure 5 visualizes an adjusted overview of Figure 1 including each rejection or acceptance of the research questions and hypotheses.
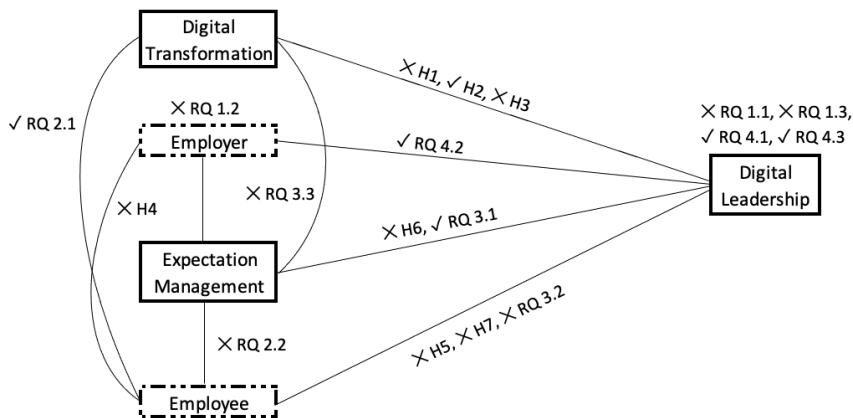

Figure 5: Adjusted Conceptual Model

3.3.1 Further Derivations of the Scientific Results achieved

The main goals of this work's empirical contribution have been to (1) highlight the needed leadership skills, (2) compare them to the existing research, (3) try to carve out contemporary characteristics of leadership in

the German banking sector, and (4) formulate leadership expectations for digital leadership in the German banking sector.

The first, second, and third goals have each been answered thanks to the expert interviews and the online survey. The literature review gives a broad overview of the existing literature and the results have been included in the surveys. In order not only to present and interpret the results but also to continue to consider what they mean and how the findings can be used, the leadership skills are ranked below and the trend is indicated in Table 31 to then develop an adapted Kano model. Table 18 and Table 22 have been the main sources for the answering options in the online survey. The adjusted Kano model serves as guidance for goal (4).

Table 9 summarizes the results of both online survey questions concerning digital leadership skills and indicates a trend based on the rankings. This trend does not explicitly show that a skill is no longer relevant, but only how certain skills and their focus have changed over the last five years.

Table 9: Digital Leadership Skills and Indicated Trends

Leadership Skills	Leadership Skills relevant for digital leadership		Trend	Emerging leadership skills	
	Mean	Ranking		Mean	Ranking
Adaptable	3.17	2	⇔	3.12	2
Innovative	3.15	3	⇓	3.05	4
Technological Affinity	2.92	6	⇑⇑⇑⇑	3.29	1
Social Network	2.51	11	⇑	2.59	10
Disruptive	2.31	15	⇓	2.25	16
Resilient	2.69	8	⇑⇑⇑	2.83	5
Willingness to Compromise	2.64	9	⇓⇓	2.46	12
Performance Commitment	2.54	10	⇓	2.47	11
Convincing	2.86	7	⇓	2.64	9
Decisive	2.80	8	⇔	2.66	8
Motivational	3.10	5	⇓	2.81	6

Strong Communication Skills	3.53	1	⇓	3.10	3
Monitoring the Workflow	1.83	16	⇓⇓	2.00	19
Enthusiastic	2.54	10	⇓⇓⇓	2.20	17
Composed	2.49	12	⇓⇓⇓	2.17	18
Courageous	2.64	9	⇓⇓	2.37	13
Empathic	3.14	4	⇓⇓⇓	2.46	12
Intrigued	2.42	14	⇓	2.32	15
Visionary	2.86	7	⇔	2.71	7
Continuously growing Know-How	2.47	13	⇓	2.34	14
Total average mean	2.88	-	⇓	2.59	-
Legend:	⇔ = indifferent ⇑= 1-3 interval				
	⇑⇑⇑ = 3-5 interval ⇑⇑⇑⇑ = 6 or more interval				

The model which has been developed in this study and is shown in Figure 6 and Table 10, is based on the Kano model's definitions and theories and has not been empirically tested in this work. Figure 6 and the examples from Table 10 identify employees' leadership expectations for digital leadership in the German banking sector (goal (4)).
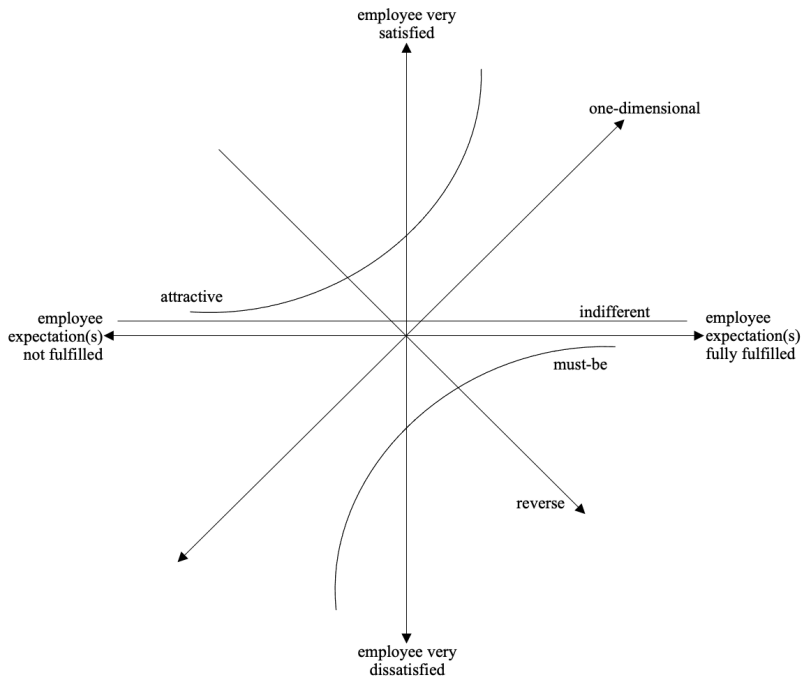
Figure 6: Adjusted Kano Model

Source: Author's elaboration, adapted from Högström et al. (2010)

The author categorized the leadership skills according to the findings and took the Likert's Scale answer as the guiding principle (1-2 = reverse attribute, 2-2.5 = indifferent attribute, 2.5-3 = must-be attribute, 3-4 = one-dimensional or attractive attribute). At points where no findings could help this categorization process assumptions have been made. They are marked by (*).

This work's further scientific results are presented in the following chapter '5.1 Theoretical and Practical Implications' to enable an easier and more comprehensible comparison of the gained insights and further deriving suggestions.

Table 10: Leadership Skills as Attributes integrated in the Kano Model

Source: Author's elaboration, adapted from Table 4, Table 6, Högström et al. (2010), Paraschivescu & Cotîrleț (2012)

Category	Description	Examples
Attractive Attribute Core Quality	presence creates satisfaction and enthusiasm because they are not expected and surpass the expectations → key to employee satisfaction	being a good storyteller(*), being a role model(*), empathy, employee engagement(*), exhilarant(*), innovative, quick apprehension skills(*), strong determination(*)
One-dimensional/Performance Attribute Core Quality	satisfaction is proportional to the level of fulfillment; dissatisfaction is created if the expectations are not fulfilled → employees require explicitly	adaptability, appreciation(*), approachability, authenticity(*), composure(*), cooperative(*), employee development(*), flexibility(*), motivation and inspiration, personal skills (e.g. passionate to work with people)(*), reliability(*), robustness(*), self-reflection(*),

	performance attributes	strong communication skills and the ability to listen(*)
Must-be Attribute Core Quality	extreme dissatisfaction is created by missing fulfillment; when fulfilled, satisfaction is not necessarily guaranteed →represent basic requirements	confidence(*), convincement, courage, decisiveness, diversity and cultural intelligence(*), fairness, open-mindedness(*), optimism(*), organizational skills(*), resilience, respect(*), technological affinity and skills, transparency and truthfulness(*), trust, visionary, willingness to compromise
Indifferent/Neutral Attribute Additional Quality	degree of expectation fulfillment is irrelevant; the attributes do not affect satisfaction or dissatisfaction	composed, continuously growing know-how, creativity, disruption, enthusiasm, intrigued, performance commitment and goal orientation, policy commitment(*), social network
Reverse Attribute Additional Quality	attributes create dissatisfaction when fulfilled and satisfaction if they are absent	monitoring the workflow

3.3.2 Limitations and Future Research

This partial chapter of '3 Results and Discussion' provides an outline of the limitations and future research of this work in keywords. Limitations are important to be named to give future researchers indications and support to focus on the most relevant key aspects and to know how to weigh this work. This study has certain limitations:

- sole focus on Germany and the German banking sector → the limitation of country and sector refines the content
- the literature review has been limited at the beginning by focusing on one kind of leadership and excluding management
- this work's results are limited to its chosen methodology
- limitations related to the datasets:
  - o the quantity of survey respondents in Method II is not thorough

- o the data from Method I and Method II are each just a snapshot of a single point in time
- o the percentage of leadership experience and current leadership positions has been exceptionally high in Method II
- o a different question selection and questioning could lead to different and better results
- o the author's capability of statistical analysis is limited, and more experienced researchers can carry out more meaningful, more extensive, and complex calculations and interpretations

These are potential biases due to the elected approach and these are this work's major limitations which do not mean that this listing is complete. Other readers might detect further limitations and weigh their importance differently.

Future research derived from the findings of this work are:

- to develop leadership further and design new leadership training adjusted to the needs of digital leadership
- that the banking sector might be no pioneer in this field of AI but should try to become up-to-date with the developments
- to focus on the methodological comparison of the same research topic in different countries
- to address the same research topic in one country but through various similar sectors
- that future research should vary the choice of leadership styles, theories, and the inclusion of management to ensure the importance of each research field, how they influence each other, and which might have lost their significance

- the major recommendation in the choice of methodology (e.g. defining the target group is of utmost importance)
- the idea is to ask the same respondents not once to receive a snapshot of a single point, but over a longer period which might lead to more insights on how and why their estimation changes

4 New Scientific Results

This dissertation examines leadership skills in terms of digital transformation and expectation management in the German banking sector. Two surveys have been conducted to compare the existing literature with the dissertation's topic; an expert interview and an online survey. The results of both surveys have been analyzed, discussed in the subchapters of the chapter '5 Discussion Section', and also partly interpreted in the subchapters of the chapter '6 Limitations and Implications'. Those are all new scientific results but the question evolves which ones are relevant and what should be done next. In the further course, all scientific findings are assigned to this chapter and are summarized in bullet points below:

- Identified Employees' Digital Leadership Expectations
  This work identified employees' leadership expectations for digital leadership in the German banking sector. The expectations are highlighted and visualized by the adjusted Kano model.
- A Kano Model adjusted to Digital Leadership Skills and resulting Employees' Expectations and Satisfaction
  The Kano Model, presented in Figure 14 and Table 32, visualizes the methodological results, including the varying degrees of leadership skills and their importance and how they affect employees' expectations and satisfaction.
- Leadership is still needed in the German Banking Sector

This work underlines leadership's significance for this industry. For now, it cannot be substituted by management.

- <u>A Strong Integration of Employees in Digital Transformational Processes</u>

   To include employees strongly in digital transformational processes is important to learn and benefit from their experiences, expectations, and outlook.

- <u>The Connection between the Importance and Characteristics of Digital Leadership</u>

   The online survey's results suggest a connection between the importance of digital leadership and digital leadership characteristics. However, it does not suggest a connection between the importance of managing digital transformation and digital leaders.

- <u>The Prioritization of Digital Leadership Characteristics differ</u>

   This work makes the following contributions to the debate on digital leadership skills. The applied empirical evidence suggests a connection between the importance of digital leadership and digital leadership characteristics and a distinction between the prioritization of digital leadership characteristics between executives and employees. It was to be expected that executives and employees weigh the importance of different leadership characteristics differently. As shown in the literature review, expectations also differ.

- <u>AI as Leadership Substitution</u>

   The empirical results show that employees do not believe AI will replace or complement their direct supervisor shortly. The respondents were rather reluctant to use the future assessment.

- Employees' Expectations are not affected by Digital Transformation

  Although employees acknowledge the importance of digital transformation, they do not transform that importance into expectations towards their company and supervisor. The pace of the introduction of digital transformation also does not influence the expectations met. As the third example, management's attitude toward digital transformation does also not affect employees' expectations of their company.

- Employees' age does not affect the Acceptance of Digital Leadership negatively

  Although different generations have varying expectations of leadership, younger generations do not rate the importance of digital leadership and AI higher than older generations. It could not be proven that employees' age affects the acceptance of digital leadership negatively.

- Employees with a high WFH percentage have a high Acceptance of Digital Leadership

  Although this work's research on WFH and digital leadership could not give evidence of the connection between those two aspects, the results imply a very high acceptance of digital leadership.

5 Conclusions and Implications

In conclusion, the dissertation has strived to investigate how digitalization changes leadership in the German banking sector through a comprehensive analysis of the existing academic literature, expert interviews, and an online survey. The findings of this research highlight the importance of leading digital change, employees' expectations in combination with leadership,

technology-dependent leadership forms, and required leadership skills. They contribute significantly to the existing body of knowledge in the field of leadership. This work's structure and motivation were essential for its success in addressing and answering the research questions and hypotheses. In addition to the results, conclusions, and implications from the past chapters, the findings of other empirical studies in the dissertation indicate further recommendations for future research and practical applications that are imperative to consider:

- knowing which leadership skills are most needed is important to face the strategic issues of the bank
- facing the challenges of fast-paced change and an overwhelming overload of tasks, topics, and information
- never underestimate the power and importance of authenticity, expectations, and growing virtuality
- aiming for great employee commitment in addition to the traditional view of employees' job satisfaction

By building upon the insights gained from the dissertation, researchers can delve deeper into 'Limitations and Future Research', 'Theoretical and Practical Implications', and 'New Scientific Results' to enhance our understanding of digital leadership. Additionally, practitioners in the German banking sector can leverage these findings into leadership training or programs as well as other potential applications and improvements highlighted in 'Theoretical and Practical Implications'.

In summary, the dissertation has made a meaningful contribution to the academic discourse surrounding leadership, and its implications extend beyond the theoretical realm. I hope that future research will build upon these foundations, contributing further to the field of banking and financial services, connecting theoretical considerations with practical

implementation suggestions, and paving the way for continued advancements in our understanding of leadership in the banking sector, especially digital leadership, and technology-driven transformations shaping leadership and the working world.

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