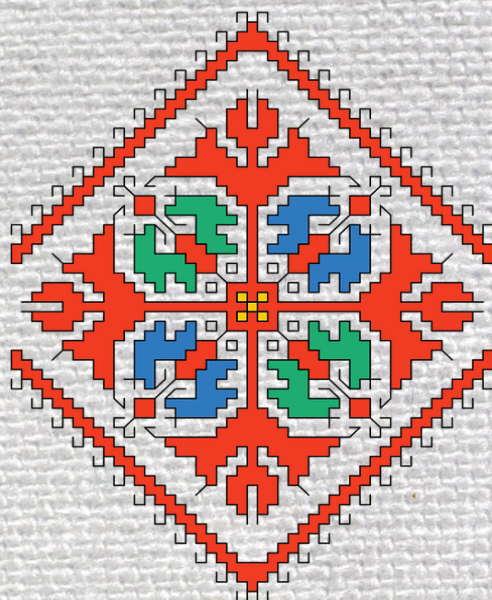


# Образование, научни изследвания и иновации



Education,  
scientific research  
and innovation



**ОБРАЗОВАНИЕ, НАУЧНИ ИЗСЛЕДВАНИЯ  
И ИНОВАЦИИ**

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Списанието отразява иновативни идеи, научни резултати, съвременни тенденции и перспективи за развитие в изброените научни области. Публикуват се само оригинални научни статии, преминали двойно сляпо рецензиране.

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**Съдържание****Contents****Обществени комуникации  
и информационни науки****Public Communications and  
Information Sciences**

Съвременни предизвикателства пред отделите за снабдяване на автомобилните компаниии <i>Михаел Раймес</i>	7	Modern Challenges for the Purchasing Departments of Automotive Companies <i>Michael Reimes</i>
Ролята на емоционалната интелигентност и невербалната комуникация в управлението на стреса сред лидерите в контекста на виртуални интервюта: перспектива от гледна точка на съдебната психология <i>Лукас ван Ленгерих</i>	11	The Role of Emotional Intelligence and Non-Verbal Communication in Stress Management Among Leaders in Virtual Interview Settings: a Forensic Psychology Perspective <i>Lukas van Lengerich</i>
Оценка на дружества по метода на мултипликатора в наследственото право на Германия – част I/III <i>Георг Мартин Аман</i>	18	Company Valuation Using the Multiplier Method in German Inheritance Tax Law – Part I/III <i>Georg Martin Amann</i>
Двойни последици за служителите от амбидекстралното лидерство <i>Селина Хел</i>	27	Dual Employee Consequences of Ambidextrous Leadership <i>Selina Hehl</i>
Анализ на пригодността на съответните рамки за цифровизация във връзка с киберфизичните системи <i>Илона Хофман</i>	36	Analysis of the Suitability of Relevant Frameworks for Digitalization in Connection With Cyber-Physical Systems <i>Ilona Hofmann</i>
Какво въздействие оказва цифровата трансформация върху ефективността на бизнеса? <i>Кристиан Функ</i>	43	What Impact Does Digital Transformation Have on Business Performance? <i>Christian Funk</i>
Оценка на дружества по метода на мултипликатора в наследственото право на Германия – част II/III <i>Георг Мартин Аман</i>	50	Company Valuation Using the Multiplier Method in German Inheritance Tax Law – Part II/III <i>Georg Martin Amann</i>



Влияние на лидерството в средното образование върху бъдещата реализация на учениците <i>Златка Иванова</i>	57	Impact of Leadership in Secondary Education on the Future Realization of Students <i>Zlatka Ivanova</i>
<b><i>Национална сигурност</i></b>		<b><i>National Security</i></b>
Поуки от историята на действащата демокрация: исторически модели и значението им за съвременните предизвикателства пред политиката за сигурност <i>Марина Винерс</i>	64	Lessons Learned from the History of Participatory Democracy: Historical Patterns and Their Significance for Modern Security Policy Challenges <i>Marina Wieners</i>
Установяване на стандарти и ценности като инструмент за превенция на престъпността в компанията <i>Бастиян Нагел</i>	70	The Role of Standards and Values in Corporate Crime Prevention <i>Bastian Nagel</i>
Управление на риска в кризисни ситуации <i>Йонас Хеш</i>	81	Risk Management in Crisis Situations <i>Jonas Heesch</i>
<b><i>Актуално</i></b>		<b><i>Current topics</i></b>
Вятърна енергия в открито море във Виетнам: качествено изследване на възгледите на водещи експерти относно изменения Закон за електроенергията <i>Хенри Васник</i>	88	Offshore Wind Energy in Vietnam: a Qualitative Study of the Viewpoints of Leading Experts on the Revised Electricity Law <i>Henri Wasnick</i>
Психологическа диагностика и нейното приложение в психологията на движението <i>Катя Лоре Шуг</i>	98	Psychological Diagnostics and Its Application in Traffic Psychology <i>Katja Lore Schug</i>
Устойчивостта на директорите на училища в образователната система <i>Ишай Никритин</i>	104	School Principals' Resilience in the Education System <i>Yishay Nikritin</i>
Изменен закон за електроенергията и отражението му върху развитието на офшорните вятърни централи във Виетнам <i>Хенри Васник</i>	111	Amended Law on Electricity and Its Implication for Offshore Wind Development in Vietnam <i>Henri Wasnick</i>

Социално-емоционалното увреждане в контекста на приобщаването: предизвикателства и перспективи за участие в социалния живот <i>Яна Йонсон</i>	120	Social-Emotional Handicap in the Context of Inclusion: Challenges and Perspectives for Participation in Social Life <i>Jana Johnson</i>
Ролята на демографските данни в информационните процеси при вземането на решения за инвестиции в жилищни недвижими имоти <i>Евалд Андреас Новер</i>	125	The Role of Demographic Data in Information Processes for Residential Real Estate Investment Decisions <i>Ewald Andreas Nover</i>
Финансиране на бюрата по труда – структури, разпределение и бюджет за административни разходи <i>Сара Жажжа</i>	133	The Funding of Job Centers – Structures, Distribution and Administrative Cost Budget <i>Sarah Jahjah</i>
Управление на информационните процеси в инвестициите в недвижими имоти в условията на демографски промени <i>Евалд Андреас Новер</i>	136	Managing Information Processes in Real Estate Investment Under Conditions of Demographic Change <i>Ewald Andreas Nover</i>



**ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ**  
**PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES**

**MODERN CHALLENGES FOR THE PURCHASING DEPARTMENTS  
OF AUTOMOTIVE COMPANIES**

**Michael Reimes**

*University of Library Studies and Information Technologies*

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**Abstract:** *Rapid changes in the automotive industry, driven by technological advancements, fluctuating market conditions, and evolving customer expectations, have transformed the role of purchasing departments. This study examines the challenges facing these departments, essential for maintaining a steady supply of components, managing supplier relationships, and reducing costs. Global supply chains are increasingly complex and vulnerable to disruptions caused by geopolitical conflicts, natural disasters, and pandemics. Consequently, automotive companies must adopt agile, resilient procurement strategies. The digital transformation of procurement processes, including the integration of advanced analytics, AI, and blockchain technologies, adds further complexity by demanding enhanced transparency and efficiency. A growing emphasis on sustainability and ethical sourcing requires evaluating suppliers on cost, quality, and environmental performance. The surge in demand for high-tech components due to innovations in electrification and autonomous driving further challenges traditional procurement methods. Data were collected through a comprehensive literature review and expert interviews, providing valuable insights into digital integration, risk management, and interdepartmental collaboration. The findings provide practical recommendations for automotive procurement. The study concludes that flexible, technology-driven, and sustainable strategies are crucial for maintaining competitiveness.*

**Keywords:** *Automotive Industry; Purchasing Departments; Digital Transformation; Sustainability; Supply Chain*

**INTRODUCTION**

The automotive industry is changing. There are rapid technological developments, a fluctuating market situation and changing customer requirements. The purchasing department is very important for this change. It ensures that there are always enough parts and materials available. It also takes care of relationships with suppliers and helps to reduce costs. In recent years, new problems have arisen. These are forcing automotive buyers to adapt quickly and in new ways. One major challenge is that global supply chains are becoming increasingly complicated. They can easily be disrupted by things like political conflicts, natural disasters and pandemics (Brancati 2019). Digital transformation adds another layer of complexity. It requires advanced analytics, AI and blockchain technologies. These help to provide better insights and enable faster responses (Kern & Wolf 2019).

Another problem is that ecology and environmental friendliness are becoming increasingly important. Car companies are being pushed to produce less CO<sub>2</sub> and to source raw materials fairly. Purchasing teams should evaluate suppliers. They have to pay attention to price, quality and environmental friendliness (Liao et al. 2017). Technology in the automotive industry, especially in electric and self-driving cars, is developing rapidly. Therefore, new high-tech parts are needed. This change requires us to rethink how we purchase. This way, we can work with digital companies and new companies that can offer new ideas (Motohashi 2017). Due to problems in the company, such as a lack of money, risk control and cooperation between departments, the purchasing department is also changing (Motohashi 2018). We need a flexible and versatile strategy to combat the current problems. It should be based on new technologies and good risk planning. This article explains the problems and how they have been found to affect the purchasing departments of automotive companies.

## **RESEARCH METHODOLOGY**

This study uses a qualitative research methodology to analyse the modern challenges faced by purchasing departments in automotive companies. The data was collected through an extensive literature review of current academic and industry publications, with a focus on sources available through the Consensus app since 2019. The literature review was guided by a set of predetermined keywords, including 'automotive procurement', 'supply chain disruption', 'digital transformation', and 'sustainability in automotive procurement' (Russo 2015). By evaluating both academic journals and industry reports, this study summarises current insights and emerging trends relevant to the identified challenges.

In addition to the literature review, semi-structured interviews were conducted with purchasing managers from leading automotive companies. These interviews provided practical insights into how companies are adapting their purchasing strategies to global market dynamics and technological advances (Wang et al. 2016). The transcripts of the interviews were analysed using thematic coding to identify recurring themes such as digital integration, risk mitigation and sustainable procurement. This triangulation of data from scientific sources, industry reports and expert interviews provided a solid understanding of the current issues facing purchasing departments.

Data analysis was conducted using qualitative data analysis software that facilitated the organisation and interpretation of recurring patterns across multiple sources. Methodological rigor was enhanced by cross-validating insights from interviews with results from the literature review (Brancati et al., 2019). Ultimately, the integration of these methods allowed a nuanced examination of the multifaceted challenges of motor vehicle procurement and provided actionable insights for practitioners and researchers (Kern & Wolf 2019). The approach taken in this study highlights the importance of combining academic research and practitioner insights to capture the dynamic nature of the purchasing department in the automotive industry.

## **RESULTS**

This study shows that purchasing departments in automotive companies are facing modern problems. They need a new strategy. A major problem is that global supply chains are being disrupted. Events such as the COVID-19 pandemic and political problems show that the normal supply chain model has weaknesses. Therefore, purchasing departments need to plan better strategies. Companies are starting to use more diverse suppliers and invest in digital supply chain monitoring. This enables them to identify and mitigate problems (Motohashi 2017). These digital tools allow us to monitor and assess risks as they happen. This is very important to avoid interrupting delivery.

The study showed that making the switch to digitalisation is a major problem. Modern purchasing departments are supposed to use advanced analysis, AI and blockchain techniques. This helps to make better decisions and improve operations (Kern & Wolf, 2019). These technologies make it possible to better predict demand, automatically process orders and better evaluate supplier performance. But the integration process has problems. These include high costs, the need for highly trained employees and the resistance of old procurement teams to change (Motohashi 2017). Companies that successfully use digital solutions report major efficiency gains and cost reductions. They say this despite having experienced some problems (Liao et al. 2017).

Sustainability has become an important issue in car purchase planning. Purchasing departments are now having to pay attention to environmentally friendly products due to increasing pressure from regulations and consumer demand. They also have to consider the sustainability of their suppliers (Brancati 2019). This change is not only about suppliers' environmental impacts. It also concerns their compliance with good labour practices. Car companies increasingly want to establish long-term partnerships with suppliers. These suppliers are committed to sustainability, even if it costs more in the short term (Motohashi 2018, ). The difficulty lies in combining cost, environmental and social responsibility. This requires new ideas and strong leadership in purchasing departments.

Another difficulty today is the rapid technical progress in cars, especially in electrification and autonomous driving. The demand for high-tech parts and systems has increased as a result of these technical changes. This has made purchasing more difficult. Purchasing departments now have to orient themselves



in a landscape of suppliers that is constantly evolving. Many of them are small or new companies that focus on high-tech (Wang et al., 2016). In this rapidly changing environment, we need clear rules for evaluating suppliers. Purchasing teams and research and development departments also need to work closely together. Technological innovations are often unpredictable. Therefore, sourcing techniques must be flexible. They need constant adaptation and long-term planning (Davis 2021).

The modern purchasing world still takes a lot of care with risk management. Purchasing departments face more risks because global supply chains have become more complex and new technologies have been introduced (Miller 2020). Companies are now investing a lot of money in risk analysis systems. These systems include old metrics and new signs of digital and environmental hazards. For example, blockchain technology can be used to make supply chains clearer and more traceable. This can help to reduce fraud and compliance issues (Wilson 2023). But it's not just about technology. It is also important that our purchasing teams learn to recognise and respond to risks.

It has been shown that working with different departments is important to solve modern problems. The purchasing department has to connect more and more with other areas such as production, logistics and research. They do this to ensure that they pursue the company's goals (Kern & Wolf 2019). It is important that everyone works together to develop strategies. These must take into account both current operational needs and future goals. The results show that companies that collaborate a lot with other departments are better able to respond to market changes and technical issues (Liao et al. 2017).

In addition, changing rules have made the work of purchasing departments more difficult. Increasingly stringent rules on pollutants, labour and safety require us to actively address compliance. Car companies have to follow the changes in legislation in different areas. They have to adjust their purchasing plans accordingly. This regulatory pressure affects more than just the selection of suppliers. It also influences negotiations and long-term relationships with suppliers.

In short, the purchasing departments of car companies face an important decision. They have to adapt traditional purchasing methods. This is important because the environment is changing rapidly with digitalisation, sustainability and more risks. The future of automotive companies depends on whether they can adapt to these new challenges. According to books and discussions with experts, four things are important in this rapidly changing environment. These are the use of digital technologies, paying attention to sustainability, good management of risks, and better collaboration between departments.

## **CONCLUSION**

On the whole, the purchasing departments of automotive companies have to face many new problems. This requires flexibility and creative ideas. Global supply chains have problems. In addition, digitalisation means that everything is changing rapidly. We also need sustainable methods. All of this together is changing the way we procure things. Companies should not only acquire good digital tools to make their work better and more robust. They should also ensure that their employees understand risks and can work well together. Purchasing departments have to constantly change their plans. This is important because of tougher rules and rapid technical changes in order to stay ahead of their competitors. The literature on the Consensus app and expert interviews indicate that in order to solve these problems, it is important to use digital solutions. You should also be able to manage complicated supplier relationships, keep an eye on costs, and buy ethically. The ever-changing purchasing landscape in the automotive industry shows that research and flexible practices are important. They help purchasing departments meet both current and future needs. This study presents a close examination of these issues. It also provides advice to automotive companies on how to make their purchasing departments better and more sustainable.

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## СЪВРЕМЕННИ ПРЕДИЗВИКАТЕЛСТВА ПРЕД ОТДЕЛИТЕ ЗА СНАБДЯВАНЕ НА АВТОМОБИЛНИТЕ КОМПАНИИ

**Резюме:** Бързите промени в автомобилната индустрия, предизвикани от технологичния напредък, променливите пазарни условия и променящите се очаквания на клиентите, трансформираха ролята на отделите за снабдяване. В настоящото проучване се разглеждат предизвикателствата пред тези отдели, които са от съществено значение за поддържането на постоянни доставки на компоненти, управлението на взаимоотношенията с доставчиците и намаляването на разходите. Глобалните вериги за доставки стават все по-сложни и уязвими към смущения, причинени от геополитически конфликти, природни бедствия и пандемии. Вследствие на това автомобилните компании трябва да приемат гъвкави и устойчиви стратегии за снабдяване. Цифровата трансформация на процесите на снабдяване, включително интегрирането на усъвършенствани анализи, изкуствен интелект и блокчейн технологии, допълнително усложнява ситуацията, като изисква повишена прозрачност и ефективност. Нарастващият акцент върху устойчивостта и етичното снабдяване изисква оценяване на доставчиците по отношение на разходите, качеството и екологичните показатели. Рязкото нарастване на търсенето на високотехнологични компоненти, дължащо се на иновациите в областта на електрификацията и автономното шофиране, допълнително предизвиква традиционните методи за възлагане на обществени поръчки. Данните са събрани чрез обстоен преглед на литературата и интервюта с експерти, които предоставят ценни сведения за цифровата интеграция, управлението на риска и междудементовото сътрудничество. Констатациите предоставят практически препоръки за възлагане на обществени поръчки в областта на автомобилостроенето. Проучването стига до заключението, че гъвкавите, технологично ориентирани и устойчиви стратегии са от решаващо значение за поддържане на конкурентоспособността.

**Ключови думи:** автомобилна индустрия; отдели за снабдяване; цифрова трансформация; устойчивост; верига на доставките

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**ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ**  
**PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES**

**THE ROLE OF EMOTIONAL INTELLIGENCE AND NON-VERBAL  
COMMUNICATION IN STRESS MANAGEMENT AMONG LEADERS IN VIRTUAL  
INTERVIEW SETTINGS: A FORENSIC PSYCHOLOGY PERSPECTIVE**

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**Abstract:** *New challenges in assessing leadership traits have emerged with the rise of virtual interviews, including nonverbal communication and stress management. The role of emotional intelligence (EI) in the regulation of stress-induced behaviors is well established, but its role in virtual interview settings has not been fully explored. This study investigates how EI affects control of nonverbal stress indicators like facial microexpressions, gaze patterns, and vocal modulation in candidates, comparing virtual and face-to-face settings. From a forensic psychology perspective, this paper explores deception detection theories and stress related behavioral cues, and provides insights into how evaluators can better interpret nonverbal indicators in leadership assessments. The findings of the study highlight the importance of EI as a crucial factor in reducing stress-related cues, with implications for forensic assessments, leadership selection, and virtual deception detection.*

**Keywords:** *Emotional Intelligence; Nonverbal Communication; Virtual Interviews; Stress Management; Leadership Assessments; Forensic Psychology; Deception Detection*

## **INTRODUCTION**

The shift to virtual worlds has impacted leadership assessments, making it challenging to interpret stress-related nonverbal behaviors. Although direct interaction provides more non-verbal signals, video interviews are limited in the number of behaviors that can be observed and rely mostly on the analysis of voice, face, and eye contact (Deloitte, 2023).

Therefore, such research is impactful as nonverbal communication is crucial in assessing leadership, and how individuals are perceived in terms of confidence, authenticity, and stress management (Burgoon et al., 2016). At the same time, emotional intelligence (EI) has been identified as a key factor in the management of stress, whereby people are able to control the display of the distress (Goleman, 1995). In forensic psychology, the detection of lies is based on the same non-verbal cues, such as micro-expressions, nervousness, and pauses in speaking (Ekman, 2003).

This research aims to examine the relationship between emotional intelligence, nonverbal stress behaviours, and deception cues in virtual interviews. Thus, applying the principles of forensic psychology, the work aims to demonstrate how stress affects people differently in virtual and in-person environments, and how EI affects the candidates' capability to control the signs of stress. The implications of the findings are relevant to the assessment of leadership, forensic evaluation, and virtual credibility assessment.

## **LITERATURE REVIEW**

### **Emotional Intelligence and Stress Regulation**

Emotional intelligence includes self-awareness, self-control, social awareness and interpersonal skills (Goleman 1995). People with high EI are more likely to deal with stress, regulate their emotions and actions, and demonstrate calmness and assurance (Bar-On 2006). In leadership roles, EI improves stress coping, flexibility, and interpersonal interactivity (Antonakis et al., 2009).

### **Nonverbal Communication and Stress Indicators**

Some of the nonverbal cues include eye contact, hand gestures, facial expressions, and voice tone which are said to be stress indicators (Mehrabian, 1972). Forensic psychology also focuses on stress related



microexpressions as unconscious responses that show the person's internal emotion such as deceit or stress (Ekman, 2003). People who are highly stressed may manifest:

- Avoiding eye to eye contact or increased blinking
- Microexpressions of anxiety for instance lip pressing, eyebrow raising
- Nervous hand movements including fidgeting and self-touching
- Vocal tremors and pauses while speaking.

### **Virtual vs. Face-to-Face Interviews: The Challenges in Assessing Stress**

Virtual interviews are difficult because there is no physical contact and the interviews are conducted through digital media (Maurer, 2020). Research shows that stress triggered behaviors may be overemphasized in virtual settings because of the following reasons:

- Increased cognitive load due to the delay in audio/visual feedback.
- Low nonverbal congruence between the interviewer and the candidate.
- The awareness of self-due to the constant presence of the webcam (webcam stress).

Forensic studies have also established that virtual environments make deception detection difficult because analysts cannot observe the full body movements and spatial relations that are usually used in face-to-face interactions (Vrij et al., 2010).

## **RESEARCH METHODOLOGY**

### **Research Objective**

The main purpose of this research is to examine the effect of emotional intelligence (EI) on stress related nonverbal cues in interviews; both virtual and face-to-face. This research is based on Forensic Psychology to determine how candidates' emotional self-control affects their nonverbal communication during the stress interview. Furthermore, the study aims to establish whether EI improves leadership perception and credibility assessments in the interview context.

### **Research Hypotheses**

The study is guided by the following hypotheses:

- **H1:** Those with high emotional intelligence have less stress related nonverbal behaviours than those with low emotional intelligence.
- **H2:** Stress indicators are more evident in virtual interviews than in face-to-face interviews because of factors such as: absence of physical contact, eye contact, body language, and environmental factors such as screen fatigue and technological distractions.
- **H3:** Those with high EI are evaluated more positively as leaders and are considered more credible by the assessors.

### **Participants**

Sixty leadership candidates were invited to take part in the study from various sectors. Each participant was interviewed twice with two different interview formats which were categorized as;

**Group 1:** Virtual interviews (n = 30)

**Group 2:** Face-to-face interviews (n = 30)

All the participants were required to fill out the emotional intelligence questionnaire (EQ-i 2.0) right after they left their interviews. The EQ-i 2.0 is a standardized measure of EI that provides an assessment of an individual's EI in different areas, including themselves, their emotions, and their relationships with others, as well as their decision-making skills and stress coping strategies.

## **Data Collection**

### **1. Nonverbal Behavior Analysis**

To assess the stress related nonverbal cues, all interviews were conducted and recorded and then analyzed using behavioral coding frameworks. The following nonverbal indicators of stress were examined:

- Gaze: Avoidance and eye contact time: Frequency and duration of eye contact with the interviewer and avoidance behaviors such as looking away or excessive blinking.
- Microexpressions of Anxiety: Brief facial expressions of nervousness such as furrowed brows, lip biting, or tightening of the jaw.
- Language Use: Pauses and hesitations; filler words ('um', 'uh'); pitch changes; and speech rate variations.
- Hands and body movements: Frequency of trembling, hand clenching, face touching or other nervous behaviors that indicate the level of stress.

### **2. Leadership Evaluation**

After every interview three independent assessors rated the candidates on two key aspects:

- Leadership Presence: How self-assured, cool, and dominant the candidate seemed in the course of the interview.
- Stress Management: The ability of the candidate to keep his/her calm and perform effectively during pressure situations.

These attributes were measured using a 10-point Likert scale, where 1= Poor and 10= Excellent.

### **3. Self-reported levels of stress**

Just immediately after their interview, candidates were asked to rate their stress level on a scale of 1-10, where 1 is no stress at all and 10 is extreme stress. This measure helped in understanding how the candidates felt stress in relation to their non-verbal communication as observed during the interviews.

## **Data Analysis**

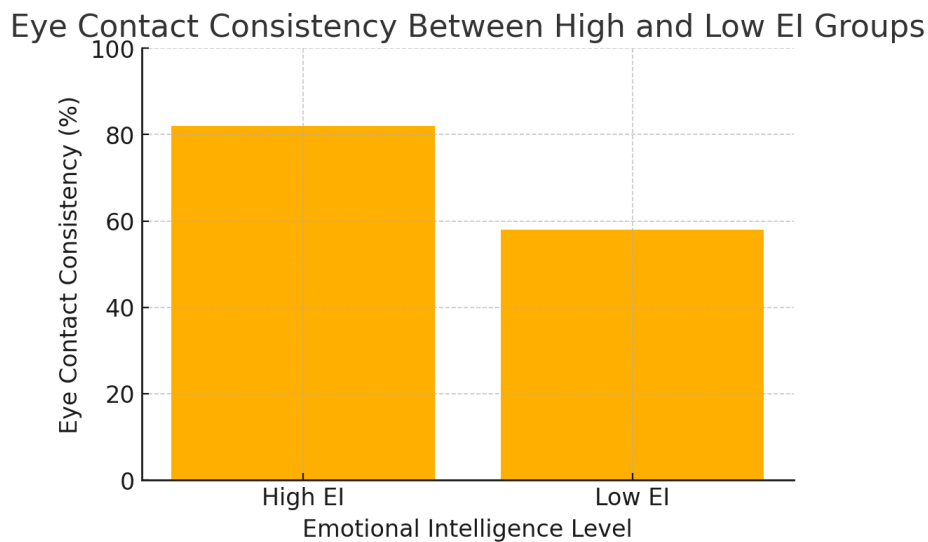
In order to analyze the data collected from the study, the following statistical analysis was performed;

- Correlation Analysis: To establish the relationship between the EI scores and the stress related behaviours as observed (that is, those with high EI should have less stress indicators).
- Regression Analysis: To determine the EI as a predictor of leadership evaluation scores and perceived credibility.
- Comparative Analysis (t-tests or ANOVA): To compare stress indicators between virtual and face-to-face interview, to see if virtual interviews lead to more stress behaviors.

Thus, the study implements the above outlined analysis tools in order to concretize the effects of emotional intelligence on interview performance and offers systematic evidence on how it functions in stress regulation and leadership attribution.

## **RESULTS**

### **Emotional Intelligence and Nonverbal Stress Cues**



*Fig. 1. Eye Contact Consistency Between High And Low EI Groups*

Higher EI was associated with fewer stress-related behaviors. For example:

- High EI candidates maintained eye contact 82% of the time, compared to 58% in low EI candidates.
- Microexpressions of anxiety were detected in 41% of low EI candidates but only 19% of high EI candidates.
- Vocal tremors were present in 10% of high EI candidates but 39% in low EI candidates.

### Virtual vs. Face-to-Face Stress Indicators

*Table 1. Nonverbal Stress Behaviors (Virtual Vs. Face-To-Face)*

Nonverbal Stress Behavior			Virtual Interview (%)	Face-to-Face Interview (%)
Vocal (Trembling)	Modulation	Issues	45	20
Self-Touching Behaviors			63	38
Microexpressions of Anxiety			41	19
Eye Contact Consistency (%)			58	82

- Vocal modulation issues (e.g., trembling voice) appeared in 45% of virtual interviews vs. 20% of face-to-face interviews.

Microexpression Frequency in Virtual vs. Face-to-Face Interviews

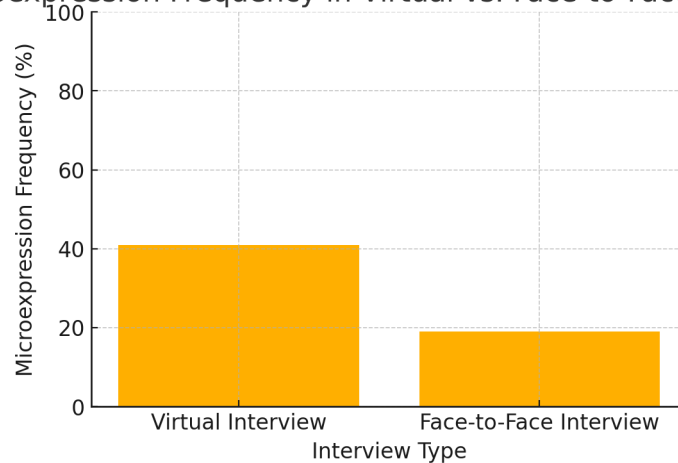


Fig. 2 Microexpression Frequency in Virtual vs. Face-to-Face Interviews

- Self-touching behaviors (e.g., adjusting hair, rubbing face) were higher in virtual settings (63%) compared to face-to-face (38%).

### Leadership and Credibility Scores

Table 2: Leadership Evaluation Scores by Emotional Intelligence Level

Emotional Intelligence Level	Leadership Evaluation Score (Avg /10)	Perceived Credibility Score
<b>High EI</b>	<b>8.5</b>	<b>85</b>
<b>Low EI</b>	<b>6.2</b>	<b>58</b>

- High EI candidates had an average leadership evaluation score of 8.5/10, while low EI candidates scored 6.2/10.
- Perceived credibility (based on forensic deception detection scales) was 27% lower for low EI candidates.

### DISCUSSION

This study has further confirmed the significance of Emotional Intelligence (EI) in stress management and its effects on the management and perception of leadership capabilities in the context of virtual interviews. The results of the study show that those participants who had high EI had fewer nonverbal stress behaviours such as vocal tremor, avoiding eye to eye contact and microexpressions of anxiety which in turn resulted in higher leadership evaluation scores. These results are in conformity with previous researches which have established that EI is a key determinant of stress management, interpersonal communication and career achievement (Bar-On, 2006; Goleman, 1995).

#### Emotional Intelligence as a Buffer Against Stress-Induced Nonverbal Cues

Another very interesting finding was the fact that stress behaviours were different for people with high and low emotional intelligence. Those participants who had high EI had better nonverbal communication skills than those with low EI. They had healthy eye contact, had minimal microexpressions of anxiety and had good vocal modulation. These outcomes show that high EI helps people to control their physiological and psychological stress responses in a way that they appear calm and confident while appearing before others.



From the forensic psychology perspective these results are significant for the practice of detecting deception and credibility assessments. A previous study has indicated that stress can cause nonverbal behaviours which can be wrongly interpreted as having fiscal concealment motive (Vrij et al., 2010). This study adds to that knowledge by showing that people with high EI are less likely to exhibit stress behaviors that could lead to the wrong conclusions in deception detection during virtual interviews.

### **Virtual and Face-to-Face Interviews: The Enhancement of Stress Indicators**

Another important discovery is that stress indicators are more pronounced in virtual interviews than in face-to-face interviews. The participants had higher levels of nonverbal stress behaviors in virtual interviews than in face-to-face interviews such as increased self-touching, more microexpressions of anxiety and more vocal modulation problems. These results are in line with those of studies that have shown that virtual settings increase cognitive load and self-awareness through factors such as webcam stress, audio visual delay and reduced interpersonal coordination (Maurer, 2020).

This finding has important implications for both the interviewer and the interviewee. Interviewers may have to be trained to identify stress-related nonverbal cues that are particularly prevalent in virtual encounters so as not to misconstrue a candidate's leadership abilities. In the same way, candidates would be useful to undergo training on virtual communication in order to reduce the stress that comes with the use of webcam and therefore improve their nonverbal attitude in the digital world.

### **Leadership Perception and Credibility Assessments**

The study also shows that the candidates with high EI received higher leadership evaluation scores and were considered to be more credible by the assessors. This means that in addition to the technical fit and the verbal abilities, the control of nonverbal behaviours is a crucial determinant of leadership perception. Those participants who had low levels of stress behaviours were considered to be confident, capable, and honest, and thus having the right leadership traits. These findings are supported by the idea that leadership presence is not only about the words that one uses but also about the body language and voice tonality.

These findings have important consequences for organizations that are trying to improve their leadership selection procedures. Although conventional face-to-face interviews are more convenient than virtual interviews, some measures may be required to make the process more credible. Applying principles of forensic psychology, including the analysis of microexpressions and stress behaviours in the digital environment, may improve the objectivity of the virtual leadership assessments.

### **Practical Implications for Leadership Selection and Forensic Assessments**

The results of the study also suggest that organizations should consider including emotional intelligence training as part of their leadership development programs. It is possible that organizations could include EI testing and training as part of their recruitment and training to assist candidates in developing their stress management skills and nonverbal communication in pressure situations.

For instance, digital evaluators who are involved in deception or credibility assessment in the digital environment should consider the heightened levels of stress signs in the virtual environment. Assuming that stress is deception can result in prejudice and thus it is important that sophisticated tools or AI based assessments be used to distinguish between stress inspired behaviours and actual deceit.

### **CONCLUSION**

This research has strongly established that emotional intelligence acts as a significant predictor of stress-related nonverbal behaviors, especially in the context of virtual interviews. Those with high EI had better nonverbal stress cue control, which in turn led to better leadership evaluation scores and credibility perceptions. Furthermore, the study reveals the difficulties of virtual interviews as stress indicators are more apparent due to, for example, cognitive load, lack of nonverbal synchrony, and self-awareness induced by the webcam.

These implications have significance not only for leadership assessments but also for forensic psychology, which deals with stress behaviors as delegates for deception detection. By virtue of the fact that

organizations are conducting virtual interviews, it is possible that they should include emotional intelligence assessments and training to enable candidates to better navigate the nonverbal communication and stress regulation processes. Likewise, interviewers should be trained in the analysis of digital nonverbal cues to avoid misinterpreting stress behaviors.

Future work should also include the integration of AI-based facial expression and voice analysis tools to assist the evaluators in identifying and interpreting the nonverbal deception cues in the virtual environment. Furthermore, longitudinal research could investigate the impact of emotional intelligence training on the candidates' stress regulation abilities overtime to gain more understanding of the formation of effective leadership assessment tools.

Linking emotional intelligence and nonverbal communication with forensic psychology, this study contributes to the knowledge on the dynamics of virtual interviews and offers recommendations for improving leadership assessments in the digital environment.

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## РОЛЯТА НА ЕМОЦИОНАЛНАТА ИНТЕЛИГЕНТНОСТ И НЕВЕРБАЛНАТА КОМУНИКАЦИЯ В УПРАВЛЕНИЕТО НА СТРЕСА СРЕД ЛИДЕРИТЕ В КОНТЕКСТА НА ВИРТУАЛНИ ИНТЕРВЮТА: ПЕРСПЕКТИВА ОТ ГЛЕДНА ТОЧКА НА СЪДЕБНАТА ПСИХОЛОГИЯ

**Резюме:** С възхода на виртуалните интервюта се появиха нови предизвикателства при оценката на лидерските качества, включително невербалната комуникация и управлението на стреса. Ролята на емоционалната интелигентност (ЕИ) в регулирането на поведения, предизвикани от стрес, е добре установена, но нейното значение в контекста на виртуалните интервюта все още не е напълно изследвано. Това проучване разглежда как ЕИ влияе върху контрола на невербалните индикатори на стрес, като микромимики на лицето, модели на зрителен контакт и вокална модулация при кандидатите, сравнявайки виртуални и присъствени интервюта. От гледна точка на съдебната психология този труд анализира теориите за разпознаване на измама и поведенческите сигнали, свързани със стреса, като предоставя насоки как оценителите по-добре да интерпретират невербалните индикатори при оценката на лидерските качества. Резултатите от изследването подчертават значението на ЕИ като ключов фактор за намаляване на стресовите сигнали, с последици за съдебните оценки, подбора на лидери и разпознаването на измами във виртуална среда.

**Ключови думи:** емоционална интелигентност; невербална комуникация; виртуални интервюта; управление на стреса; оценка на лидерството; съдебна психология; разпознаване на измами

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**ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ**  
**PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES**

**COMPANY VALUATION USING THE MULTIPLIER METHOD IN GERMAN  
INHERITANCE TAX LAW – PART I/III**

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**Abstract:** *The following study on company valuation using the comparative or multiplier method is the first of a total of three parts. Due to its popularity in practice, German inheritance tax law also “had to” allow the multiplier method as a method for business valuation if it is recognised and customary in the industry. The unknown business value of the company to be valued is determined using multiples derived from the known market values of other companies comparable to the valuation object (Ernst, Schneider, Thielen 2018, pp. 11, 223). The enterprise value is then determined either from the stock market prices of comparable companies (Comparative Public Company Approach with trading multiples) or, for unlisted companies, from realised market prices of comparable transactions (Recent Acquisition Approach with transaction or industry multiples) (Serf 2005, p. 184; Ernst, Schneider, Thielen 2018, p. 11). The procedure for determining the multiples is presented in five steps. A basic distinction is made between enterprise value and equity value multiples (Löhnert, Böckmann 2023, pp. 881, 887 ff.). The formulaic illustration of the enterprise value and equity value multiples is shown.*

**Keywords:** *Comparative Public Company Approach; Inheritance Tax Act; Multiplier Method; Recent Acquisition Approach; Company Valuation*

## **INTRODUCTION**

Comparative methods or **multiplier methods**, also known as market-oriented methods or simply practitioner methods, have become increasingly popular and thus more important in the practice of business valuation (Olbrich, Frey 2023, p. 476).

This is due to the fact that these are basically easy-to-use methods that provide a business value with little input, but also accept compromises in detail due to the degree of simplification, which is why the multiplier methods are also viewed critically (Wassermann 2010, p. 188; Castedello 2014, Chapter A para. 200 f. and para. 206 with further references; Institut Wirtschaftsprüfer (IDW) S 1<sup>1</sup> as amended in 2008 2021, para. 143; IDW S 1 as amended in 2008 2021, para. 144) (Ernst, Schneider, Thielen 2018, pp. 11, 298), but are nevertheless to be recognised as “other recognised methods that are also customary in the ordinary course of business for non-tax purposes” in accordance with § 11 (2) sentence 2, clause 1 of the Valuation Act (Bewertungsgesetz) (Eisele 2024, § 11 BewG<sup>2</sup> para. 38).

If a certain method for determining the company value is **recognised** and **customary in the industry**, the tax authorities must accept the result – provided the method was carried out in a manner that is not objectionable; in transaction practice, the use of multiplier methods is not only common for freelance practices, but for all companies of all sizes and industries, as multiplier methods derive the value from paid company and share values, their valuation concept is thus similar to the derivation of the value from sales close to the reporting date and therefore more in line with the value required for tax purposes than capitalised earnings values, which require a variety of typifications that are disputed in individual cases (Viskorf 2024, § 11 BewG para. 66 with further references).

Proof of **customary practice** should therefore generally be possible, so that § 11 (2) sentence 2 sentence 2 of the Valuation Act could ensure that, contrary to the legislator’s intention, it is not the (simplified) capitalised earnings value method but the multiplier method that becomes the practical norm in inheritance tax valuation, since the multiplier method enjoys great popularity in non-tax valuation, which is also in

view of the constitutional (“constitutional court” Viskorf 2024, § 11 BewG para. 66 with further references (footnote 155)) requirement of a fair market valuation would be welcome (Viskorf 2024, § 11 BewG para. 66 with further references (footnote 155)).

The multiplier method can therefore be the common method for determining a specific value **in** some sectors – particularly in the liberal professions (Grootens 2013, p. 221).

In principle, a company valuation using multiples is a highly simplified discounted cash flow valuation (Ernst, Schneider, Thielen 2018, p. 225), which provides the next best indication of value if no market prices are available (Ruthardt, Hachmeister 2023, p. 717 with further references), although the multiplier method is **based on a one-period orientation**, which means that random factors can override the valuation if they are not filtered out (valuation as at the reporting date) (Ernst, Schneider, Thielen 2018, p. 263; Sepelfricke 2020, p. 332).

The company valuation on the basis of future-oriented parameters represents the most plausible option for determining value, as future orientation appears to be the least controversial principle in the context of company valuation, if we disregard the fact that popular valuation errors with regard to future orientation are the lack of consideration in the planning of the company to be valued. A characteristic feature of the multiples valuation is that it does not initially focus on the present value calculation of the discounted cash flow method or the discounted earnings method in accordance with IDW S 1, but rather on the determination of values based on **observable** comparable company prices (Zwirner, Petersen 2023, p. 288).

To determine the value, the market prices collected (ultimately this is also based on a company valuation using the discounted cash flow method or the discounted earnings method in accordance with IDW S 1) of the **comparable companies** (e.g. enterprise value) are set in relation to certain company reference figures (e.g. turnover) of the comparable companies and the resulting ratios (= multiplier) are then applied to the reference figures expected for the company to be valued (e.g. turnover of the company to be valued) (Ernst, Schneider, Thielen 2018, p. 11), whereby the provisional enterprise value is calculated from the product of the company reference value, for example annual sales x multiplier; in the case of enterprise value multiples, the interest-bearing net debt capital (at the beginning of the period) of the company to be valued (already known from the weighted average cost of capital approach) must then be **deducted** and, in the case of both enterprise and equity multiples, the value of any remaining non-operating assets **must be added** (Löhnert, Böckmann 2023, p. 881).

The logic behind this is that the value of a company is derived from the prices paid on the market for comparable companies or for shares in comparable companies, the so-called comparable companies, as **similar** goods must in principle also have similar prices (Olbrich, Frey 2023, p. 476).

The prerequisite for similarity is that the companies are active in the same industry and have comparable **characteristics** in terms of growth rate, competitive position, risk structure and capital costs, then multipliers can also be determined for these companies “on a par” with the company to be valued (Löhnert, Böckmann 2023, p. 882).

In other words, the unknown enterprise value of the company to be valued is determined using multiples derived from the known market values of other companies comparable to the valuation object; the valuation using multiples is based on the assumption that similar companies or similar transactions must be valued similarly to the company or transaction to be valued (Ernst, Schneider, Thielen 2018, pp. 11, 223).

## RESEARCH METHODOLOGY

This study is the **first** of three parts and provides an introduction to company valuation using the multiples method and its characteristics, the Comparative Public Company Approach with trading multiples and the Recent Acquisition Approach with transaction and sector multiples. As the majority of companies are not listed on the stock exchange, the focus of this three-part series of analyses is on sector multiples, how these are determined and which different multiples are used in practice. A distinction is made between enterprise value and equity value multiples, to which the **second** part is dedicated. In the **third** part, the most important enterprise value and equity value multiples are explained and evaluated in detail. The role that non-operating assets play in the multiplier process is then analysed and the extent to which corporate taxes and shareholders’ personal income taxes affect the company valuation process. In addition, it will



also be shown to what extent case law recognises the multiplier method, as it can also be used effectively to minimise the inheritance or gift tax burden via § 11 (2) sentence 2 clause 1 of the Valuation Act. Finally, a critical appraisal of the multiplier method is provided.

## RESULTS

The multiplier methods are comparative methods that calculate the company value, depending on the market environment and whether these were share purchases or total acquisitions (Olbrich, Frey 2023, p. 476 f.), from the **stock market prices of comparable companies** (Comparative Public Company Approach with trading multiples) or, for unlisted companies, from realised **market prices of comparable transactions** (Recent Acquisition Approach with transaction or industry multiples) (Finance November/December 2023, p. 72 f.; Finance May/June 2024, p. 72 f.; Finance November/December 2024, p. 72 f.) (Serf 2005, p. 184; Ernst, Schneider, Thielen 2018, p. 11).

The company valuation using the comparative **public company approach** is based on the market value of the comparable company, whereby a listed comparable company used for the valuation is required to operate in the same industry as the company to be valued (Olbrich, Frey 2023, p. 477).

The **comparative public company approach** has its limits in the stock exchange listing, because if the company to be valued is not listed on the stock exchange, there is no market value and therefore no possibility of comparison with other possible comparable companies listed on the stock exchange.

If the company to be valued is not listed on the stock exchange, **industry multiples** are helpful. These are multiples based on empirical values from historical transactions that relate to the entire industry in which the company to be valued operates (Olbrich, Frey 2023, p. 485 with further references).

There are the **“big” industry multiples**, which are determined by *Finance* magazine, for example; the *Finance* multiples are based on market assessments by experts from mergers & acquisitions consultancies, who provide corridors for the **Earnings Before Interest and Taxes (EBIT)** and sales multiples of 16 industries (Finance November/December 2023, p. 72 f.; Finance May/June 2024, p. 72 f.; Finance November/December 2024, p. 72 f.).

In connection with the multiplier method, there is a pronounced variety of applications with regard to both the derivation of the multipliers and the reference values to be applied, which inevitably leads to a certain range of company values (Löhnert, Böckmann 2023, p. 881).

Ruhnke lists other common industry-related multipliers below, with regional differences, customer structure and employee qualifications, for example, being responsible for the choice of a value within the range (Ruhnke 2002, p. 797).

Table 1. Industry-related multipliers for determining company value

Industry/sector	Annual multiplier (bandwidth)		
	Profit after tax (EAT)	Earnings before interest and taxes (EBIT)	Turnover
<b>Production</b>			
Building trade	02,00 – 05,00	04,00 – 11,00	0,10 – 0,40
Chemistry	07,00 – 10,00	06,00 – 11,00	0,40 – 0,72
Mechanical engineering	04,00 – 08,00	05,00 – 06,50	0,15 – 0,35
Furniture production	06,00 – 08,00	Ø	0,06 – 0,32
Pharmaceuticals	10,00 – 12,00	04,00 – 06,00	0,42 – 0,76
<b>Trade</b>			
Computer trade	04,00 – 09,00	03,00 – 10,00	0,06 – 0,25
Food trade	04,00 – 06,00	03,00 – 10,00	0,08 – 0,52
Furniture trade	04,00 – 06,00	03,00 – 10,00	0,12 – 0,36
<b>Service</b>			
Software houses	07,00 – 10,00	Ø	0,20 – 0,50
Forwarding companies	03,00 – 06,00	Ø	0,05 – 0,25

Then there are the “**small**” **industry multipliers**, which are used in Germany, for example, to value small companies and freelance practices (doctors, pharmacies (Behringer 2013, p. 228), lawyers, tax consultants, auditors and so on) (Olbrich, Frey 2023, p. 485 with further references); here, too, a turnover or profit figure is multiplied by a multiplier (Löhnert, Böckmann 2023, p. 881). The multipliers are based on industry-specific experience rates of the German Medical Association, German Bar Association, German Chamber of Tax Consultants or the IDW (Ernst, Schneider, Thielen 2018, p. 11).

The methodology of industry multiples **does not** differ conceptually from the method described above

(Löhnert, Böckmann 2023, p. 887); it also assumes that the business value can be derived on the basis of comparable companies with the advantage that the valuer does not need to do any preliminary work to determine the multiplier when using industry multiples (Olbrich, Frey 2023, p. 485 with further references).

The valuation of small companies or freelance practices using industry-specific turnover multiples, for example, has the advantage that turnover and existing assets are usually relatively undisputed and can be clearly determined and are not influenced by valuation options (motivated by commercial or tax law) and that this method is often the most cost-effective and quickest to determine for small offices or practices from a cost-benefit perspective (Ernst, Schneider, Thielen 2018, p. 10 f.).

### IMPLEMENTATION/PROCEDURE MULTIPLIER PROCEDURE

The procedure for company valuation with multiples is based on the following five steps from Löhnert, Böckmann (Löhnert, Böckmann 2023, p. 887):

Table 2. Procedure for multiplier valuation

Step 1	Step 2	Step 3	Step 4	Step 5
Company analysis	Multiplier selection	Reference selection	Multiplier calculation	Valuation
Analysing the company	Enterprise value multiples (EV)	Comparable listed companies	Collection of financial data	Calculation of the enterprise value
Adjustment of past financial data	Equity value multiples (MC)	Comparable transactions	Adjustment of financial data	Interpretation of the results
Forecast of future financial data		Use of industry multiplier		

So that comparable companies can be selected later, the status quo of the company to be valued must **first** be analysed on the basis of the financial data (e.g. annual financial statements), then the past financial data must be adjusted or corrected for extraordinary or one-off results; if the valuation is to be based on future financial years, the results must be forecast (estimated); in the **second step**, suitable multiples are selected; in principle, a distinction is made between enterprise value multiples (the numerator is the market value of the equity plus the interest-bearing net debt; One of the most frequently used enterprise value multiples is based on the reference figure EBIT or sales) and equity value multiples (the numerator is the market value of equity; One of the best-known equity value multiples is the price/earnings ratio, where the share price per share is set in relation to earnings per share). In the **third step**, a distinction is made between comparable companies within the industry (with comparable sales, earnings, size, capital structure, legal/political framework, country), This is also referred to as the Comparative Public Company Approach in the case of stock market listings or prices paid in company transactions, the so-called Recent Acquisition Approach; in the **fourth step**, the multiples of the comparable companies or transactions are determined; the data required for this can be obtained, for example, from annual financial statements published in the Federal Gazette or company register (Ernst, Schneider, Thielen 2018, p. 248 f.), annual and interim reports, share analyses with corresponding earnings estimates can be used when focusing on future results, and information on transactions can be obtained from press research or special databases, for example; in order to minimise the influence of “comparable company outliers”, it is advisable to use a median calculation instead of an average multiple when calculating multiples, or by referring to industry multiples that skip the third and fourth steps; in the **fifth step**, the results are determined, i.e. the multiples obtained are applied to the reference value of the company to be valued, the product represents the enterprise value (in the case of equity multiples, the enterprise value is calculated directly; in the case of enterprise value multiples, the

interest-bearing net debt capital on the valuation date must be deducted and the value of any non-operating assets must be added to both the enterprise valuation with enterprise and equity multiples) (Löhnert, Böckmann 2023, pp. 881, 887 ff.).

### TRAINING OF MULTIPLIERS

Formulaic mapping of enterprise value and equity value multiples (Ernst, Schneider, Thielen 2018, pp. 224, 228):

**Enterprise value multipliers (EV):** (1)

$$\frac{\text{Enterprise value of comparable company } (EV_{comp})}{\text{Reference figure of comparable company (Turnover, EBIT)}} = \text{Multiplier}_V \quad (1)$$

$$\text{Reference figure of subject company (Turnover, EBIT)} \times \text{Multiplier}_V = EV_{comp} \quad (2)$$

$$Equity_{adj} = EV_{comp} - \text{Net Debt}_{comp} + \text{Non - operating Assets}_{after tax} \quad (3)$$

**Equity-Value-Multiplikatoren (MC):** (4)

$$\frac{\text{Equity value of comparable company } (EQ_{comp})}{\text{Reference figure of comparable company (Net income)}} = \text{Multiplier}_V \quad (4)$$

$$\text{Reference figure of subject company (Net income)} \times \text{Multiplier}_V = EQ_{comp} \quad (5)$$

$$Equity_{adj} = EQ_{comp} + \text{Non - operating Assets}_{after tax} \quad (6)$$

*Multiplier<sub>V</sub>*

Multiplier for comparable companies

*EV<sub>comp</sub>*

Market value of total capital (= equity + debt)

*Net Debt<sub>comp</sub>*

Market value of interest-bearing net debt

*Non – operating Assets<sub>after tax</sub>*

Liquidation value or present value of the expected liquidation proceeds from the sale of non-operating assets **after** corporate taxes (corporation tax plus solidarity surcharge + trade tax) **and** personal income taxes of the shareholders (income tax plus solidarity surcharge)

*Equity<sub>adj</sub>*

Market value of equity **including** the value of non-operating assets (= enterprise value)

*EQ<sub>comp</sub>*

Market value of equity **excluding** the value of non-operating assets



The multiplier method is essentially based on the logic of a simple rule of three, i.e. a certain ratio of the comparable company (value/reference value) expressed by the multiplier is multiplicatively linked to the corresponding reference value of the company to be valued and thus transferred to it (Olbrich, Frey 2023, p. 479 f.).

Key figures from the balance sheet, the income statement, the cash flow statement or other key figures, such as product quantity-related multipliers (order quantity of goods) (Bysikiewicz, Seebeck, Zwirner 2023, p. 390 with further references) of the company can serve as reference figures) of the company, it is important that both components – value and reference figure – are meaningfully **related** to each other, the concept of profit in particular is “blurred”, turnover is a figure that comes before expenses or, if applicable, before accounting policy measures, the formation of multipliers is based on the basic assumption that there is a linear relationship between the company value and the reference figure used, certain assumptions are therefore made when selecting the reference value, namely that comparable relationships exist between the company to be valued and all comparable companies with regard to all factors that are not included in the reference value, whereby the multiples are all static in their approach, i.e. the valuation is based on the reference value of a specific (current or representative) year (Ernst, Schneider, Thielen 2018, p. 225).

In addition to the financial benchmarks, non-financial or operational benchmarks can also be used if this seems plausible in light of the industry in which the company operates or if the company has not yet generated any profits, for example the number of customers of the peer company or the number of website visitors per day (Olbrich, Frey 2023, p. 479).

## CONCLUSION

This study on company valuation using the multiplier method has produced the following four results:

1. Multiplier methods are often used in practice as company valuation methods because they are **easy** to handle and quickly produce a company value.
2. If the multiplier method is recognised as a company valuation method in an industry **and** is typical for the industry, it can even be used to minimise the company value and the inheritance or gift tax burden via § 11 (2) sentence 2, clause 1 of the Valuation Act.
3. Ultimately, it does not matter whether the unknown enterprise value is determined from the stock market prices of comparable companies (Comparative Public Company Approach with trading multiples) or, for unlisted companies, from the realised market prices of comparable transactions (Recent Acquisition Approach with transaction or industry multiples), because at some point **some-one** has to determine the numerator (enterprise value of the comparable company) of the multiple for the comparable company using the significantly more complex discounted cash flow method or the discounted earnings method in accordance with IDW S 1.
4. Only then can the unknown enterprise value of the company to be valued be determined using the multiplier for the comparable company **and** the multiplier method becomes an easy-to-use procedure.

## NOTES

1. IDW S 1 is a valuation standard published by the Institut der Wirtschaftsprüfer in Deutschland e.V. (IDW), the Institute of Public Auditors in Germany. It provides principles for conducting company valuations in a consistent and standardized manner.
2. BewG is an abbreviation of Bewertungsgesetz in German, which means Valuation Act.

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## ОЦЕНКА НА ДРУЖЕСТВА ПО МЕТОДА НА МУЛТИПЛИКАТОРА В НАСЛЕДСТВЕНОТО ПРАВО НА ГЕРМАНИЯ – ЧАСТ I/III

**Резюме:** Настоящото проучване относно оценката на дружества чрез сравнителния или мултипликаторния метод е първата от общо три части. Поради популярността му в практиката германското наследствено право „трябваше“ да допусне мултипликаторния метод като метод за оценка на бизнеса, ако той е признат и обичаен в отрасъла. Неизвестната стойност на

предприятието, което се оценява, се определя чрез мултипликатори, изведени от известните пазарни стойности на други предприятия, сравними с обекта на оценката (Ernst, Schneider, Thielen 2018, pp. 11, 223). След това стойността на предприятието се определя или от борсовите цени на сравними предприятия (сравнителен подход за публични дружества с търговски мултипликатори), или за некотирани дружества – от реализираните пазарни цени на сравними сделки (подход на скорошно придобиване с трансакционни или отраслови мултипликатори) (Serf 2005, p. 184; Ernst, Schneider, Thielen 2018, p. 11). Процедурата за определяне на мултипликаторите е представена в пет стъпки. Прави се основно разграничение между множители на стойността на предприятието и множители на стойността на собствения капитал (Löhnert, Böckmann 2023, pp. 881, 887 ff.). Представена е формулна илюстрация на множителите на стойността на предприятието и множителите на стойността на собствения капитал.

**Ключови думи:** *подход на съпоставими публични дружества; закон за данъка върху наследствата; метод на множителите; подход на скорошни придобивания; оценка на дружества*

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## ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES

### DUAL EMPLOYEE CONSEQUENCES OF AMBIDEXTROUS LEADERSHIP

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**Abstract:** *The aim of this research is to shed light on employee dual (i.e., positive and negative) consequences of ambidextrous leadership, a leadership style that is highly relevant in today's business environment (Kafetzopoulos, 2022). Until now, research has regarded ambidextrous leadership as a purely positive phenomenon for employees and has predominantly examined its impact on their innovative behaviors. This study looks at both positive and negative employee consequences and incorporates essential behavioral employee variables. Employees (N = 148) from various industrial sectors completed an online survey. Data was analyzed thorough hierarchical regression analyses and PROCESS macro bootstrapping methods. Results partly provided support for the proposed hypotheses. There was evidence for several positive employee consequences (reduced role stress and subsequently reduced CWB, increased affective commitment, increased OCB). Against the initial reasoning, there was no indication that ambidextrous leadership is detrimental for employees and their work behaviors.*

**Keywords:** *Ambidextrous Leadership; Opening and Closing Leader Behaviors; Employee Consequences*

## INTRODUCTION

### Ambidextrous Leadership

Disruptive technological changes, market volatility, and the acceleration of global competition navigate today's business environment (Kraft, 2018; Wang et al., 2022; Zarb et al., 2017). To survive, organizations must operate in a way that fits this complex and rapidly changing business environment. They must foster innovation and flexibility while at the same time focusing on efficiency and stability (Kraft, 2018). In response to this new challenge, ambidextrous leadership was introduced (Rosing et al., 2011). It encompasses a leader's engagement in two distinctive, yet complementary leadership activities, namely opening and closing leader behaviors (Rosing et al., 2011; Zacher & Wilden, 2014).

Opening leader behaviors refer to leader behaviors that increase the variability of employees' behaviors and result in their exploration activities (e.g., experimentation, discovery, risk taking; Kraft, 2018; Rosing et al., 2011; Rosing & Zacher, 2023). In contrast, closing leader behaviors relate to leader behaviors that decrease the variability of employees' behaviors and initiate their exploitation activities (e.g., focus on control, standardization, corrective actions, routines; Kafetzopoulos, 2022; Rosing et al., 2011; Zacher & Rosing, 2015). An ambidextrous leader flexibly switches between both leader behaviors dependent on the situation (Rosing et al., 2011).

### Research Gap and Aim

Research on ambidextrous leadership has mainly focused on innovation outcomes with the prevailing assumption that ambidextrous leadership is beneficial for employees' innovative performance (e.g., Zacher & Rosing, 2015; Zacher & Wilden, 2014). This perspective is insufficient. First, it implies that ambidextrous leadership is exclusively positive for employees. Second, the focus on employees' innovative performance as the predominant outcome variable of ambidextrous leadership has led to a neglect of other important employee performance dimensions. One study I conducted as part of my doctoral dissertation investigated employee dual (i.e., positive and negative) consequences resulting from ambidextrous leadership. In addition, two important performance variables (organizational citizenship behavior (OCB); counterproductive work behavior (CWB)) were considered. The study also integrated several moderator variables and supplementary insights. For this publication, only the main findings are presented. For a comprehensive theoretical and empirical view, refer to my dissertation.



### Positive-Consequences Model

Self-determination theory proposed that all individuals have three universal psychological needs, namely autonomy, competence, and relatedness (Ryan & Deci, 2000). The author suggests that opening leader behaviors fulfill employees' need for autonomy as the leader increases employees' behavioral variability (i.e., exploration; Rosing et al., 2011) and grants employees with ownership of their behaviors (Shao et al., 2019). Closing leader behaviors, on the other hand, fulfill employees' need for competence as they decrease employees' behavioral variability and allow employees to operate within routines and repetitive tasks, where they feel particularly efficient and competent (Shao et al., 2019; Zacher & Rosing, 2015). There is empirical support that psychological need fulfillment in turn increases employees' (affective) commitment (e.g., Mathieu & Zajac, 1990; Stan and Virgă, 2021). Based on this, the author hypothesizes:

*Hypothesis 1.* Ambidextrous leadership is positively related to employee affective commitment.

Employees with high affective commitment feel emotionally attached to their organization (Meyer & Allen, 1984; Meyer et al., 1993). Therefore, it lies in their sincerest interest to do what they possibly can to help their organization (Meyer et al., 1993; Yousef, 2000). Moreover, as employees with high affective commitment feel favorably treated by their organization (Meyer & Allen, 1984), they want to reciprocate through their own positive behaviors (Morin et al., 2011; Organ, 1988), as underpinned by social exchange theory (Blau, 1964). Therefore, employees with high affective commitment are more likely to engage in OCB. There is evidence for a positive relationship between employee affective commitment and OCB (e.g., Bakhshi et al., 2011; Meyer et al., 2002; Morin et al., 2011). A replication is expected:

*Hypothesis 2.* Employee affective commitment is positively related to employee OCB.

Linking hypothesis 1 and 2, affective commitment is proposed as the underlying mechanism (see Figure 1):

*Hypothesis 3.* Ambidextrous leadership has a positive indirect effect on employee OCB via employee affective commitment.



Fig. 1. Positive-Consequences Model

### Negative-Consequences Model

The leader's engagement in both opening leader behaviors (i.e., employee exploration) and closing leader behaviors (i.e., employee exploitation) imposes cognitive challenges on employees. Exploration and exploitation require employees to utilize different ways of thinking (divergent vs. convergent thinking; Good & Michel, 2013) and follow paradoxical cognitive agendas (Keller & Weibler, 2015; Laureiro-Martínez et al., 2010). Consequently, employees are likely to experience role stress (Wang et al., 2021). Wang et al. (2021) found that ambidextrous leadership is positively related to employees' role ambiguity, however in a purely Chinese context. This study proposes a positive effect of ambidextrous leadership on employee role stress in a context outside of China:

*Hypothesis 4.* Ambidextrous leadership is positively related to employee role stress.

When experiencing role stress, employees need to invest a greater number of resources (e.g., attention, focus, time, energy) to make sense of situations marked by complex information intake, cognitive confusion, contradictory expectations, and behavioral difficulties (Zhao et al., 2018). Based on conservation of resources theory (Hobfoll, 1988, 1989), employees are thus more likely to engage in CWB to save and restore their resources. First, are no longer able to invest an adequate number of resources (e.g., time, self-discipline, energy) to control their behaviors. Second, CWB may maladaptively help employees to attain new resources (e.g., sense of control; Zhao et al., 2018). Research has found positive associations between

various job stressors and employees' CWB engagement (e.g., Fox et al., 2001; Penney & Spector, 2005). Thus, it is hypothesized:

*Hypothesis 5.* Employee role stress is positively related to employee CWB.

Linking hypothesis 4 and 5, role stress is regarded as the underlying mechanism (see Figure 2):

*Hypothesis 6.* Ambidextrous leadership has a positive indirect effect on employee CWB via employee role stress.

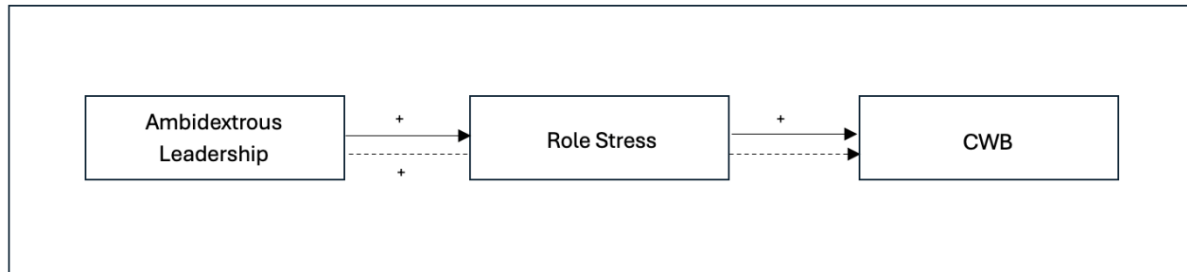


Fig. 2. Negative-Consequences Model

## RESEARCH METHODOLOGY

### Procedure and Sample

SoSci Survey was used to distribute the survey (Leiner, 2019). Participants were recruited from the researcher's professional and private networks (convenience sampling) and via SurveySwap. The participation requirements included a minimum age of 18, a good grasp of written English, not being self-employed and having a supervisor above them. The final sample comprised  $N = 148$  participants. A prevailing part of participants (73.6%) was younger than 40 years and more than half of the participants (55.4%) were female, compared to 43.2% male participants (rest third gender/non-binary, or preferred not to say). Participants were employed in various industries, such as technology (16.9%), healthcare (16.9%), education (14.9%), finance (12.8%), and manufacturing (10.8%). Most participants have been employed in their current organization for up to four years (62.2%) and a quarter of participants (25.0%) was employed in organizations with more than 1,000 employees.

### Measures

For ambidextrous leadership, the researcher used two 7-item scales (opening and closing leader behaviors) based on Rosing et al.'s (2011) classical conceptualization of ambidextrous leadership. Participants indicated their agreement on a 5-point Likert scale ranging from 1 ("not at all") to 5 ("frequently, if not always"). Sample items were "My leader allows different ways of accomplishing a task" (opening leader behavior) and "My leader controls adherence to rules" (closing leader behavior). Cronbach's alpha for the scales was .89 and .85. When testing the hypotheses, the multiplication term of both scales was used (Rosing & Zacher, 2023; Wang et al., 2021).

For affective commitment, the 6-item scale developed by Meyer et al. (1993) was adopted. Participants indicated their agreement on a 7-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). A sample item was "This organization has a great deal of personal meaning for me." Cronbach's alpha was .85. For role stress, the 14-item scale developed by Rizzo et al. (1970) was used. Participants rated their agreement on a 6-point Likert scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"). A sample item was "At work, I know exactly what is expected of me (R)." Cronbach's alpha was .83.

For OCB, the 13-item scale developed by Williams and Anderson (1991) was used. A sample item was "I adhere to informal rules devised to maintain order." Cronbach's alpha was .70. For CWB, the 19-item scale from Bennett and Robinson (2000) was utilized. A sample item was "I acted rudely toward someone at work." Cronbach's alpha was .92. For both OCB and CWB, participants rated their agreement on a 5-point Likert scale ranging from 1 ("never") to 7 ("daily"). Control variables were age, gender, and industry.

## RESULTS

All statistical analyses were performed in IBM SPSS Statistics (version 30.0) and both models were

tested subsequently. To test the direct effects (Hypothesis 1, 2, 4, 5), hierarchical regression analyses were conducted. In step one, the control variables were entered in the model. Then, in step two, the variable of interest was added and examined whether significantly more variance of the dependent variable was explained. Further, the indirect effects (Hypothesis 3, 6) were tested by employing PROCESS macro bootstrapping methods (10,000 samples) for SPSS (Hayes, 2018). Means, standard deviations, and correlation coefficients of all study variables are displayed in Table 1.

Table 1. Means, Standard Deviations, and Correlations for Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3
1. AL	4.13		-		
2. AC	1.36		.30***	-	
3. OCB	0.45		.21**	.21**	-
1. AL	4.13		-		
2. RS	0.70		-.36***	-	
3. CWB	0.94		-.14	.25**	-

Note. *N* = 148. AL = ambidextrous leadership. AC = affective commitment. RS = role stress.

The upper section depicts the positive, the lower the negative consequence model.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001. (two-tailed).

### Positive-Consequences Model

For Hypothesis 1, the final model (step 2) was significant with  $F(4, 143) = 7.67, p < .001, R^2 = .18$ . Table 2 yields the results. Ambidextrous leadership significantly predicted employee affective commitment,  $B = 0.11, p < .001$ . Hence, Hypothesis 1 could be supported.

Table 2. Results from Hierarchical Regression Analysis Predicting Affective Commitment

	Step 1			Step 2		
	<i>B</i>	95% CI	<i>t</i>	<i>B</i>	95% CI	<i>t</i>
Constant	3.75***	[2.78; 4.72]	7.67	2.12***	[0.97; 3.28]	
Age	0.33**	[0.09; 0.57]	2.68	0.42***	[0.19; 0.65]	3.62
Gender	0.10	[-0.31; 0.52]	0.50	0.12	[-0.27; 0.51]	0.62
Industry		[-0.19; 0.05]	-1.15	-0.07	[-0.19; 0.05]	
AL				0.11***	[0.06; 0.17]	4.51
<i>R</i> <sup>2</sup>			.06			.18

$\Delta R^2$	.06	.12
$F$	3.04*	7.67***

Note.  $N = 148$ . AL = ambidextrous leadership;  $B$  = unstandardized regression coefficient; CI = confidence interval around  $B$ ;  $\Delta R^2$  = change in  $R^2$ . Standard errors ( $B$ ) in parentheses.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . (two-tailed).

For Hypothesis 2, the final model (step 2) was significant with  $F(4, 143) = 3.87, p = .005, R^2 = .10$ . Table 3 displays the results. Employee affective commitment significantly predicted employee OCB,  $B = 0.08, p = .007$ . Thus, Hypothesis 2 could be supported.

Table 3. Results from Hierarchical Regression Analysis Predicting OCB

	Step 1			Step 2		
	$B$	95% CI	$t$	$B$	95% CI	$t$
Constant	3.25***	[2.93; 3.58]	19.88	2.97***	[2.60; 3.35]	
Age	0.06	[-0.03; 0.14]	1.35	0.03	[-0.05; 0.11]	0.75
Gender	0.02	[-0.11; 0.16]	0.35	0.02	[-0.12; 0.15]	0.24
Industry	0.05*	[0.01; 0.09]	2.39	0.06**	[0.02; 0.10]	2.69
AC				0.08**	[0.02; 0.13]	2.76
$R^2$			.05			.10
$\Delta R^2$			.05			.05
$F$			2.51			3.87**

Note.  $N = 148$ . AC = affective commitment;  $B$  = unstandardized regression coefficient; CI = confidence interval around  $B$ ;  $\Delta R^2$  = change in  $R^2$ . Standard errors ( $B$ ) in parentheses.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . (two-tailed).

For Hypothesis 3, the first part of the model was significant with  $F(4, 143) = 7.67$  and  $p < .001, R^2 = .18$ . Ambidextrous leadership significantly predicted employee affective commitment,  $B = 0.11, p < .001$ . Furthermore, the second part of the model was also significant with  $F(5, 142) = 4.09$  and  $p = .002, R^2 = .13$ . However, employee affective commitment did not significantly predict employee OCB,  $B = 0.05, p = .066$ . Results did not reveal an indirect effect of ambidextrous leadership on employee OCB via employee affective commitment,  $B = 0.01, 95\% \text{ CI } [-0.01; 0.01]$ . Hypothesis 3 could not be supported. Notably, the direct effect of ambidextrous leadership on employee OCB was significant,  $B = 0.02, 95\% \text{ CI } [0.01; 0.04]$ .

### Positive-Consequences Model

For Hypothesis 4, the final model (step 2) was significant with  $F(4, 143) = 5.53, p < .001, R^2 = .13$ . Table 4 shows the results. Ambidextrous leadership significantly predicted employee role stress,  $B = -0.06,$



$p < .001$ . However, ambidextrous leadership turned out to *negatively* predict employee role stress. Hence, hypothesis 4 could not be supported.

Table 4. Results from Hierarchical Regression Analysis Predicting Role Stress

	Step 1			Step 2		
	<i>B</i>	95% CI	<i>t</i>	<i>B</i>	95% CI	<i>t</i>
Constant		[2.61; 3.62]	12.12		[3.37; 4.58]	
Age	0.02	[-0.10; 0.15]	0.38	-0.03	[-0.15; 0.10]	
Gender		[-0.33; 0.11]	-0.98	-0.12	[-0.32; 0.09]	
Industry	0.01	[-0.06; 0.07]	0.19	0.01	[-0.06; 0.07]	0.16
AL					[-0.09; -0.03]	
$R^2$			.01			.13
$\Delta R^2$			.01			.12
$F$			0.42			

Note.  $N = 148$ . AL = ambidextrous leadership;  $B$  = unstandardized regression coefficient; CI = confidence interval around  $B$ ;  $\Delta R^2$  = change in  $R^2$ . Standard errors ( $B$ ) in parentheses.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . (two-tailed).

For Hypothesis 5, the final model (step 2) was significant with  $F(4, 143) = 4.09, p = .004, R^2 = .10$ . Table 5 yields the results. Employee role stress significantly predicted employee CWB,  $B = 0.31, p = .005$ . Thus, Hypothesis 5 could be supported.

Table 5. Results from Hierarchical Regression Analysis Predicting CWB

	Step 1			Step 2		
	<i>B</i>	95% CI	<i>t</i>	<i>B</i>	95% CI	<i>t</i>
Constant		[1.88; 3.22]	7.51		[0.65; 2.51]	
Age		[-0.20; 0.14]	-0.31	-0.03	[-0.20; 0.13]	
Gender		[-0.67; -0.10]	-2.63		[-0.63; -0.07]	
Industry		[-0.10; 0.08]	-0.23	-0.01	[-0.10; 0.07]	
Role stress				0.31**	[0.10; 0.52]	2.88
$R^2$			.05			.10
$\Delta R^2$			.05			.05
$F$			2.56			4.09**

Note.  $N = 148$ .  $B$  = unstandardized regression coefficient; CI = confidence interval around  $B$ ; = change in  $R^2$ . Standard errors ( $B$ ) in parentheses.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . (two-tailed).

$\Delta R^2$

For Hypothesis 6, the first part of the model was significant with  $F(4, 143) = 5.53$  and  $p < .001$ ,  $R^2 = .13$ . Ambidextrous leadership significantly predicted employee role stress,  $B = -0.06$ ,  $p < .001$ . The second part of the model was also significant with  $F(5, 142) = 3.39$  and  $p = .006$ ,  $R^2 = .11$ . Employee role stress significantly predicted employee CWB,  $B = 0.28$ ,  $p = .017$ . Results supported a significant indirect effect of ambidextrous leadership on employee CWB via employee role stress,  $B = -0.02$ , 95% CI  $[-0.03; -0.01]$ . The indirect effect turned out to be *negative*, thus not supporting hypothesis 6. Notably, the direct effect of ambidextrous leadership on employee CWM was not significant,  $B = -0.02$ , 95% CI  $[-0.05; 0.02]$ .

## CONCLUSION

The aim was to investigate employee consequences, both positive and negative, resulting from ambidextrous leadership. The empirical results strengthened the established view that ambidextrous leadership is beneficial for employees. First, the positive-consequence model revealed affective commitment and OCB (although direct, not indirect) as positive employee consequences of ambidextrous leadership. Second, against the initial assumption, ambidextrous leadership was found to *reduce* employee role stress and subsequently also result in *less* CWB. That way, the proposed negative-consequence model unexpectedly turned out as positive-consequence model. The findings contribute to the literature on ambidextrous leadership by adding several positive employee outcomes (see Figure 3). Practitioners such as consultants, human resources managers, and leadership development trainers can utilize these findings to underpin the importance of ambidextrous leadership.

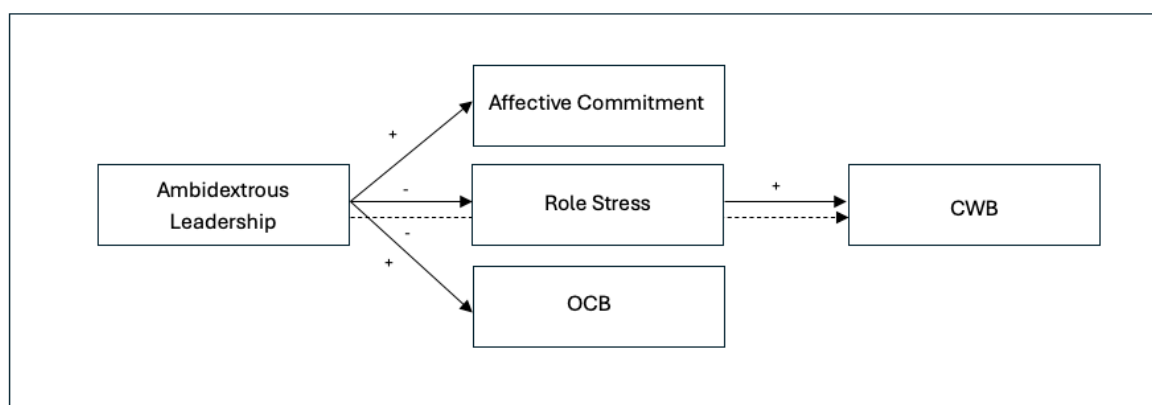


Fig. 3. Positives Employee Consequences of Ambidextrous Leadership

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## ДВОЙНИ ПОСЛЕДИЦИ ЗА СЛУЖИТЕЛИТЕ ОТ АМБИДЕКСТРАЛНОТО ЛИДЕРСТВО

**Резюме:** Целта на това проучване е да се хвърли светлина върху двойните (т.е. положителни и отрицателни) последици за служителите от амбидекстралното лидерство – лидерски стил, който

е изключително актуален в днешната бизнес среда (Kafetzopoulos, 2022). Досега изследванията разглеждаха амбидекстралното лидерство като чисто положително явление за служителите и предимно се фокусираха върху въздействието му върху тяхното иновативно поведение. Настоящото изследване разглежда както положителните, така и отрицателните последици за служителите и включва съществени поведенчески променливи на служителите. Служители ( $N = 148$ ) от различни индустриални сектори попълниха онлайн проучване. Данните бяха анализирани чрез задълбочени йерархични регресионни анализи и макрометоди на PROCESS bootstrapping. Резултатите частично подкрепиха предложените хипотези. Налице са доказателства за няколко положителни последици за служителите (намаляване на ролевия стрес и впоследствие намаляване на CWB, увеличаване на афективната ангажираност, увеличаване на ОСВ). Противно на първоначалните разсъждения, нямаше индикации, че амбидекстралното лидерство е вредно за служителите и тяхното трудово поведение.

**Ключови думи:** амбидекстрално лидерство; отварящо и затварящо лидерско поведение; последици за служителите

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**ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ**  
**PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES**

**ANALYSIS OF THE SUITABILITY OF RELEVANT FRAMEWORKS  
FOR DIGITALIZATION IN CONNECTION WITH CYBER-PHYSICAL SYSTEMS**

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**Abstract:** *Digitalization is the key drive of innovation and growth for companies and economies. The focus is on efficiency gains, flexibilisation and better use of resources. Digitalization is increasingly associated with cyber-physical systems, and this represents a considerable challenge in terms of implementation. Studies indicate that the implementation success of this type of project is stagnating, which leads to the conclusion that new implementation approaches are needed. The following questions therefore need to be researched:*

- *Which fundamental, implementation-relevant dimensions need to be considered in digitalization projects with cyber-physical systems?*
- *Which frameworks exist to support the implementation of digitalization projects with cyber-physical systems, which dimensions do they offer and how high is the coverage with the required, implementation-relevant dimensions?*

*In the first step, all dimensions were identified that are related to digitalization in a business context. In the second step, digitalisation-related frameworks were analysed and evaluated in the third step. "Systems Engineering GfSE/INCOSE – ISO/IEC 15288" emerged as a convincing framework.*

*This theoretical research forms the basis for subsequent empirical research to create a framework for implementation recommendations for digitalization with cyber-physical systems.*

**Keywords:** *Digitalization; Cyber-physical Systems; Implementation; Frameworks*

## **INTRODUCTION**

Digitalization and digital transformation is a growth driver in the economy. According to a survey, the business benefits and the goals and expectations that companies associate with digitalization are improvements in strategic competitive position, fulfilment of customer wishes, redesign of work processes, redesign/redefinition of business models, stronger customer loyalty, cost savings and enabling new forms of collaboration (cf. Wintermann et al. 2020, p. 56).

Digitization basically has two perspectives. Firstly, the purely technical view of how analogue signals are converted and stored into machine-readable data and information as well as data processing and transmission processes with the help of control devices, computers, software and more (cf. Müller-Brehm/Otto/Puntschuh 2020, p. 4). The second view of digitalization concerns how we as individuals and society deal with digitalization in our everyday lives. In other words, the effectiveness of the interaction with and through people, the corresponding technologies and the design and use of applications (cf. Müller-Brehm/Otto/Puntschuh 2020, p. 5). In addition, digitalization is increasingly being linked to cyber-physical systems. Cyber-physical systems (CPS) are systems in which information and software technology is connected to mechanical components, with data transfer and exchange as well as monitoring and control taking place in real time via a network such as the internet. Key components are mobile and movable equipment, devices and machines (including robots), embedded systems and networked objects (Internet of Things) (cf. Bendel 2021). This poses a challenge in terms of implementation.

When it comes to the success rate of digitalization projects, studies have shown that, depending on the question, over 40% (cf. NTT DATA Business Solutions 2024, p. 48) of digital transformation objectives are not achieved and up to 70% of digitalization projects fail (cf. Forth/Reichert/de Laubier/Chakraborty 2020).

## RESEARCH METHODOLOGY

The following questions therefore need to be explored:

- Which fundamental, implementation-relevant dimensions need to be considered in digitalization projects with cyber-physical systems?
- Which frameworks exist to support the implementation of digitalization projects with cyber-physical systems, which dimensions do they offer and how high is the coverage with the required, implementation-relevant dimensions?

Theoretical research will be carried out to answer this question. Based on existing specialized literature, relevant facts will be developed using methods of concentric circles and keyword searches.

Only the part of the theoretical research that forms the basis for the subsequent empirical research is presented in this publication.

## RESULTS

### Identification of dimensions from the business context:

The first step was therefore to identify all relevant dimensions that come into contact with digitalization in a business context.

Here is an excerpt of identified dimensions:

In principle, all concepts of *business economics* must be considered during digitalization. Here, the focus is not only on the current, operational business, but also on the future. Strategic, planning and design issues are also part of business economics (cf. Hofmann A. 2016). *Innovation management* is also a core activity. This involves the design of new products, new processes in the sense of a technical procedure, new services and the design of a combination of the aforementioned. In addition, these approaches are supported by the use, provision and further development of technology-oriented approaches (cf. Möhrle 2018). *Organizational management* is also an instrument and core element of business administration for corporate management and serves to achieve corporate goals and their value creation (cf. Bach et al. 2017, p. 1). A wide variety of *project management* methods are available for the operational implementation of digital projects. The field of tension of business-IT alignment encompasses organization, business processes and IT (cf. Masak 2006, p. 10). *Interoperability* is another specific feature of digitalization. Interoperability refers to the ability of a system to work together with other systems (cf. Johner 2023). *Digital leadership* is about specific knowledge and the associated expertise relating to digital value creation. In addition to technical and social skills, digital skills will also be essential in the future (cf. Kollmann 2022, p. 10). The *skills of social competence* include communication skills, conflict behaviour, empathy, cooperation skills, assertiveness, flexibility of action and self-control (cf. Kanning 2002). Due to the lack of emphasis, many players do not realize that the digital transformation requires compliance with many *legal regulations, provisions and standards*, especially in connection with cyber-physical systems. *Safety, security and privacy* are often equated in terms of terminology. However, they differ extensively in their meaning in terms of definition and environment as well as possible threats, risks, attack scenarios, avoidance and defence strategies (cf. Schmid/IAS 2018) and always go hand in hand with ensuring protection against undesirable behaviour. Using and coordinating the dimensions mentioned so far already gives an idea of the complexity of digitalization. *Complexity* generally defines the totality of all interdependent features and elements that are part of a diverse but holistic relationship structure (system). Complexity is understood to mean the variety of possible behaviours of the elements and the variability of the courses of action (cf. Feess 2018).

### Identification of relevant frameworks

The second step was to examine frameworks that are related to digitalisation or cyber-physical systems to identify further dimensions. Enterprise architectures (EA) are a special type of framework for optimizing a company regarding the alignment of digital approaches, from design to implementation and integration of digitalization. EA frameworks are defined as a logical structure for classifying and organizing complex information. Enterprise architecture frameworks help to implement the business strategy, considering IT strategies, technology deployment and business requirements across all the company's specialist departments. The presentation on the developments and interrelationships of EAFs (see Matthes 2011, p.

56) was used as a basis and supplemented with further developments.

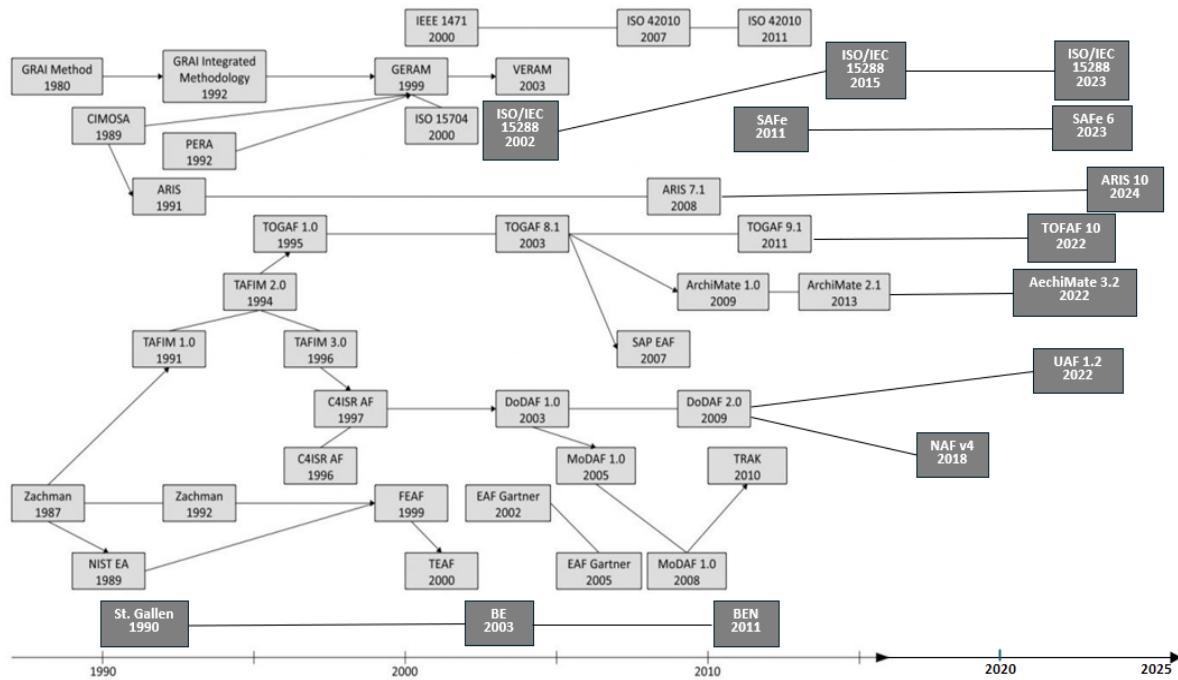


Fig. 1. Development of EA frameworks (own illustration based on Matthes 2011)

The presentation does not claim to be exhaustive. Each framework focuses on specific aspects of the transformation and uses different methods to achieve its goal. Trend-setting, newer or very different EA frameworks (FW) were used for the analysis:

**FW 1** = St. Gallen Business Engineering Framework / Navigator BEN

Business engineering is understood as “business engineering”, i.e. the approach provides models and methods for the development mode “change the business”. Fundamental changes are often triggered by technological innovations, primarily in the field of information and communication technology (see Österle/Winter/Brenner 2011, p. 2).

**FW 2** = Systems Engineering GfSE/INCOSE – ISO/IEC 15288

Systems Engineering (SE) is an interdisciplinary team approach to the realization of complex systems. SE focusses on product development. The aim is to define, implement and verify customer requirements and functionalities as early as possible in the development process to obtain registration, i.e. product approval for the market from the relevant authorities (cf. GfSE 2017, p. 2).

**FW 3**= Scaled Agile Framework (SAFe)

The scaling agile framework, an agile concept for the methodical organization of software development. As a framework, SAFe provides methodological knowledge in the form of a documented process model and tried-and-tested process patterns (cf. Block 2023, p. 60).

**FW 4** = Digital Transformation Management Frameworks DTMF

DTM framework is representative of one of many that are created and promoted by consulting firms. This takes a holistic perspective and places digital innovations at the centre. Transformation strategies are used to consider ideas for new products and processes as well as the adaptation of structures, systems and cultures in the context of the financial framework and technological possibilities (cf. Hess 2022, p. 6).

**FW 5** = Zachman framework

One of the oldest representatives of enterprise architecture frameworks is the Zachman Framework.

Zachman recognized that information systems entailed a complexity that had to be mapped through clear classifications and interfaces, which should be represented by a kind of architecture of the IT components. The approach is that the questions “what”, “how”, “when”, “who”, “where” and “why” must be answered (see Schweda C. 2024, p. 243).

**FW 6 = TOGAF (The Open Group Architecture Framework)**

The core task of “TOGAF” is to shape transformation. The core element of TOGAF is the Architecture Development Method (ADM), a model consisting of 10 phases for architecture planning, architecture development, architecture implementation and, if necessary, adjustments (cf. The Open Group 2022, p. 17).

**FW 7 = HISA Health Information System Architecture – ISO 12967** and **FW 8 = WHO Guideline** are industry-specific frameworks from the healthcare sector and are representative of regulated domains, as this was the subject of the research.

**Identification and evaluation of dimensions from relevant frameworks:**

In the third step, a matrix was created with all the dimensions identified from the previous analysis of the respective fields of action considered in the framework. These fields of action were given the generic term dimensions. A total of 36 dimensions were identified in the context of digitalization with cyber-physical systems and clustered into the following perspectives:

Table 1. Comparison and evaluation of different frameworks

		Dimension	FW to be evaluated							
Business Perspective		Strategy / business model								
		Business economics								
		Organizational management								
		Innovation management								
		Process management								
		Contractual arrangements								
		Value chain/ecosystem								
		System/product concept								
		Purchasing, production, handover, operation								
		Resource management								
		Knowledge management								
		Information management								
		Transformation options/areas								
		Evaluation of the benefit								
		Business IT alignment								
Technical Perspective.		Workflow management								
		Technologies as enablers								
		Information systems								
		IT infrastructure								
		Interoperability								
		Safety, security and privacy								
		System of Systems Challenge								
		Operational system/product development								
		System development regulations								



Project-		Project management								
		Portfolio management								
		Stakeholder Needs								
		Risk assessment								
		Decision management								
		Complexity reduction								
Human		Digital Leadership								
		People, soft skills & social competences								
		Change management								
		Interface communication								
		Industry-specific regulations								
		Industry specifics								

Strong focus was marked with “x”, included in the framework marked with “!”.

ISO/IEC 15288 Systems Engineering GfSE/INCOSE covers 26 dimensions that offer methods and approaches for implementing digitalization with cyber-physical systems. In systems engineering, the focus is very much on system/product development, i.e. on the necessary technical issues. All required activities and their dependencies and sequences are explained in an application-oriented manner. This promotes improved communication and more efficient collaboration, as well as an improved understanding of the system.

FW 3 = SAFe, FW 4 = DTMF and FW 6 = TOGAF are rated the same and have a strong business management focus. Nevertheless, they differ greatly in terms of details and approaches.

SAFe focuses on agile methodologies and the organizational planning and implementation of software-driven projects. SAFe combines proven frameworks such as Scrum, Kanban, DevOps and Lean Start-up, promotes collaboration between many teams by defining roles and hierarchy levels and focuses on accelerated time-to-market and customer focus.

The DTM framework strongly emphasizes the impact of corporate culture and therefore focuses on involving every employee in change management. Another focus is the development of a clear strategy for digital transformation.

The focus of TOGAF is on the modular approach including roles, result types and practical tips for planning, developing and deploying enterprise architectures, as well as focusing on digital transformation and also taking agility into account.

If the results of the study are presented in relation to the dimensions covered and the clusters of business, technical, human, industry-specific and project-specific perspectives, the focus of the content can be recognized.

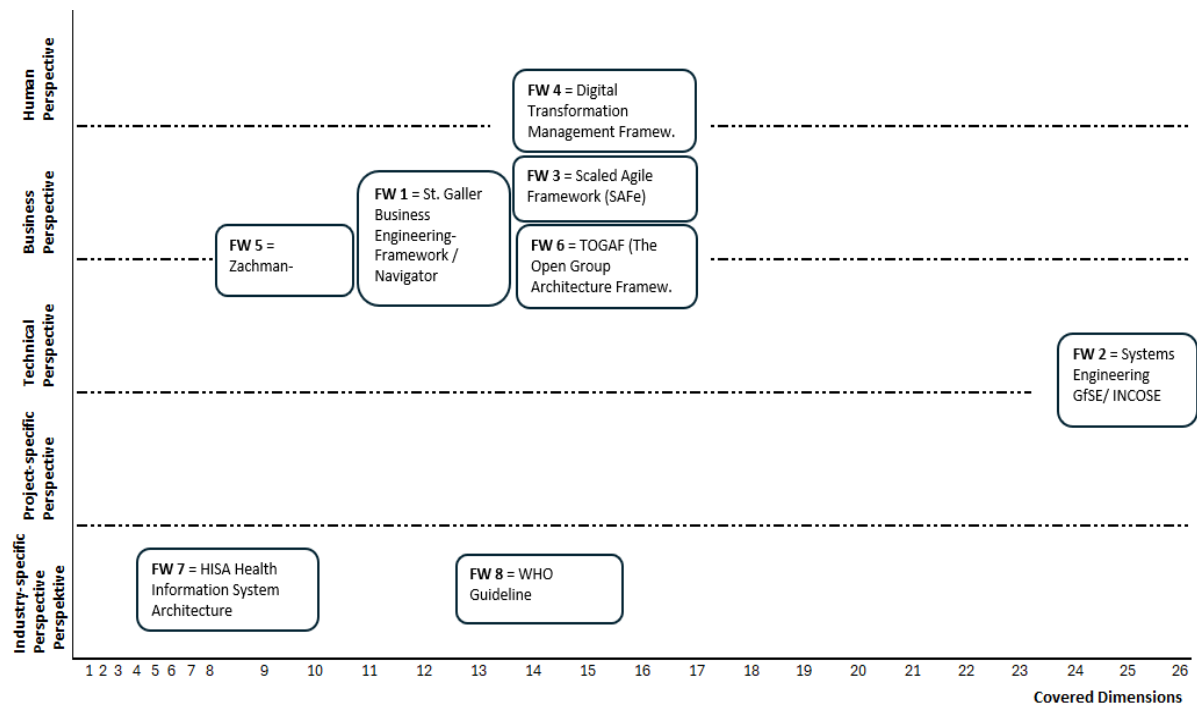


Fig. 2. Frameworks depending on the dimensions covered

## CONCLUSION

As in all analyses, there are advantages and disadvantages, strengths and weaknesses of the frameworks. The decisive factor in each case is the perspective from which the assessment is made. What all frameworks have in common is that none of them covers all the necessary fields of action for the successful implementation of a digital transformation with cyber-physical systems. These were basic findings for subsequent empirical research to generate further documented, analysable data and information. Ultimately, the aim is to create a guideline for action in the form of a framework that supports digitalization with cyber-physical systems.

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## АНАЛИЗ НА ПРИГОДНОСТТА НА СЪОТВЕТНИТЕ РАМКИ ЗА ЦИФРОВИЗАЦИЯ ВЪВ ВРЪЗКА С КИБЕРФИЗИЧНИТЕ СИСТЕМИ

**Резюме:** Цифровизацията е основен двигател на иновациите и растежа на компаниите и икономиките. Фокусът е върху повишаването на ефективността, гъвкавостта и по-доброто използване на ресурсите. Цифровизацията все повече се свързва с киберфизични системи, а това представлява значително предизвикателство по отношение на внедряването. Проучванията показват, че успехът на изпълнението на този тип проекти е в застой, което води до заключението, че са необходими нови подходи за изпълнение. Поради това е необходимо да се изследват следните въпроси:

- Кои фундаментални измерения, свързани с изпълнението, трябва да се вземат предвид в проектите за цифровизация с киберфизични системи?
- Какви рамки съществуват в подкрепа на изпълнението на проекти за цифровизация с киберфизични системи, какви измерения предлагат и колко високо е покритието с необходимите свързани с изпълнението измерения

В първата стъпка бяха идентифицирани всички измерения, свързани с цифровизацията в бизнес контекст. Във втората стъпка бяха анализирани свързаните с цифровизацията рамки, които бяха оценени в третата стъпка. *Systems Engineering GfSE/INCOSE – ISO/IEC 15288* се очерта като убедителна рамка.

Това теоретично изследване формира основата за последващо емпирично изследване за създаване на рамка за препоръки за прилагане на цифровизацията с киберфизични системи.

**Ключови думи:** цифровизация; киберфизични системи; внедряване; рамки

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**ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ**  
**PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES**

**WHAT IMPACT DOES DIGITAL TRANSFORMATION HAVE ON BUSINESS PERFORMANCE?**

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<https://doi.org/10.70300/WXKM2066>

**Abstract:** *This article examines the impact of digital transformation on business success, to be more precise on the financial performance of businesses. Inspired by the countless publications on the topic of digital transformation, this article aims to critically examine the largely positive statements about the impact of digital transformation on the performance of businesses. The article is based on a comparison of commercial and academic studies. The commercial studies examined were produced by well-known consulting and IT companies. Based on the review of academic literature studies from academia where chosen and analysed. Based on the results of the academic studies, the statements in regards to digital transformation are contextualized and interpreted, to provide a better understanding of the significance of the publications. In addition, some general findings on the effectiveness of digital transformation are presented. The results of this study show that certain framework conditions shall be taken into account, when discussing potential outcomes of investments in digital transformation, in order to derive positive effects from the programs and when these effects could occur.*

**Keywords:** *Digital Transformation; Business Performance; Semantic Analyses; Financial Reports*

**INTRODUCTION**

Current significance – Numerous publications postulate that the successful implementation of digital transformation has a positive impact on business success. In a study published in 2021, Boston Consulting found that companies that successfully implemented digital transformation had 1.8 times higher profit growth rates and approximately twice as high growth rates in enterprise value than their “non-digital” competitors.

At the same time, studies and publications by McKinsey and Harvard Business Review from 2018, 2020 and 2021 show that, depending on the study, only 16 to 58% of respondents rate their company’s digital transformation as successful.

It is worth noting that smaller companies with fewer than 100 employees are 2.7 times more likely to have a successful transformation than large companies with more than 50,000 employees (Patrick Forth, 2021); (Walker, 2020) (Walker & Clemente, 2021); (Boutière, et al., 2018).

**RESEARCH METHODOLOGY**

For this paper, a comprehensive research methodology incorporating both qualitative and quantitative approaches was adopted. The methodology primarily revolves around a systematic literature review to provide a holistic understanding of AI’s applications, challenges, and societal implications.

A systematic literature review was conducted to identify and analyze (ideally) peer-reviewed studies, scholarly articles, and commercial web sources related to digital transformation. This involved defining specific research questions, establishing inclusion and exclusion criteria, and systematically searching electronic databases such as Google Scholar. The selection criteria for studies and data sources encompassed several key considerations:

**Relevance:** Studies and sources were selected based on their relevance to the research objectives and questions. The selected studies were focusing on the impact of digital maturity on financial business performance of companies. The academic studies used a similar data-based methodology.

**Credibility:** Emphasis was placed on peer-reviewed articles, reputable reports, and scholarly publications



from recognized institutions and experts in the definition of digital transformation.

Relevance: The selected studies were mainly created during the years 2018–2022 except Westermans publication from 2012.

## RESULTS

### The “commercial” view

Commercial studies are within these paper studies, created by management & IT consultancy companies. In 2012, Westerman published a major two-year study in cooperation with the consulting firm CapGemini. In this study of some 400 companies, 469 senior executives were interviewed. In addition, key financial figures from the 184 publicly traded companies were statistically analyzed. Depending on the degree of digital transformation in each company, Westermann was able to demonstrate up to 26% higher EBIT margins for companies with good transformation management (Westerman, 2012).

A 2019 study, led by Harald Proff from the consulting firm Deloitte, in collaboration with the University of Duisburg-Essen also came to positive conclusions. The study surveyed managers from 160 German companies. In order to identify industry differences within the study, the sample was expanded to include a further 785 data sets from the EU, North and South America. The seniority of the managers was described as followed “26% of respondents were at the board/CxO level, 74% were at a level below the CxO” (Proff, 2021).

The authors of the study conclude that there is a strong correlation between a company’s digital capabilities or digitization to value creation and EBIT. The authors of the study refer to this as EBIT impact. Another finding of the study is, that “a maximum profit effect of 10% is possible with digital processes and technologies, but up to 20% with digital offers and even up to 26 percent with digital business models” (Proff, 2021).

At a first glance, the surveys of companies that have only carried out a few or fragmented digital transformation projects revealed a not surprising finding. Companies that have only carried out isolated pilot projects cannot report a profit effect. Conversely, this means that there must be a critical minimum level of digitalization efforts before a profit effect occurs (Proff, 2021). The obvious explanation for this is that the benefits of digitalization can only be reaped once a complete process chain has been (successfully) digitalized. Individual digital projects, which in the worst case interrupt a process chain due to media disruptions, hardly deliver any added value. In the worst case, media disruptions can even lead to the risk of quality losses in a process.

Another study by Deloitte Consulting LLP also reports positive influences on company results. In the study, 1200 managers in the USA were surveyed. Around 51% of those surveyed stated that they belonged to the management/executive board, while a further 22% categorized themselves as vice presidents and another 27% as directors. The company sizes in terms of annual turnover covered the range from \$500 million to over \$5 billion (Gurumurthy, 2020). The key message of the study is that companies that are already successful in their digital transformation report up to 45% more sales growth and 43% higher margins (net profit margin) compared to the industry average. The consultants from Deloitte justify these high figures in the financial indicators with advantages at the cost level and in the growth area.

In the area of costs, the companies surveyed, reported significantly reduced costs for the provision of new products or services. As well as significantly reduced costs for the acquisition of new customers. The high values of the net profit margin can be correlated with the reported cost reductions. The same applies to the rates of sales growth, which are above the industry average. A correlation between increased sales figures for new products and services and overall sales growth could also be derived from the survey results. The reported higher values of customer lifetime value, i.e. the contribution margin that a customer brings in over their entire customer lifetime, also contributes to both, margins and growth (Gurumurthy, 2020).

The results presented here are exemplary for countless other studies written by management and IT consultancies. When reviewing the numerous publications from the consulting world, it is striking that many studies paint an extremely optimistic picture of the potential associated with the correct implementation of digital transformation. In addition, data collection via surveys is very often used as a method.

Only a few of the studies published by management consultancies verify the statements about the

economic potential resulting from the surveys with “hard” data, e.g. measurable financial figures from annual reports. The Westerman study mentioned at the beginning of this paper seems to be one of these exceptions.

In addition to the lack of verification of the very positive results of the surveys, another possible weakness in the methodology of these surveys should be considered. As explained in the descriptions of the three exemplary studies, in each case, responsible decision-makers (managing directors, division heads, etc.) were interviewed, who in most cases had already been working in the organization for several years at the time of the survey and were responsible for investments in digital transformation. This constellation carries the risk of cognitive dissonance.

In 1978, Leon Festinger subsumed individual perceptions such as information, needs, knowledge, and opinions as cognitive elements under this term. When two cognitive elements contradict each other and express the opposite, cognitive dissonance occurs. From this thesis, Festinger derived the model of effortful justification. In essence, it states that people cannot retrospectively evaluate a decision they have made (in which they have invested effort) as bad (Festinger, 1957).

With regard to the managers surveyed in the studies conducted by management and IT consulting firms, a critical question must be asked: Is the positive feedback in the surveys reliable? Or did the managers surveyed give overly positive answers? With the knowledge of cognitive dissonance, it can be difficult to critically evaluate one’s own decision or the support of a program in which a lot of money has been invested. Unfortunately, the questionnaires and methods used for statistical analysis in the above studies are not available for this study. Depending on how the data were collected, processed and prepared, the effects may have been taken into account and mitigated. Whether this has happened is unclear and would be the subject of a separate scientific study.

This leads to the thesis that studies by management and IT consultancies which are based purely on surveys could tend to produce too positive results.

### **The academic view**

On the other hand, there are initial studies from the academic environment that aim to use the evaluation of “hard” data to provide information on whether companies that are well advanced in their digital transformation can achieve economic advantages compared to their competitors.

In the chosen studies, public listed companies in the respective countries were selected for the examination. The annual publicly available annual reports of the selected companies were collected for the respective study period. In the study by Lai Guo and Luying Xu, additional statistical databases were also included. The annual reports were subjected to a semantic analysis. The word frequency method was used to investigate how often key terms of the digital transformation were used and how their use changed over the period under investigation.

Subsequently, the development of key financial figures based on the annual reports and the market performance of the companies was analyzed over the course of the study period. Based on the data obtained, correlation analyses and regression analyses were carried out, to assess the influence of digital maturity (and the underlying sub-areas) on the financial performance of the companies.

These (3) studies were considered:

- 1.) Digital orientation, digital maturity, and digital intensity: determinants of financial success in digital transformation settings by Mina Nasiri, Minna Saunila and Juhani Ukko
- 2.) The Effects of Digital Transformation on Firm Performance: Evidence from China’s Manufacturing Sector by Lei Guo 1 and Luying Xu
- 3.) Digital Maturity and Corporate Performance: The Case of the Baltic States by Yulia Eremina, Natalja Lace and Julija Bistrova

**Study 1:** The study by Nasiri, Saunila and Ukko “**Digital orientation, digital maturity, and digital intensity: determinants of financial success in digital transformation settings**” focuses on large companies, as the authors assume that they have the necessary financial resources to implement transformative projects at an organizational level. Three factors are examined as prerequisites for the

financial success of a company in the implementation of digital transformation.

Firstly, digital orientation; secondly, digital intensity and thirdly, digital maturity. They define digital orientation as commitment and openness to using new technologies. Here they refer to the definition of Sabai Khin und Theresa Char Fei Ho (Khin & Ho, 2019).

The authors use the term digital intensity to describe the ability of an organization to increase efficiency in its work through the use of new technologies (Westerman, et al., 2012). Due to the complexity of digital transformation, successful companies must constantly look for strategic options to achieve their corporate goals. The systematic approach and the necessary willingness of the company to continuously develop and adapt to structural changes as part of the digital transformation is referred to as digital maturity. The authors refer to the definition by Kane (Kane, et al., 2017).

The analysis included 284 companies and their official financial reports. In their study, the authors linked/compared the three dimensions mentioned above (digital orientation, digital intensity and digital maturity) and their characteristics with the net profit (net profit) and operating profit (operating result EBIT) from the financial reports for each company.

The authors concluded that digital intensity and digital orientation do not have a direct positive influence on the financial success of a company. BUT as strategic elements contribute to the level of digital maturity. The researchers were able to demonstrate a correlation between the level of digital maturity and the financial success of companies. The larger a company is, the stronger this correlation is.

The logical explanation for these results (in a nutshell) is, that neither the openness (digital orientation) to carry out digital transformation projects (which in the first step is only a declaration of intent - but not an action) nor the (possibly uncoordinated or poor, or mutually obstructive) use of digital technologies (digital intensity) provide the financial success.

Only when the focus is placed on an ongoing process to increase digital maturity, which integrates digital intensity and digital orientation, the positive effects on companies' key financial figures will arise.

**Study 1** shows a correlation between the level of digital maturity and the financial success of companies (Nasiri, et al., 2022).

### **Study 2: The Effects of Digital Transformation on Firm Performance: Evidence from China's Manufacturing Sector by Lei Guo 1 and Luying Xu**

The study examines the impact of digital transformation on the two dimensions of operational performance (cost reduction and efficiency improvement) and financial performance of companies. The study used data from 2254 manufacturing companies listed in the A-share market from 2010–2020 in China.

The researchers assume a U-shaped relationship between digital transformation and the impact on financial performance. This means that at the beginning of the digital transformation efforts and investment costs have a negative impact; after a certain point in time, a bottoming out can be seen before the positive effect of the digital transformation has a positive impact on the key financial figures. The study aims to compare the benefits of digital transformation with the costs. Furthermore, the authors argue that digital transformation has a greater and longer-lasting impact on operational performance than on financial results.

In the study, return on assets (ROA) is used as a proxy variable for financial performance, i.e. a company's annual net profit is divided by its total assets. Digital Intensity is the independent variable in this study. Digital Transformation Intensity shows the use / deployment (how much and how intense) of digital technology.

As in the previous study, digital intensity is determined by analyzing the text of the respective annual reports. The word frequency method was used. Brynjolfsson and Hitt [11] (Brynjolfsson, 1996, cited from Guo & Xu, 2021) found that IT often has a strong impact on business performance two to three years after its introduction. Since digital transformation affects operational and financial performance differently, the lag period is set to one year for operational performance and three years for financial performance. The sample periods of the independent variables were 2010–2019 and 2010–2017 respectively.

**Study 2** shows a positive correlation between investments in digital transformation and a company's operational performance. The effect is seen as consistently positive up to the fifth year after the start of the activity.

**Study 2** confirms the impact of digital transformation on a company's financial results. The positive impact begins with a time lag from the second year and disappears by the fifth year (Guo & Xu, 2021).

### **Study 3: Digital Maturity and Corporate Performance: The Case of the Baltic States by Yulia Eremina, Natalja Lace and Julija Bistrova**

The research looks at listed companies in the Baltic States (Nasdaq Baltic main list). In a first step, a linguistic analysis of the annual reports of the years 2013–2018 was carried out in which the companies explain the progress of their digital transformation projects to their shareholders – in the broadest sense, what their digital maturity level is. The analysis was carried out with the help of NVIVO software.

The sample consisted of 28 companies, 13 from Estonia, 11 from Lithuania and 4 from Latvia. I

In a second step, the financial results of the companies were analyzed. The key figures were analyzed: Sales Growth; EPS growth; ROE (return earned on equity capital); Gross profit / assets; Gross profit margin; Operating Profit Margin; Net profit margin; TSR (Total shareholders Return) – set in correlation to digital maturity. The median of the correlations of the above-mentioned individual values to digital maturity shows a heterogeneous picture:

- Sales Growth / RoE / Gross Profit / Assets - *show a positive correlation*
- Gross Profit Margin / Operating Profit Margin / Net Profit Margin – *are around zero, i.e. a correlation cannot be proven*
- EPS Growth and TSR – *show a negative correlation*

The positive correlations in sales growth could be explained by looking at the period in which the analyzed data was generated (2013 to 2017) and placing this in the context of the focus topics that were implemented in IT projects during this period. Online sales, customer relationship management and online marketing have significantly optimized the sales economy at that time.

The neutral and negative correlations in the key financial figures could be due to the fact that the digital transformation was not yet sufficiently advanced at the time of data collection to raise the companies surveyed to a higher level of digital maturity overall. However, this is offset by the investment costs for the digital transformation projects.

**Study 3** shows a (positive and negative) correlation between individual key financial figures and the digital maturity of a company.

## **CONCLUSION**

Looking at the three studies presented, which were carried out using a similar methodology, but differ greatly in terms of the underlying data basis, we see:

- a.) different sample sizes
- b.) different times of the sample survey
- c.) different geographical origin of the data
- d.) and different sizes of the companies considered.

All three studies can demonstrate a correlation between the extent of the digital transformation and the financial success of the company. However, the results are not as clear and positive as those of the consulting & IT consultancy studies presented at the beginning of this paper. A more differentiated view is necessary here. While a methodological weakness was already pointed out at the beginning of this chapter in the context of the surveys of the consulting & IT firms. The academic studies are very similar in design and use a semantic analysis of the annual report to assess a company's digital progress.

This procedure is certainly a valid method for analyzing the sometimes quite large amounts of data with reasonable effort and in a reasonable amount of time. The “measurement” of digital progress in a company via additional surveys to collect “hard” data of defined KPIs could certainly provide a more reliable data basis here. Which could be an approach for future research.

The different and sometimes contradictory statements on the influence of digital progress in a company on its financial success can be explained by the following framework conditions:

- a. Company size – the influence of digital transformation is more pronounced in large organizations



- than in small ones. The costs for digital transformation projects have a certain minimum volume.
- In smaller companies, the success rate of digital projects tends to be higher than in large companies
  - Progress of the digital transformation – a minimum level of digital transformation must have taken place throughout the company – the positive effects only become visible after this “break-even” point
  - Time – the positive effects of investments in digital transformation occur with a time lag. (the positive effect starts from the second year and disappears from the fifth year)

So in the end one could argue, that investments in digital Transformation are not different to other investments in e.g. production facilities or innovations. Digital transformation is not the magic wand that consulting companies promise us. It always requires a well-developed business case and solid project implementation.

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## КАКВО ВЪЗДЕЙСТВИЕ ОКАЗВА ЦИФРОВАТА ТРАНСФОРМАЦИЯ ВЪРХУ ЕФЕКТИВНОСТТА НА БИЗНЕСА?

**Резюме:** В тази статия се разглежда въздействието на цифровата трансформация върху успеха на бизнеса, по-точно върху финансовите резултати на предприятията. Вдъхновена от безбройните публикации по темата за цифровата трансформация, статията има за цел да подложи на критичен анализ предимно положителните твърдения за въздействието на цифровата трансформация върху резултатите на предприятията. Проучването се основава на сравнение на търговски и академични проучвания. Разгледаните комерсиални проучвания са изготвени от известни консултантски и ИТ компании. Въз основа на прегледа на академичната литература са избрани и анализирани изследвания от академичните среди. Въз основа на резултатите от академичните изследвания твърденията по отношение на цифровата трансформация са контекстуализирани и интерпретирани, за да



се осигури по-добро разбиране на значението на публикациите. Освен това са представени някои общи констатации относно ефективността на цифровата трансформация. Резултатите от това проучване показват, че при обсъждането на потенциалните резултати от инвестициите в цифровата трансформация трябва да се вземат предвид някои рамкови условия, за да се извлекат положителни ефекти от програмите и да се установи кога могат да се проявят тези ефекти.

**Ключови думи:** цифрова трансформация; ефективност на бизнеса

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**ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ**  
**PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES**

**COMPANY VALUATION USING THE MULTIPLIER METHOD IN GERMAN  
INHERITANCE TAX LAW – PART II/III**

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**Abstract:** *The following analysis of company valuation using the comparative or multiplier method is the second of a total of three parts. In valuation practice, a basic distinction is made between enterprise value multiples (the numerator is the market value of equity plus interest-bearing net debt) and equity value multiples (the numerator is the market value of equity) (Lhnert, Böckmann 2023, pp. 881, 887 ff.). This study provides an overview of the different equity value and enterprise value multiples and their reference values. The derivation of the reference values for the multiplier calculation, i.e. the relevant earnings parameters from the income statement, is presented. It is shown how the market value of equity (equity value) is calculated on the basis of the market value of total capital (enterprise value) (and vice versa). It is examined whether an adjustment can be made by adding to and/or deducting from the enterprise value using the multiplier method.*

**Keywords:** *Comparative Public Company Approach; Inheritance Tax Act; Multiplier Method; Recent Acquisition Approach; Company Valuation*

**INTRODUCTION**

In valuation practice, a basic distinction is made between equity value and enterprise value multiples. In the case of **equity value multiples**, the market value of equity serves as the numerator, while the denominator contains reference values that are defined **after interest payments**, which is why the denominator uses values such as operating earnings after interest and before corporate taxes, i.e. earnings before taxes (EBT) or earnings after taxes (EAT), the best-known multiplier is the so-called price/earnings ratio, in which the share price per share is set in relation to earnings per share or net profit for the year. However, all equity multiples do not take into account the fact that the **level of debt** influences the cost of equity, i.e. highly indebted companies have higher costs of equity than companies with low levels of debt, This problem can be avoided with enterprise value multiples, as the numerator of **enterprise value multiples** is the market value of equity plus interest-bearing net debt, i.e. enterprise multiples are calculated using the fiction of a company with no debt, Accordingly, the denominator contains reference values that are defined **before interest payments**, which is why values such as sales, earnings before interest, taxes, depreciation and amortisation (EBITDA), earnings before interest, taxes and amortisation (EBITA) or earnings before interest and taxes (EBIT) are used in the denominator; however, enterprise value multiples do not take into account the tax effect due to different capital structures (Löhnert, Böckmann 2023, p. 887 ff.).

The term “enterprise value” is not uniformly defined, which is why a distinction is made between the equity value and the enterprise value when calculating the multiplier, whereby the **equity value** represents the market value of a company’s equity (for listed companies, the equity value corresponds to the market capitalisation (market cap for short), i.e. the number of shares x share price) and the **enterprise value** refers to the value of a company’s entire operating business (Ernst, Schneider, Thielen 2018, p. 226).

To determine (the **numerator** of the multiplier) the enterprise value of the **comparable companies**, either the market value of the equity (market capitalisation; excluding non-operating assets) plus the interest-bearing net debt **or**, to determine (the numerator of the multiplier) the equity value of the comparable companies, only the market value of the equity (market capitalisation; excluding non-operating assets) (comparative public company approach with trading multiples).

For unlisted companies from realised **market prices of comparable transactions** (recent acquisition

approach with transaction or industry multiples), the enterprise value of the comparable companies or the equity value of the comparable companies must be determined (the numerator of the multiplier) using the discounted cash flow method (weighted average cost of capital approach enterprise value or **flow-to-equity approach equity value**).value of the comparable companies, a company valuation must be carried out using the discounted cash flow method (weighted average cost of capital approach→ enterprise value or flow to equity approach→ equity value) or the capitalised earnings value method in accordance with IDW S 1<sup>1</sup> (→ equity value) (Serf, 2005, p. 184; Ernst, Schneider, Thielen 2018, p. 11).

## RESEARCH METHODOLOGY

This study is the **second** of three parts and provides an overview of the different equity value and enterprise value multiples and their reference values. The derivation of the reference values for the multiplier calculation, i.e. the relevant earnings parameters from the income statement, is presented. It is shown how the market value of equity (equity value) is calculated on the basis of the market value of total capital (enterprise value) (and vice versa). It is examined whether an adjustment can be made by adding and/or discounting the enterprise value using the multiplier method. In the **third** part, the most important enterprise value and equity value multiples are explained and evaluated in detail. The role that non-operating assets play in the multiplier method is then analysed and the extent to which corporate taxes and the shareholders' personal income taxes affect the business valuation method is examined. In addition, it will also be shown to what extent case law recognises the multiplier method, as it can also be used effectively to minimise the inheritance or gift tax burden via § 11 (2) sentence 2 clause 1 of the Valuation Act. Finally, a critical appraisal of the multiplier method is provided.

## RESULTS

Seppelfricke (Seppelfricke 2020, p. 293 f.) and Olbrich, Frey (Olbrich, Frey 2023, p. 478) propose the following calculation scheme:

*Table:1 Calculation from enterprise value to equity value multiplier method*

<b>Market value of total capital (Enterprise value)</b>		
- Interest-bearing liabilities		(= net debt
- Pension obligations	- Interest-bearing net debt	at the beginning of the
+ <u>Interest-bearing current assets</u>		<u>WACC approach)</u>
= Market value of equity (Equity value) excluding non-operating assets		
+ Non-operating assets		
<hr/>		
= <b>Market value of equity (Equity value)</b> including non-operating assets		

It should be noted that only the **interest-bearing net debt** is to be deducted from the market value of the total capital; this consists of the interest-bearing liabilities (e.g. bank and shareholder loans), the pension obligations and the interest-bearing current assets (e.g. cash and cash equivalents) to be offset; in recent years, it has become established practice to consider pension provisions (= "interest-bearing loan obligation" of the company to its employees) as interest-bearing financial liabilities and to take them into account in the calculation (Löhnert, Böckmann 2023, p. 888).

Whether the enterprise value or the equity value is used to calculate a multiplier depends on the reference figure used (e.g. sales or operating earnings after interest and after corporate taxes), as the reference figure (denominator) **specifies** the valuation (numerator), so to speak (= equivalence requirement) (Olbrich, Frey 2023, p. 479; Ernst, Schneider, Thielen 2018, p. 228).

If the peer companies are **indebted** but the company to be valued is not, it makes sense to choose the enterprise value with sales or a pre-interest profit figure as a reference value; an enterprise value based on sales is also considered if the profit is unknown or strongly influenced by accounting policy, whereas an equity value is considered if the capital structure between the company to be valued and the peer companies is compatible, which should be the exception in practice (Künkele 2023, p. 1656 f.).

Ernst, Schneider, Thielen provide an overview of practically relevant enterprise value and equity value

multipliers (Ernst, Schneider, Thielen 2018, p. 230):

Table 2. Overview of practice-relevant multipliers

Multiplier	Market prices of <u>comparable companies</u> Reference value of comparable companies	Reference value	Enterprise value multiplier or market capitalisation (equity value multiplier)	Dependence on framework conditions
<i>Enterprise value/Sales</i>	$= \frac{\text{Enterprise Value}}{\text{Sales}}$	Sales	EV	very low
<i>Enterprise Value/EBITDA</i>	$= \frac{\text{Enterprise Value}}{\text{EBITDA}}$	EBITDA	EV	low
<i>Enterprise Value/EBITA</i>	$= \frac{\text{Enterprise Value}}{\text{EBITA}}$	EBITA	EV	medium
<i>Enterprise Value/EBIT</i>	$= \frac{\text{Enterprise Value}}{\text{EBIT}}$	EBIT	EV	medium
<i>Enterprise Value/oFCF</i>	$= \frac{\text{Enterprise Value}}{\text{oFCF}}$	Operating free cash flow	EV	low
<i>Enterprise value/Sales value drivers</i>	$= \frac{\text{Enterprise Value}}{\text{Sales value drivers}}$	Value drivers for sales	EV	low
<i>Price-sales-ratio</i>	$= \frac{\text{Share price per share}}{\text{Sales per share}}$	Sales	MC	very low
<i>Price-earnings-ratio</i>	$= \frac{\text{Share price per share}}{\text{Earnings per share}}$	EAT	MC	high
<i>Price-book value-ratio</i>	$= \frac{\text{Share price per share}}{\text{Book value per share}}$	Balance sheet equity or economic equity	MC	very high
<i>Equity value/FtE</i>	$= \frac{\text{Equity Value}}{\text{FtE}}$	Flow to equity	MC	low

It must be taken into account that accounting differences between the peer companies become all the more significant the deeper the reference figure is “anchored” in the income statement, i.e. while sales are still largely spared from major accounting differences, every step down towards earnings after taxes (EAT) leads to a greater impact of accounting policy recognition and measurement options, which lead to a **dilution** of the reference figure (Löhnert, Böckmann 2023, p. 891), therefore the dependence on framework conditions indicates the influence of different national accounting and tax regulations as well as the utilisation of accounting leeway on the reference values and thus the multiples (Ernst, Schneider, Thielen 2018, pp. 230, 234).

### MULTIPLIERS BASED ON FIGURES FROM THE INCOME STATEMENT

Most multipliers or multiplier valuations are calculated on the basis of figures from the income statement, such as turnover, EBITDA or EBIT, etc. (enterprise value multipliers), which are determined in accordance with the calculation scheme (see Table 3 (Ernst, Schneider, Thielen 2018, p. 233)), which is only partially based on the structure commonly used in annual financial statements (e.g. § 275 (2) of the German Commercial Code (HGB<sup>2</sup>)), so that individual items usually have to be reclassified. As a result, in a profit and loss statement prepared in accordance with the German Commercial Code (HGB), one-off income from the sale of fixed assets and current securities, insofar as they are included in other operating income, must be **reclassified** as extraordinary income. This requires a reclassification from their position before EBITDA (Earnings Before Interest, Taxes, Depreciation and

Amortization) to EBIT (Earnings Before Interest and Taxes). In doing so, other operating income and expenses should be analysed to determine whether they occur regularly or whether they are only of a one-off and therefore extraordinary nature (Ernst, Schneider, Thielen 2018, p. 232).

The specific selection of the multiples to be used depends on the sector to which the company to be valued belongs, its growth profile, the accounting differences and its earnings situation; it is therefore advisable to use an EBIT multiple rather than an EBITDA multiple in sectors in which the peer companies have different capital intensities, as the EBIT multiple takes into account the different reinvestment requirements due to depreciation and amortisation, if the company to be valued has higher or lower margins than the average or median of the peer companies, the sales multiple provides an indication of value, as it implies an identical margin profile between the company to be valued and the average or median of the peer companies (Löhnert, Böckmann 2023, p. 890 with further references).

Table 3. Derivation of relevant revenue indicators from the income statement for the multiplier calculation

**Sales**

**(EV multiplier)**

+ other operating income

- Operating expenses

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= **EBITDA** (Earnings Before Interest, Taxes, Depreciation and Amortisation) **(EV multiplier)**

- Depreciation and amortisation of fixed assets

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= **EBITA** (Earnings Before Interest, Taxes and Amortisation) **(EV multiplier)**

- Goodwill amortisation

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= **EBIT** (Earnings Before Interest and Taxes) **(EV multiplier)**

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+ Extraordinary income

- Extraordinary expenses

+ Investment income

- Interest expenses (or + net interest income)

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= **EBT** (Earnings Before Taxes)

**(MC multiplier)**

- Income taxes

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= **EAT** (Earnings After Taxes)

**(MC multiplier)**



## PREMIUM AND/OR DISCOUNT ON THE ENTERPRISE VALUE

It should be noted that the business value determined after applying the multiplier (before taking into account the non-operating assets) does not yet represent the final value of the business valuation process using the multiplier method; it is often adjusted by a premium and/or discount, which can be attributed to the size of the valuation object at hand, the fact that it is generally not listed on the stock exchange and any differences between the company to be valued and the comparable companies that remain even after careful selection.

- a **Package premium** (PP = control premium, as the company to be valued is acquired as a whole, for example, which gives the possibility of influencing the management; in practice, package premiums of between 20%–50% are applied);
- a **Fungibility discount** (FD = discount due to the lack of stock market listing of the company to be valued compared to the comparable companies taken into account in the multiplier, which limits its marketability and thus resaleability);
- a **Portfolio discount** (PD = discount, because the company to be valued is a company that only manufactures *one* product compared to the market);
- a **“Small-Cap-Discount”** (SCD= discount, as the company to be valued is compared with the market leader and thus a subordinate market position of the company to be valued must be taken into account; in practice, small-cap discounts of up to 50% occur) (Olbrich, Frey 2023, p. 481 f.).

Formula for premium/discount on the enterprise value (Olbrich, Frey 2023, p. 481 f.):

$$Equity_{adj} = EQ_{comp} + PP - FD - PD - SCD + Non - operating Assets_{after tax}$$

<i>Equity<sub>adj</sub></i>	Market value of equity <b>including</b> the value of non-operating assets (= enterprise value)
<i>EQ<sub>comp</sub></i>	Market value of equity <b>excluding</b> the value of non-operating assets
<i>Non – operating Assets<sub>after tax</sub></i>	Liquidation value or present value of the expected liquidation proceeds from the sale of the non-operating assets <b>after</b> corporate taxes (corporation tax plus solidarity surcharge + trade tax) <b>and</b> personal income taxes of the shareholders (income tax plus solidarity surcharge)

In this context, Olbrich, Frey point out a supposed pseudo-objectivity of the comparative methods, because, for example, the selection of the comparable companies deemed suitable, the type and number of reference values used and the formation of a premium (package premium) or discount (e.g. fungibility discount) are at the discretion of the valuer, they are **not** verifiable, therefore a sensitive use is recommended within the framework of § 11 BewG<sup>3</sup> in order not to jeopardise the recognition of the business value by the tax authorities using the multiplier method (Olbrich, Frey 2023, p. 487 with further references).

## CONCLUSION

This study on company valuation using the multiplier method has produced the following five results:

1. In the case of **equity value multiples**, the market value of equity serves as the numerator, while the denominator contains reference values after interest payments.
2. Equity multiples neglect the fact that the **debt ratio** increases the cost of equity, so comparing equity value multiples for companies with different debt ratios leads to incorrect enterprise values; enterprise value multiples avoid this problem.
3. In the case of **enterprise value multiples**, the market value of equity plus interest-bearing net debt serves as the numerator, i.e. enterprise multiples are calculated on the basis of the fiction of an unlevered company, and the denominator accordingly contains reference values before interest payments.
4. Whether the enterprise value or the equity value is used to calculate a multiplier depends on the **reference value** used, as the reference value (denominator) determines the valuation (numerator),

so to speak.

5. If the multiplier method is used via § 11 (2) sentence 2 clause 1 of the Valuation Act to minimise the enterprise value and the inheritance or gift tax burden, it is advisable to use the premium and/or discount on the enterprise value **sensitively**.

## NOTES

1. IDW S 1 is a valuation standard published by the Institut der Wirtschaftsprüfer in Deutschland e.V. (IDW), the Institute of Public Auditors in Germany. It provides principles for conducting company valuations in a consistent and standardized manner.
2. HGB is an abbreviation of Handelsgesetzbuch in German, which means German Commercial Code.
3. BewG is an abbreviation of Bewertungsgesetz in German, which means Valuation Act.

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## ОЦЕНКА НА ДРУЖЕСТВА ПО МЕТОДА НА МУЛТИПЛИКАТОРА В НАСЛЕДСТВЕНОТО ПРАВО НА ГЕРМАНИЯ – ЧАСТ II/III

**Резюме:** Настоящият анализ на оценката на дружествата чрез сравнителния метод или метода на мултипликаторите е втората от общо три части. В практиката на оценяването се прави основно разграничение между множители на стойността на предприятието (числителят е пазарната стойност на собствения капитал плюс лихвоносния нетен дълг) и множители на стойността на собствения капитал (числителят е пазарната стойност на собствения капитал) (Löhnert, Böckmann 2023, pp. 881, 887 ff.). Настоящото проучване предоставя преглед на различните множители на стойността на собствения капитал и на стойността на предприятието, както и на техните референтни стойности. Представено е извеждането на референтните стойности за изчисляване на множителя, т.е. съответните параметри на печалбата от отчета за доходите. Показано е как се изчислява пазарната стойност на собствения капитал (стойността на собствения капитал) въз основа на пазарната стойност на общия капитал (стойността на предприятието) (и обратно). Проучено е дали може да се направи корекция чрез добавяне и/или приспадане от стойността на предприятието, като се използва методът на множителя.

**Ключови думи:** подход на съпоставими публични дружества; закон за данъка върху наследствата; метод на мултипликатора; подход на скорошно придобиване; оценка на дружеството

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## ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES

### ВЛИЯНИЕ НА ЛИДЕРСТВОТО В СРЕДНОТО ОБРАЗОВАНИЕ ВЪРХУ БЪДЕЩАТА РЕАЛИЗАЦИЯ НА УЧЕНИЦИТЕ

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**Резюме:** Настоящата разработка анализира многоаспектното влияние на училищното лидерство в средното образование върху бъдещата реализация на учениците. Изследването обхваща въздействието на лидерските практики върху развитието на умения за XXI век, социалното развитие и кариерното ориентиране. Изследват се ролята на лидерството за професионалното развитие и морала на учителите, както и предизвикателствата и стратегиите в българския образователен контекст. Констатира се, че ефективното лидерство е катализатор за цялостна трансформация на образователната среда.

**Ключови думи:** лидер; училище; образование; кариера; реализация

#### ВЪВЕДЕНИЕ

Съвременната образователна система е изправена пред значителни предизвикателства, свързани с необходимостта от непрекъснати промени, които да дадат основа за успех в силно конкурентната среда на училищата. В този контекст училищното лидерство е признато на световно ниво като ключов и определящ фактор за осигуряване на качествено образование (Hallinger, 1985). Лидерството в образованието е свързано с развитието на начин на мислене, умения и ценности, които позволяват на индивидите и организациите да оказват положително влияние върху обществото (Hargreaves 2006).

Училищното лидерство се определя като процес на привличане и насочване на способностите и енергията на всички участници в училищната общност към постигането на общи образователни цели (Predova 2018). Този процес включва определяне на посоката, планиране и мотивиране (Predova 2018). Исторически, училищните лидери са изпълнявали предимно административни функции. Въпреки това съвременните очаквания изискват от тях да бъдат двигател на трансформацията (Andreeva 2017).

Основната цел на настоящото изследване е да проследи многоаспектното влияние на лидерските практики в средното образование върху бъдещата реализация на учениците. Разгледани са предизвикателствата, пред които са изправени училищните лидери в българския контекст, както и ефективните стратегии за тяхното преодоляване и за подобряване на образователната система.

#### ТЕОРЕТИЧНИ МОДЕЛИ И СТИЛОВЕ НА ЛИДЕРСТВО В ОБРАЗОВАНИЕТО

В образователната среда се прилагат различни модели и стилове на лидерство, като всеки от тях притежава силни и слаби страни.

Ефективният лидер трябва да притежава способността да комбинира тези стилове в зависимост от конкретната ситуация, нуждите на учениците и целите на обучението (Predova 2018).

Преглед на основните модели:

- **УЧЕБНО (Instructional) ЛИДЕРСТВО:** Този модел е тясно фокусиран върху подобряване на качеството на преподаване и учене. Той включва дефиниране на мисията на училището, управление на учебната програма и поддържане на положителен учебен климат (Pivanov, 2004). Учебното лидерство оказва значително въздействие върху резултатите от училищното образование, особено когато се осъществява чрез съгласуване на действията на училищните структури и култура, създаване на атмосфера на непрекъснато усъвършенстване и високи



очаквания (Pivanov 2004). То е най-ефективният тип лидерска практика за подобряване на резултатите от ученето на учениците (Dutta 2021).

- **ТРАНСФОРМАЦИОННО ЛИДЕРСТВО:** Този стил се фокусира върху промяната и развитието на индивидуалните способности на членовете на екипа (Predova 2018). Трансформационните лидери вдъхновяват екипа да възприеме визията и целите на училището, като ги овластяват (Predova 2018). Те умеят да управляват вниманието, комуникациите и доверието, като са предсказуеми и последователни (Li 2024). Ключовите качества включват стратегическо мислене и способност да се вижда проблемът, преди да стане явен (Xu 2025). Трансформационните лидери са „агенти на промяната“, които насърчават креативността, критичното мислене и експериментирането с иновативни стратегии (Hebert 2012).
- **РАЗПРЕДЕЛЕНО (Distributed) ЛИДЕРСТВО:** Този модел осигурява активно участие на членовете на училищния екип в процеса на вземане на решения, насърчава сътрудничеството и хармоничните работни отношения, генерира стремеж към постигане на цели и повишава ефективността на учителите и учениците (Yemini 2015). Разпределеното лидерство развива приобщаваща култура на доверие и осигурява професионално развитие, основано на доказателства (Yemini 2015). То насърчава споделянето на отговорности, съвместното вземане на решения и непрекъснатото учене сред учителите (Maranto 2015).
- **ЛИДЕРСТВО – СЛУЖЕНЕ (Servant Leadership):** Този стил е съсредоточен върху подкрепата и развитието на членовете на екипа, като преподавателите, използващи този стил, поставят интересите на учениците над своите собствени (Pivanov 2004).
- **АВТОКРАТИЧНО/АВТОРИТАРНО ЛИДЕРСТВО:** Предполага централизирано вземане на решения и строг контрол. Може да е ефективно при нужда от бързо изпълнение на задачи, но може и да потиска инициативата и креативността (Predova 2018).
- **ДЕМОКРАТИЧНО ЛИДЕРСТВО:** Включва всички членове на училищната общност във вземането на решения, което води до по-висока ангажираност, удовлетвореност и мотивация (Predova 2018).
- **СИТУАЦИОННО ЛИДЕРСТВО:** Предполага гъвкавост на ръководителя, който модифицира подхода си в зависимост от конкретната ситуация и нивото на развитие на служителите (Pivanov 2004).

## СРАВНИТЕЛЕН АНАЛИЗ НА ОСНОВНИТЕ ЛИДЕРСКИ СТИЛОВЕ В СРЕДНОТО ОБРАЗОВАНИЕ

Таблица 1. Сравнителен анализ на основните лидерски стилове в средното образование

Стил на лидерство	Основни характеристики	Приложение в училищна среда	Предимства	Недостатъци / Рискове
<b>Учебно (Instructional)</b>	Фокус върху качеството на преподаване и учене; дефиниране на мисия, управление на учебна програма, поддържане на климат.	Подобряване на академичните резултати, координация на учебния процес, професионално развитие на учителите.	Повишава учителската ефикасност, създава силна учебна култура, подобрява резултатите на учениците.	Може да се превърне в прекалено директивен, ако не е балансиран с други стилове.



	Фокус върху промяната, развитие на индивидуални способности, вдъхновяваща визия, управление на вниманието, комуникациите, доверието.		Катализатор за промяна, насърчава креативността и критичното мислене, повишава ангажираността.	Изисква силна харизма и стратегическо мислене, може да срещне съпротива при липса на доверие.
	Активно участие на екипа във вземането на решения, споделяне на отговорности, съвместно учене.	Подобряване на училищната дейност, професионално развитие на учителите, създаване на приобщаваща култура.	Повишава ефективността на учителите и учениците, насърчава сътрудничеството и иновациите, повишава отчетността.	Изисква висока степен на доверие, може да бъде възпрепятствано от липса на такова.
<b>Служене (Servant)</b>	Подкрепа и развитие на членовете на екипа, поставяне на интересите на учениците на първо място, грижа за благополучието.	Създаване на безопасна и подкрепяща училищна атмосфера, личностно и професионално развитие на учениците.	Повишава благосъстоянието и мотивацията на учениците, изгражда доверие и лоялност.	Може да доведе до недостатъчен контрол или липса на строга дисциплина, ако не е балансиран.
		Ситуации, изискващи бързи и точни решения (напр. подготовка за изпити, кризисни ситуации).	Ефективност при бързо изпълнение на задачи, поддържане на строга дисциплина.	Потиска инициативата и креативността, може да доведе до нисък морал и съпротива.
	Включване на всички участници във вземането на решения, отворена комуникация.	Училища, фокусирани върху творчество и иновации, изграждане на консенсус.	Повишава ангажираността, удовлетвореността и мотивацията, насърчава сътрудничеството.	Процесът на вземане на решения може да бъде бавен, изисква време и усилия за постигане на консенсус.
	Гъвкавост на подхода в зависимост от ситуацията и нивото на развитие на служителите.	Адаптиране към различни нужди на учениците и учителите, разнообразни задачи и проекти.	Позволява оптимално използване на ресурсите, повишава ефективността чрез персонализиран подход.	Изисква висока адаптивност и умения за диагностика на ситуацията от страна на лидера.

## **ВЛИЯНИЕ НА УЧИЛИЩНОТО ЛИДЕРСТВО ВЪРХУ РАЗВИТИЕТО НА УЧЕНИЦИТЕ**

Училищното лидерство е критичен компонент, който оказва значително влияние върху цялостното развитие на учениците, формирайки тяхната бъдеща реализация.

### *Академични постижения*

Училищното лидерство, особено инструктивното, е от съществено значение за постиженията на учениците и цялостното качество на образованието (Gümüş 2022). Ефективните лидери поставят ясни цели, осигуряват подкрепа за професионалното развитие на учителите и улесняват сътрудничеството между персонала (Gümüş 2022). Въздействието на училищното лидерство върху академичните резултати на учениците е предимно индиректно, но мощно, осъществявайки се чрез влияние върху поведението и ефективността на учителите (Gümüş 2022).

### *Умения за XXI век*

Училищното лидерство е ключово за развитието на уменията на XXI век, които включват критично мислене, комуникация, сътрудничество, креативност, адаптивност, информационна и технологична грамотност (Sebastian 2012). Лидерите насърчават интелектуалната стимулация, като подкрепят учителите да експериментират с иновативни стратегии и да развиват критично мислене и решаване на проблеми у учениците (Hebert 2012).

### *Социално-емоционално развитие*

Социално-емоционалното учене (СЕУ) описва процеса на развитие на компетенции, които помагат на учениците да управляват емоциите си, да създават и поддържат взаимоотношения, да разрешават междуличностни проблеми и да вземат ефективни решения (Xu 2018). Училищното лидерство е жизненоважно за успешното прилагане на програми за СЕУ (Hallinger 1987). Силното лидерство от администрацията, интегрирането на СЕУ в съществуващите практики и създаването на позитивна култура, която подсилва СЕУ, са ключови компоненти за успеха (Hallinger 1987). Успешното прилагане на СЕУ програми води до подобро поведение, взаимоотношения и академични резултати (Hallinger 1987).

### *Кариерно ориентиране и предприемачески умения*

Подготовката на младите хора за бъдеща професионална и/или академична кариера е ключов приоритет (Hattie 2009). Учителското лидерство оказва влияние върху избора на учениците по отношение на образованието и бъдещата заетост (Leithwood 1994). Предприемаческото лидерство в образователна среда включва способността за изследване на иновативни идеи, разширяване на нови учебни практики, вдъхновяване на учениците за критично и творческо мислене, използване на различни модели на преподаване и намиране на необходими ресурси (Gordon 2015). Училищното лидерство, включително предприемаческото лидерство на директори и учители, е ключово за формирането на предприемачески умения и за ефективно кариерно ориентиране (Gordon 2015).

## **ВРЪЗКА МЕЖДУ ЛИДЕРСТВОТО И МОТИВАЦИЯТА, АНГАЖИРАНОСТТА И ЗАДЪРЖАНЕТО НА УЧИТЕЛИТЕ**

Качеството на преподаване оказва пряко влияние върху постиженията на учениците, а учителското лидерство е изискване на съвременността (Leithwood 1994). Лидерите в образованието имат призвание и отговорност да вдъхновяват и насочват, създавайки среда на доверие, любов към ученето и взаимно уважение (Harris 2011). Разпределеното лидерство повишава мотивацията и ангажираността на учителите, като им дава възможност да участват във вземането на решения и да споделят отговорности (Yemini 2015). Лидерите трябва да осигуряват възможности за непрекъснато обучение и развитие на учителите, което подобрява качеството на обучението и повишава удовлетвореността от работата (Pivanov 2004). Професионалното развитие е от съществено значение за растежа на съвременния преподавател, като му дава инструменти и умения да остане актуален спрямо нуждите на учениците и да планира бъдещи тенденции (Tschannen-Moran 2001).

## ПРЕДИЗВИКАТЕЛСТВА ПРЕД УЧИЛИЩНИТЕ ЛИДЕРИ В БЪЛГАРИЯ И ЕФЕКТИВНИ СТРАТЕГИИ

Българската образователна система е изправена пред редица специфични предизвикателства, които изискват адекватно и ефективно лидерство за преодоляването им, а именно:

- **Необходимост от трансформация:** Традиционно, училищните лидери са били по-скоро администратори, но днес от тях се очаква да бъдат двигател на трансформацията (Andreeva 2017).
- **Недостатъчна привлекателност и задържане на учители:** Причините за недостатъчната привлекателност на учителската професия са комплексни, включително липса на подкрепа по време на преподаването, висока административна тежест и неконкурентно заплащане (Klassen 2014).
- **Качество на образованието и умения за XXI век:** Един на всеки двама 15-годишни ученици в България не владее основни умения според PISA, което подчертава нуждата от развитие на критично мислене, работа в екип и непрекъснато учене (Zee 2016).
- **Липса на системна квалификация и политики:** Наблюдават се недостатъчна съгласуваност и неясно разпределение на отговорностите по отношение на квалификационните дейности (Fackler 2016).

## ИЗВОДИ

За преодоляване на съществуващите предизвикателства са необходими иновативни подходи, тенденции и стратегии, а именно:

- *Прилагане на иновативни подходи:* Училищните лидери трябва да бъдат отговорни за въвеждането на нови подходи и иновации, свързани с учебни програми, технологии и методи на преподаване (Pivanov 2004).
- *Адаптивно лидерство:* Фокусът трябва да бъде върху гъвкавостта, устойчивостта и проактивното решаване на проблеми, като се насърчава култура на непрекъснато учене и подобрене (Calik 2012).
- *Използване на данни за вземане на решения:* Систематичният анализ на данни трансформира образованието, позволявайки на лидерите да вземат информирани решения (Gümüş 2022).
- *Развитие на емоционална интелигентност:* Емоционалната интелигентност е ключов атрибут за образователните лидери, позволяващ им да изграждат силни взаимоотношения, да разрешават конфликти и да създават позитивна училищна култура (Calik 2012).
- *Разширяване на партньорствата с общността:* Силните партньорства с общността са от решаващо значение за успеха на образователните институции (Pivanov 2004).
- *Повишаване на възнагражденията и стимулиране на учителската професия:* Правителствената политика за поетапно повишаване на средствата за възнаграждения е важна стъпка за привличане и задържане на кадри (Dimitrova 2015).
- *Алтернативни пътища за навлизане в професията:* Стимулиране на интереса към педагогическите специалности във висшето образование чрез повече свободни места, по-добро финансиране и стипендии (Dimitrova 2015).

## ЗАКЛЮЧЕНИЕ

Училищното лидерство е фундаментален фактор за качеството на образованието и бъдещата реализация на учениците. То оказва значително влияние върху академичните постижения, развитието на умения за XXI век, социално-емоционалното развитие, кариерното ориентиране и предприемаческите умения. Ефективните лидерски стилове, като трансформационното и разпределеното лидерство, не само подобряват резултатите на учениците, но и повишават морала и професионалното развитие на учителите, създавайки положителна училищна култура.

Българската образователна система е изправена пред значителни предизвикателства, свързани с необходимостта от трансформация, задържане на учители, качество на уменията за XXI век и системна подкрепа. Въпреки наличието на амбициозни политики и рамки съществува разминаване

между стратегическите цели и тяхната практическа реализация. В един бързо променящ се свят лидерството, което е адаптивно, визионерско и способно да вдъхновява промяна, е от съществено значение. То подготвя учениците не само с конкретни знания, но и с гъвкавост, устойчивост и предприемачески дух, необходими за успех в живота и кариерата.

## ПРЕПОРЪКИ

Въз основа на анализа, за да се максимизира влиянието на училищното лидерство върху бъдещата реализация на учениците и да се преодолеят съществуващите предизвикателства, са предложени следните препоръки:

- **Прецизиране и прилагане на национални рамки за лидерски компетентности:** Необходимо е да се осигури ясно дефиниране на нагласите и уменията, необходими за училищните директори, и да се създадат ефективни механизми за тяхното развитие и оценка.
- **Системна подкрепа за професионално развитие на учителите:** Да се разработи интегриран и системен подход към квалификационните дейности, който да е пряко свързан с кариерното развитие на учителите.
- **Насърчаване на иновативни педагогикки:** Политиките трябва да стимулират училищата да прилагат проектно базирано обучение и други интерактивни методи, които активно развиват уменията на ХХІ век, критичното мислене, сътрудничеството и предприемаческия дух у учениците.
- **Инвестиции в психичното здраве и благополучие:** Да се разработят национални програми за подкрепа на социално-емоционалното учене и намаляване на стреса сред учениците и учителите.
- **Прилагане на разпределено и трансформационно лидерство:** Училищните ръководства следва активно да делегират отговорности, да насърчават сътрудничеството и да включват учителите и учениците във вземането на решения.
- **Създаване на култура на високи очаквания и непрекъснато усъвършенстване:** Фокусът трябва да бъде върху изграждане на среда, която вдъхновява учителите и учениците да постигат високи резултати.
- **Използване на данни за информирано вземане на решения:** Да се въведат системи за систематично събиране и анализ на данни за постиженията на учениците и ефективността на преподаването.
- **Активно партньорство с родители и общност:** Училищата трябва да включват активно външни заинтересовани страни, като родители, местни общности и бизнес, за осигуряване на подкрепа и споделена отговорност за успеха на учениците.

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## IMPACT OF LEADERSHIP IN SECONDARY EDUCATION ON THE FUTURE REALIZATION OF STUDENTS

**Abstract:** *This paper analyzes the multifaceted impact of school leadership in secondary education on the future realization of students. The study covers the impact of leadership practices on the development of 21<sup>st</sup> century skills, social development and career guidance. The role of leadership in the professional development and morale of teachers is examined, as well as the challenges and strategies in the Bulgarian educational context. It is found that effective leadership is a catalyst for a comprehensive transformation of the educational environment.*

**Keywords:** *Leader; School; Education; Career; Realization*

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## LESSONS LEARNED FROM THE HISTORY OF PARTICIPATORY DEMOCRACY: HISTORICAL PATTERNS AND THEIR SIGNIFICANCE FOR MODERN SECURITY POLICY CHALLENGES

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**Abstract:** *This article analyses the lessons learned from the historical development of participatory democracy and uses a historical-comparative method to examine whether current challenges are actually new or whether a recurring historical pattern can be identified. The focus is on security policy conclusions for modern democracies and their national security. The historical analysis shows that democracies have repeatedly faced similar problems over different eras. Today, democracies are not only forms of government, but also models of order that are strengthened by stable institutions, social participation and functioning control mechanisms. At the same time, deficits in these areas can have a destabilizing effect and undermine existing political structures. While the framework conditions have changed due to digitalization, globalization and new geopolitical constellations, many fundamental mechanisms remain stable.*

**Keywords:** *Participatory Democracy; National Security; Security Challenges; Lessons Learned; Historical Patterns*

### INTRODUCTION

Participatory democracy is a popular and politically relevant topic in 2025. If you google “participatory democracy”, around 40,000 results come up (March 2025). The political interest is confirmed by the commitment of international organizations (e.g., Swiss Democracy Foundation, Democracy International, International IDEA), governments (e.g., European Parliament), foundations (e.g., Hanns Seidel Foundation, Berlin Institute for Participation). The first participatory elements and democracy itself emerged in antiquity in small Greek states (poleis) through the development of the first concept of a citizen (Makhamatov 2007, p. 114). The development of participatory democracy was not linear and often failed due to various events. The Bertelsmann Foundation’s BTI report points to the continuing political regression of democracy, as 74 developing and transition countries are currently governed autocratically and 63 countries democratically (BTI 2024, p. 2). If the findings of the BTI report are viewed from the perspective of Polybius’ anacyclosis, the current political regression could be seen as a phase of cyclical development (monarchy → tyranny → aristocracy → oligarchy → democracy → ochlocracy → return to monarchy) (Podes 1991). As in previous eras, democracy comes under pressure from internal and external tensions, which can lead either to its transformation or to its regression. Against this background, it is essential to reflect on the historical developments of participatory democracy in order to identify the causes of political stability and destabilization and to draw security policy lessons for modern democracies.

### RESEARCH METHODOLOGY

The historical-comparative method was chosen for the theoretical understanding of the historical stages within the scope of the article, as it allows complex objects and phenomena with very different characteristics to be interpreted from the perspective of participatory democracy and the prerequisites and dynamics of the process to be compared. The model of Emilio Betti (understanding – fixing – interpreting) is used as a basis to clarify the theoretical complexity and to provide a methodological structure for the analysis of historical development.

### HISTORICAL LESSONS LEARNED FROM ANTIQUITY TO THE 20TH CENTURY

The participatory elements of antiquity are considered in this article through Athens and the Roman

Republic. In Athens, democratic reforms began with Solon (594–593 BC) and were further developed by subsequent governments until Pericles (bpb 2017). The Athenian collective of citizens was characterized by equality before the law (*isonomia*), equality in freedom of expression (*isegoria*) and equality in political participation (*isopoliteia*), which meant a democratic form of government (Alekhin 2011, p. 11). Athenian democracy came to an end in 338 BC with the termination of Athens' independent existence (Mann 2020, p. 22).

Lessons learned from Athenian democracy:

- The democracy of the state can be destabilized or ended by external (e.g., wars) or internal (e.g., oligarchic resistance during the Peloponnesian War) factors.
- Populist demagogues can manipulate popular opinion. The loss of critical discourse due to the high frequency of meetings and increasing polarization lead to a weakening of the system.
- Inclusion of all citizens strengthens democracy – the exclusivity of citizen status, on the other hand, leads to tensions. The ancient *demos* consisted exclusively of free-born men. Rich groups had no civil rights despite their wealth (Khankevich 1999, pp. 3–7). From the middle of the fifth century BC, a person was considered a citizen in the Athenian polis if both parents were Athenians, or if citizenship was obtained individually through a legal election in the popular assembly (*ekklesia*). This meant that a maximum of 15% of the total population could participate in governance (Gracheva 2022)
- Polarization between rich and poor leads to conflicts over income distribution, which in turn can contribute to the destabilization of democracy (Tridimas 2015, pp. 102–117)
- Wealthy population groups tend to favour peace, while poorer groups tend to be in favour of war (Tridimas 2015, pp. 102–117)

The participatory elements in ancient Rome can be identified in the period of the Roman Republic (V–I BC) (Koptev 2011, pp. 42–45; Meier 2018). These include Roman citizenship, the involvement of various population groups in state life through the establishment of popular assemblies (*comitia*), the Senate, the magistrates and various offices, as well as the distribution of civic duties (similar to Athens).

Lessons learned from the participatory elements of the Roman Republic:

- The democratic (participatory) elements can also coexist within a state structure alongside aristocratic and military components (Smorchkov 2018, pp. 2–5; Glekov 2021, pp. 56–57; Khankevich 2018, pp. 50–60).
- Participatory democracy requires a system of legal and procedural order.
- A balance of power (separation of powers including checks and balances) between different institutions (People's Assembly, Senate, magistrates) is essential to prevent individual actors from gaining superiority.
- The non-involvement of different social groups in the political process can lead to the emergence of parallel institutions (e.g. tribunes of the people as the protective body of the plebeians).
- A lack of mechanisms for the (peaceful) transfer of power can lead to the erosion of democratic structures and conflicts (Kazakov 2004, pp. 47–54).
- The inability of local authorities to react quickly to rapid developments (e.g., expansion of the state) can trigger a political crisis (Kazakov 2004; pp. 47–54).

Although there were no fully-fledged participatory democracies in the Middle Ages, some participatory elements (representation, co-determination, self-administration and legal autonomy) can be found in the form of “early cities“ (early Middle Ages), assemblies of estates (high Middle Ages) and city states (late Middle Ages).

Lessons learned from the participatory elements of the Middle Ages (V–XV centuries):

- A close connection between business and politics can favour both stability and a concentration of power, which is why economic groups should also be regarded as political actors.
- Basic democratic structures can also function without a centralized state (“early cities“, city states).
- Early separation of powers can prevent an excessive concentration of power (e.g. Magna Charta 1215).
- Religious and ideological movements influence democratic developments (for example, the Reformation of the XVI century and the ideas of Luther, Bodin, More, Campanella).

The theoretical foundations for modern participatory democracies (the sovereignty of the people, the social contract, the separation of powers, the rule of law, the right of participation, the right of resistance,

the separation of church and state, the principle of representation, basic civil liberties) were laid in the early modern period (XVI–XVII centuries) and the Enlightenment (XVIII century). These concepts were used in the American Revolution (1775–1783) and the French Revolution (1789–1799) and were later enshrined in the constitutions of the XVIII–XXI centuries.

Lessons learned from the early modern period and the Enlightenment:

- Democratic principles do not arise spontaneously but are based on philosophical and political ideas.
- Without freedom of expression and freedom of the press, citizens cannot actively participate in political processes, which is why the introduction of laws on freedom of the press is indispensable (the first postulates in Poland in 1532, the law on freedom of the press and freedom of expression in Sweden in 1766); (Levkina 2015, pp. 125–126).
- Suppression of participation rights can lead to revolutions.
- Democratic developments need time from their formulation to their practical implementation.

The modern period from the XVIII to the XX century is characterized by the increasing development of local democracies, which influence each other (e.g. US, English, French democracies). In the XVIII–XIX centuries, the first constitutions (e.g. the US Constitution of 1787, the French Constitution of 1791) with participatory elements (civil and electoral rights, separation of powers) were created and the first referendums were held (Switzerland 1802). In addition, the participatory elements were extended to the economic and social spheres, which led to the emergence of trade unions (e.g. Trades Union Congress in England in 1868, Allgemeiner Deutscher Arbeitsverein in 1863) and the introduction of social laws (e.g. social insurance in Germany 1883–1889, French social law 1893). In the XX century, women were also included in universal suffrage (e.g. in the USA in 1920, Germany in 1918/19, France in 1944). In the XIX and XX centuries, the development of democracy was restricted by the return of monarchies and dictatorships (Great Britain, France, Germany). These anti-democratic currents often had an impact beyond national borders and led to setbacks in general democratization. After the Second World War, democracy began to be seen not only as a form of government, but also as a stabilizing factor for national and international security (e.g. democratic peace theories by Babst 1964, Russett 1993, Rummel 1997) and to be integrated into the security architecture (e.g. Truman Doctrine 1947). In this context, participatory democracy develops into an independent concept (e.g. works by Pateman 1970, Barber 1984).

Lessons learned from the modern era of the XVIII–XX century:

- Participatory democracy is not limited to the form of government, but can influence the economic, social and security model of a state or region.
- Constitutions with participatory elements are essential for democratization.
- The democratization of the economy and social policy strengthens political participation.
- Democracies are vulnerable to internal crises and external threats if there are no mechanisms to safeguard them.

## RESULTS

Participatory democracy in the XXI century faces many challenges that impair its functioning and occur both nationally and internationally. These may include, for example: declining voter turnout and growing mistrust of political institutions (WZB 2021), populist movements and the spread of disinformation via social media (Vey 2024), the shift of political decision-making processes to supranational levels (Kriesi et al. 2011), short political cycles with an increasing number of tasks on various long-term issues (IDW position paper 2024), the collection and use of large amounts of personal data (Rehman 2019), pandemics (Grande et al. 2022, pp. 42–49).

But are these challenges really new, or could we have prepared for them based on historical experience? Many developments from the past are similar to today's problems, even if the framework conditions have changed. The following tabular comparison shows which challenges have historical parallels and which are really new.

Table 1. Comparison of modern challenges and historical findings (own compilation)

Modern challenge	Allocation	Evidence
Falling voter turnout and mistrust of political institutions	Known	Lessons learned Athenian democracy: Inclusion of all citizens strengthens democracy – the exclusivity of citizen status, on the other hand, leads to tensions. Lessons learnt Roman Republic: The non-inclusion of different social groups in the political process can lead to the emergence of parallel institutions.
Rise of populist movements and polarisation	Known	Lessons learned Athenian democracy: Populist demagogues can manipulate popular opinion and contribute to weakening the system.
Spreading disinformation via digital media	Unknown	This is a modern challenge posed by digitalization.
Shifting political decision-making processes to supranational levels	Known	Lessons learned Roman Republic: Balance of power between institutions is essential to prevent individual actors from gaining superiority. Lessons learned Middle Ages: The inability of local authorities to react quickly to rapid developments (e.g. expansion of the state) can trigger a political crisis.
Short political cycles with an increasing number of tasks	Known	Lessons learned early modern times: Democratic developments need time from their formulation to their practical implementation.
Socio-economic inequality and political influence	Known	Lessons learned Athenian democracy: Polarization between rich and poor leads to conflicts over income distribution. Lessons learned in the modern era XVIII–XX centuries: The democratization of the economy and social policy strengthens political participation.
Climate change and long-term political decision-making	Unknown	This is a new challenge posed by modern environmental conditions.
Data protection and digital liberties (collection and use of large amounts of personal data)	Unknown	This is a new specific challenge posed by technological developments.
Pandemics and democratic crisis management	Known	Lessons learned Roman Republic: Lack of mechanisms to respond quickly to crises can cause political instability. Lessons learned Middle Ages: Inability of local authorities to react quickly to rapid developments (e.g. expansion of the state) can trigger a political crisis.

## CONCLUSIONS

The historical-comparative analysis has confirmed that not all of today's challenges are new. This means that their occurrence or negative consequences can be mitigated or even avoided through regular historical analysis. Such a forward-looking approach would also create space to focus on the truly new challenges. The lessons learnt are generally applicable and can support the development of measures to overcome future challenges. It was also confirmed that political decisions require the involvement of several advisors or a broad range of in-house knowledge, as the concepts of democracy and national security are multidisciplinary in nature.



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## ПОУКИ ОТ ИСТОРИЯТА НА ДЕЙСТВАЩАТА ДЕМОКРАЦИЯ: ИСТОРИЧЕСКИ МОДЕЛИ И ЗНАЧЕНИЕТО ИМ ЗА СЪВРЕМЕННИТЕ ПРЕДИЗВИКАТЕЛСТВА ПРЕД ПОЛИТИКАТА ЗА СИГУРНОСТ

**Резюме:** В тази статия се анализират поуки от историческото развитие на демокрацията и се използва историко-сравнителен подход, за да се провери дали настоящите предизвикателства са всъщност нови, или може да се установи повтарящ се исторически модел. Фокусът е върху изводите от политиката за сигурност за съвременните демокрации и тяхната национална сигурност. Историческият анализ показва, че демокрациите многократно са се сблъскали със сходни проблеми през различните епохи. Днес демокрациите са не само форми на управление, но и модели на ред, които се укрепват от стабилни институции, социално участие и функциониращи механизми за контрол. В същото време дефицитите в тези области могат да имат дестабилизиращ ефект и да подкопаят съществуващите политически структури. Въпреки че рамковите условия са се променили поради цифровизацията, глобализацията и новите геополитически констелации, много основни механизми остават стабилни.

**Ключови думи:** демокрация на участието; национална сигурност; предизвикателства пред сигурността; извлечени поуки; исторически модели

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## THE ROLE OF STANDARDS AND VALUES IN CORPORATE CRIME PREVENTION

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**Abstract:** *The aim of the paper is to examine and answer the question of whether and to what extent economic crime can be minimised by teaching standards and values within the company. To answer the research question, a literature review was conducted. The study shows that the decline of social values can be seen as a major cause of economic crime and that the willingness to commit crimes within a company is inhibited when there is a high level of acceptance of norms and values, as well as a high level of social morality and loyalty to the company. The study also showed that, with regard to the causes and possible prevention strategies, communicating standards and values in one's own company has a high crime-preventing effect in the area of economic crime. However, a prerequisite for successful prevention is that the communication of standards and values is sustainably integrated into the company's processes. A code of conduct is essential for this, a corporate governance that puts it into practice, including 'tone at the top' (leadership commitment) and a supportive, efficient and controlling compliance management system and an integrity management system that is tailored to the corporate culture.*

**Keywords:** *Economic Crime; Code of Conduct; Corporate Governance; Compliance Management; Integrity Management*

### INTRODUCTION

In recent years, serious violations by top managers have once again brought economic crime to the international spotlight and it is becoming an ever-greater problem for both the companies affected and for society. Not only is there considerable media interest in economic crime, but it has also mobilised the judiciary and legislators. Prior to the Wirecard scandal, the strict US regulations in particular had an impact on internal company requirements (Bussmann 2010, p. 57). In response to the Wirecard scandal, the Financial Markets Integrity Strengthening Act was passed in Germany. In addition to strengthening balance sheet control and the independence of the auditor, and tightening liability, it has given the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) extended audit rights for the purpose of monitoring and enforcing the regulations. It also regulates the duties of listed companies to set up and operate an appropriate and effective internal control system and risk management system (Müller 2021). As a result, extensive requirements and obligations for prevention have been placed on companies, which also affect the design of corporate governance and existing compliance management programmes (Velte und Graewe 2021, p. 80). These programmes include a wide range of measures for crime prevention in companies. In addition to the current developments in the area of economic crime, there are many social discussions about the decline of values. The media often speak of a real loss of values that has a negative impact on a wide range of areas of life. In criminology, socialisation, in the course of which values and norms should also be imparted, is certainly attributed a significance for the development of crime (Schwind 2021, p. 236). Accordingly, socialisation through the professional environment also takes place within the framework of secondary socialisation. (Bussmann 2016, p. 320). This raises the question of the extent to which crime in the company can be countered by suitable internal preventive measures and what role the communication of standards and values, in particular through corporate guidelines (code of conduct), can play in this. The aim of this paper is therefore to investigate and answer the question of whether and to what extent economic crime can be minimised by communicating standards and values within the company.

## **RESEARCH METHODOLOGY**

The research methodology used for this paper includes a review and analysis of the existing literature. In this context, the already existing literature is not only screened, but also summarised and evaluated. In doing so, both academic literature and current studies by auditing firms are consulted in order to be able to generate a balance between economic findings, current affairs and the state of scientific research. The data collection is carried out as part of a secondary research and also includes an examination of the statistics provided by the German government. The consideration of government statistics and studies by auditing firms enables a presentation of the relevance and development of economic crime that is as up to date as possible, also taking into account the companies. By contrast, academic literature can be used to gain much more information on how the research situation has developed. In addition to an overview of scientific results in relation to the crime-preventing effect of internal corporate compliance management measures, insights into the crime-preventing effect of corporate guidelines can also be expected based on the literature analysis.

## **RESULTS**

### **Relevance of economic crime and development**

Economic crime is of particular relevance to companies as it poses significant risks to the company and can cause serious material and immaterial damage. In Germany, there is no legal definition for the term economic crime. In criminology, there are different definitions for the term economic crime. The original definition of Edwin H. Sutherland of 'white-collar crime', which assumes a highly respected person from the 'upper class' who commits crimes in the course of his or her professional activities, is now outdated, because people from lower classes can also commit economic offences (Enste und Potthoff 2024, p. 6). In its latest concepts, criminology is pushing for a definition that is no longer defined by the person. The differentiation between crimes committed in the economic interest of companies (corporate crimes) and crimes that serve the self-interest of the perpetrator but are committed in the course of their occupation (occupational crimes) is now widespread (Meier 2021, p. 328). For the purposes of orientation and to ensure that their statistics are standardised, the police authorities use the catalogue of criminal offences set out in Section 74 c (1) Nos. 1 to 6b of the German Court Constitution Act (Gerichtsverfassungsgesetz – GVG), which regulates the jurisdiction of the regional courts in matters of economic crime. For this reason, those offences that fall under the catalogue of criminal offences are generally classified as economic crime. These include, for example, fraud (including computer fraud), embezzlement, corruption, violation of accounting obligations, competition offences and insolvency offences. Companies affected by economic crime face risks from a loss of trust, reputational damage, the endangering of business relationships, negative effects on employee engagement and, possibly, the risk of repeat offences if there is a lack of strict reaction to the crimes committed (Bussmann 2004, p. 36). The damage caused by economic crime is immense. However, it is virtually impossible to provide precise information on the actual material damage caused (Schwind 2021, p. 632). The background to this is that a considerable dark field (dark figure) must be assumed. Surveys in the context of victim surveys often fail due to the motivation of the respondents to provide information. They not only represent their own interests, but also the interests of a company that may suffer a loss of prestige and financial losses after providing information about economic crime within the company. Especially as only those offences can be investigated that a company is aware of. However, the surveys of some auditing firms can be used for orientation (Meier 2021, p. 331). In a study conducted in 2020, 5,000 executives from 99 countries were surveyed. During the survey, more than 11,500 cases of economic crime were reported, resulting in a total loss of 42 billion US dollars. (PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft 2020, p. 3). In another study concerning Germany, 75 of the companies surveyed stated that they had suffered losses of around 40 million euros. In contrast, 26 per cent of all the companies surveyed were unable to put a figure on the monetary damage resulting from economic crime. However, the figures reported relate to offences that have been discovered. In this context, it must be assumed that there is a considerable dark figure in the area of economic crime. The actual number of cases must therefore be many times higher (KPMG AG Wirtschaftsprüfungsgesellschaft 2023, p. 16). It is realistic to assume, also on the basis of models that assume a loss amounting to 10 per cent of the gross

domestic product, that this will run into the billions in Germany alone. In the context of the Wirecard scandal alone, there is talk of losses amounting to 3.2 billion euros, which Wirecard borrowed for corporate financing. Not to mention the substantial losses incurred by investors. Based on the highest prices in 2019, shareholders have lost around 25 million euros (Schenker et al. 2023, p. 476).

An evaluation of the police crime statistics (German) illustrates the extent of the material damage. It should be noted here that the police crime statistics only include offences that have actually come to the attention of the police (Bundesministerium des Innern und für Heimat 2024, p. 4). According to police crime statistics, 38,925 cases of economic crime were registered in Germany in 2023, which represents only 0.66 percent of the total recorded crime (Bundeskriminalamt 2024b; Bundeskriminalamt 2024a). The damage caused by economic crime rose by 28.6 per cent and was responsible for 35.7 per cent of the total damage caused by all crimes recorded (Bundeskriminalamt 2024d, p. 8). This is particularly noteworthy because the number of cases of economic crime registered by the police has almost halved compared to the previous year (73,114). Although the number of cases in the area of economic crime generally fluctuates considerably, the large number of offences in the previous year (2022) was due to a bulk proceedings in which 33,738 cases were registered, resulting in a total loss of 17.7 million euros. (Bundesministerium des Innern und für Heimat 2024, p. 22). In addition to the monetary losses, further intangible losses can arise from economic crime. These include competitive distortions, a loss of trust in the integrity of the financial market, and a loss of reputation for companies or even entire industries (Bundeskriminalamt 2024d, p. 8). Further monetary losses for companies can also arise from the consequences for share prices on the stock exchange or from the management of criminal matters within the company (Bussmann 2010, p. 62). For example, additional communication efforts for possible clarifications in the media, internal investigations or the commissioning of external experts. The clearance rate for economic crime is very high. In 2023, 85.2% of reported offences were solved. The high rate of detection is due in particular to the fact that the majority of the offences recorded in the police crime statistics are those for which the complainant often knows the name of the suspect and can be named (Bundeskriminalamt 2024d, p. 8).

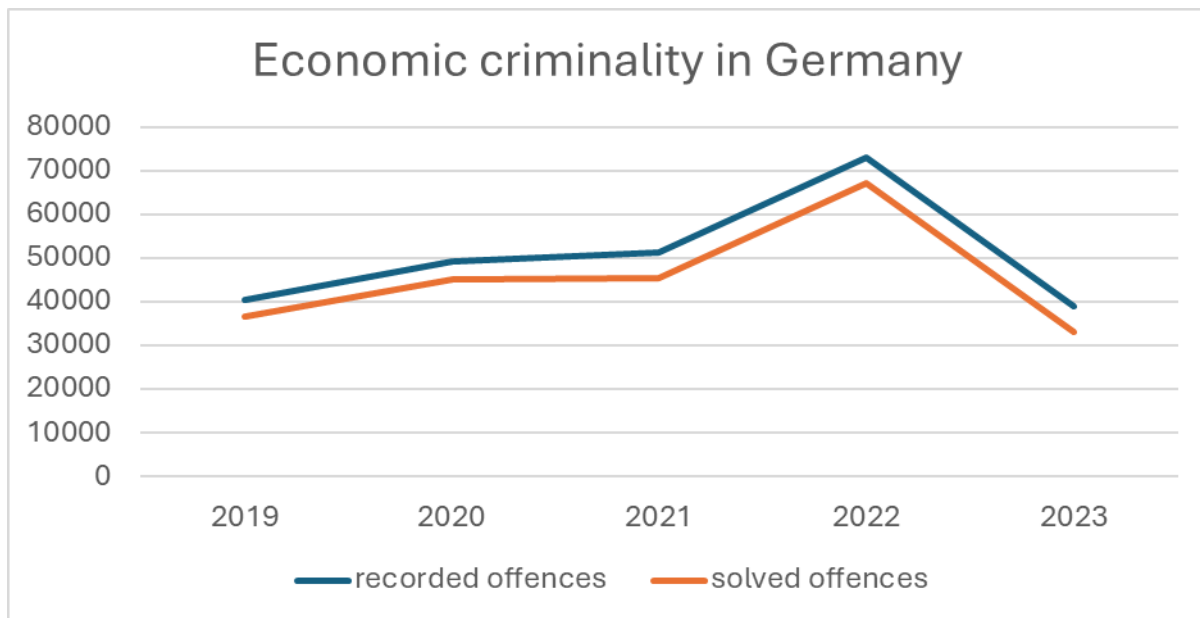


Fig. 1. Number of cases and offences recorded (Bundeskriminalamt 2024b, p. 1)

### Causes and theories of economic crime

Effective crime prevention requires an understanding of the causes of economic crime (Hlavica et al. 2017, p. 62) therefore, the causes of economic crime are to be examined below with regard to criminological and socio-economic aspects. From the author's point of view, the most important criminological aspects are the rational choice approach, the theory of differential control and the so-called fraud triangle. One of the most well-known theories of criminal behaviour, the theory of rational choice, can also be adapted to

the area of economic crime. Before committing an economic crime, the offender weighs up the costs and benefits. An economic crime is then committed if the expected benefit to the offender from committing the offence appears greater than the benefit of behaving in a compliant manner. However, the theory of rational choice has been criticised because it does not take into account the opportunity structure and the situation in which the offence is committed (Meier 2021, p. 338). The theory of differential control was published as early as 1939 by Edwin H. Sutherland and focuses on the fact that criminal techniques and skills, as well as values and attitudes, can be learned just like any other behaviour. This learned behaviour takes place in the communication process in a group and both skills and norms are adopted. The decisive factor here is whether the social norms and laws in the group are considered positive or negative. Depending on the significance that the group attaches to legal norms, crime will or will not occur (Bock 2019, p. 65). The willingness to commit economic crimes increases when criminal behaviour and breaking the law are tolerated in a team. The fraud triangle was developed by Donald Cressey. According to this, the probability that an employee of a company will come to criminal attention increases when three factors are present. On the one hand, there must be an opportunity to commit a crime, and on the other hand, the offender must have an incentive or feel compelled or under pressure. The final factor is that the offender must be able to justify the delinquent behaviour to themselves. (Cleff et al. 2011, p. 6). Fraudulent acts regularly occur when these three factors coincide in the person of the offender. The motives and triggers for fraudulent acts can be financial problems and motives (debt, greed), but also non-financial motives (seeking recognition, pressure to perform). Opportunities for economic crime are provided by ineffective internal controls and complex and unstable organisational conditions (organisational structures) (Hlavica et al. 2017, p. 66). Furthermore, the perpetrator only takes an opportunity if, on the one hand, he assumes that the probability of detection is minimal and, at the same time, he has the authorisations and abilities to actually take advantage of the opportunity (Knull 2023, p. 275). In order to justify an economic crime, the person committing it must be willing to do so in terms of their character and ethical moral values. On the other hand, the existing corporate culture is essential for the individual perception of prohibited actions or their justification. The willingness to act criminally is encouraged when employees attach little importance to ethical corporate values and guidelines (Hlavica et al. 2017, p. 66). In particular, it is easier for the perpetrator to justify the offence because some economic crimes (e.g. corruption or price fixing) only have abstract victims. The perpetrator does not have to face a victim 'face to face', which further lowers the inhibition threshold for committing the offence (Noll 2020, p. 70). In practice, it can be particularly helpful to use crime theories or the fraud triangle as a guide to analyse and structure the problem. However, the relationships between the different factors are neglected. Schneider's 'Leipzig Model of Economic Crime Behaviour' attempts to meaningfully combine the individual aspects (Schneider 2008). In order to carry out an economic crime in a company, the possibility of the commission of the offence must first be recognised and evaluated. After the evaluation, one's own action is triggered. First of all, a situation must be identified as a security gap or a favourable opportunity. The question then arises as to whether the employee regards the situation as a security risk or perceives it as a 'good opportunity'. A 'good opportunity' is only seen if personal risk factors are present, such as a poor relationship with money or frustration and resentment (Bock 2019, p. 374). According to the Leipzig Process Model, if a person experiences frustration or humiliation in their professional environment, e.g., there is a risk of fraudulent actions in order to compensate for the negative feelings resulting from the humiliation. (Cleff et al. 2011, p. 6) also see the subjective emotional world as a central condition for the emergence of economic crime. A lack of recognition and appreciation, as well as frustration, increase the probability of a crime being committed. Whereas the risk of committing a crime decreases among satisfied actors, in addition to the criminological aspects, there are also other socio-economic aspects that can be cited as causes of economic crime. One major factor in the increase of economic crime is the growing complexity of companies, which usually have a deficit in the organisational structures (Hlavica et al. 2017, p. 68). This in turn leads to an increased risk of information deficits and accounting irregularities, which in turn often provide opportunities for fraudulent activities (Hofmann 2008, p. 43). A growing corporate complexity, with the resulting increased opportunities for economic crime, is caused not only by complex corporate structures but also by internationalisation (KPMG AG Wirtschaftsprüfungsgesellschaft 2023, p. 10). Furthermore, the opportunities for fraud by technically skilled perpetrators are increasing with the ongoing development of



international networks (PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft 2022, p. 10).

### **Characteristics of economic criminals**

In addition to external groups of perpetrators, a particular risk group for economic offences are a company's own employees. Even the management itself is sometimes among the group of perpetrators, since the opportunities for circumventing controls and the expertise are greatest here (Bussmann 2004, p. 40; PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft 2020, p. 5). It is hardly surprising that economic criminals are often latecomers to crime (Schneider und John 2010, p. 160). The majority of perpetrators are around 40 years old. One reason for this could be that for some economic offences, a certain position in the company must first be reached, with knowledge of the business processes, in order to be able to commit the offence at all. A 'latecomer to crime' also implies that the offender often has no previous criminal record. Furthermore, the 'typical business criminal' is well educated, married and disproportionately often male (Neubacher 2020, p. 189). The fact that women are underrepresented in the field of crime is also confirmed by the police crime statistics. Of 26,125 suspects, only 6,646 were female. The age structure is also reflected in the police crime statistics. Most suspects can be categorised as being between 30 and 40 or between 40 and 50 years old (Bundeskriminalamt 2024c). Furthermore, economic offenders are often socially unremarkable and have very good networks (Müller 2014, p. 15). In addition to the social profile, a number of empirical studies have shown that the personality of the perpetrator is also a decisive factor in the commission of an economic offence. A large number of empirical studies come to the conclusion that economic offenders often display a strong sense of narcissism (Noll 2020, p. 94). Although a certain narcissism seems to be common in management, extreme narcissism can also develop into a narcissistic personality disorder. A narcissistic personality disorder can be characterised by a number of attributes that fit the profile of an economic criminal. In addition to a pronounced sense of self-importance and a willingness to take risks, a lack of empathy and an exaggerated desire for recognition and success, a narcissistic personality disorder is also characterised by a lack of impulse control and the ability to deceive and manipulate. Since narcissists are often found at higher levels of the hierarchy, they also have access to resources that tend to be used for personal enrichment rather than by non-narcissistic individuals (Enste und Potthoff 2024, p. 16). Further studies have also shown a lack of self-control. This refers in particular to the ability to endure the deferral of rewards. If this ability is not particularly well developed, the person tends to acquire the reward independently through an economic (criminal) offence (Noll 2020, p. 94). Although a certain type of offender can be identified, some studies also show that there are economic criminals who deviate entirely from the offender profile. In their research, Schneider and John refer to this type of offender as the "Krisentäter" (crisis offender). In this case, a private or professional event leads to the inability to maintain the previous status or lifestyle, and the commission of a crime to compensate (Schneider und John 2010, p. 165).

### **The importance of norms and values for economic crime**

It is not only personality traits and character traits that shape a person's behaviour; value orientation and beliefs also have an impact on a person's behaviour (Noll 2020, p. 95). To explain criminal behaviour, it is therefore essential to also consider the effect of norms and values, since a criminal act is defined 'by the breaking of norms and the violation of intersubjectively shared values' (Translation of: "*durch den Bruch von Normen und die Verletzung intersubjektiv geteilter Wertvorstellungen*") (Mehlkop 2011, p. 83). From criminological research, we know that a deficient sense of values has a significant impact on the commission of a property offence (Bussmann 2008, p. 123). Since all individuals are part of a value culture, crimes are not committed as a rule simply because people consider it 'wrong' and 'indecent', regardless of a possible opportunity to do so or existing security gaps. In addition to committing a crime due to a deficient sense of values, today's generation is also characterised by a different way of looking at norms. It depends on the context and situation in which a person finds themselves whether norms are accepted and applied. Actions and behaviours that are considered wrong and wrong in a private context can be approved of and legitimised in a professional context (Bussmann 2008, p. 124). These contradictions in values are also reflected in other ways. If high standards of loyalty and honesty are applied in the family environment, these standards are

far less likely to apply in dealings with banks, the state or even employers (Noll 2020, p. 97). The existing 'peer groups' in the company also have an impact on the acceptance of norms. If colleagues approve of or encourage criminal behaviour, the individual also feels confident about committing an offence (Bussmann 2008, p. 124). In addition to an environment that legitimises crime, personal experiences of victimisation as a result of property crimes can also reinforce a lack of commitment to norms (Meier 2021, p. 338). From an empirical point of view, Eckhard Burkatzki (Burkatzki 2008) in particular has used a standardised survey to examine whether a certain value orientation or value system increases the willingness to commit economic crimes. To do this, he first defined three social systems in which economic crime can be used. Community (regulated by informal control and solidarity among members), state (control is exercised through the threat of sanctions and criminal law) and market (competition between several competitors for economic success). The aim is to identify how high the acceptance of the norm-related orientations is in the three areas. Study participants who consider community-related norms to be important show a high level of community orientation. A nomo-centric (law-centred) orientation is present when a subject attaches particular importance to law-abiding behaviour and, with a strong orientation towards competition and profit maximisation in the market, an economic orientation is present. (Noll 2020, p. 95). By combining the value orientations, prototypical subgroups can be formed from the study participants. On the one hand, there is the 'norm-oriented market activist' (Translation of: "normorientierter Marktaktivist"). This subject places a strong focus on economic success, coupled with an above-average sense of community and legal norms. Economic success is important to this type of person, but it can be controlled and moderated by means of a sense of duty and a sense of community. On the other hand, there is the type of the 'radical market activist' (Translation of: "radikaler Marktaktivist"). Here, too, the focus is on economic success. However, the orientation towards the community and legal norms is far below average. In this typology, the radical market activist is the one who strongly neglects the importance of formal legal and social concerns and instead radically puts his own market interests in the foreground (Burkatzki 2008, p. 158). Although the radical market activists are the smallest subgroup in the study, at 14 per cent, they show an exorbitantly high willingness to commit crimes compared to the other subgroups (Noll 2020, p. 96). The decline in social values is also considered to be a major cause of economic crime within companies. This includes a decline in employee loyalty and a disregard for applicable codes of conduct (KPMG AG Wirtschaftsprüfungsgesellschaft 2023, p. 22). In an environment in which standards, social values and morals play no or only a subordinate role, the willingness to engage in criminal behaviour within one's own company increases. By contrast, a high level of acceptance of standards and values and a strong emotional and social bond with the company can inhibit the exploitation of criminal opportunities and offer a certain degree of protection against damage (Hlavica et al. 2017, p. 70). To answer the question of how a cause-oriented fight against economic crime in the company can be carried out and what role the communication of norms and values in the company and a corporate ethic play in this, the reactionary options and the internal company prevention concepts for avoiding economic crime must be examined in detail.

### **Combating economic crime in the company**

The most obvious reaction of the affected companies to economic crimes is to file a criminal complaint and leave further criminal prosecution to the police, public prosecutor and courts. However, in reality, only a small percentage of companies file a criminal complaint immediately, often for fear of reputational damage (Harz 2012, p. 6). The reluctance of companies to press criminal charges in cases of economic offences is based on four main reasons: Criminal charges pose unpredictable risks for companies, particularly due to unmanageable investigations; criminal prosecution is seen as inefficient; the unpredictable effect of penalties is considered to be too low; and threats of criminal charges are considered to be dysfunctional for the detection and investigation of economic offences (Bussmann 2004, p. 37). The main reason for this is the complexity of preliminary proceedings in the area of economic crime. Due to convoluted corporate structures, there are often a large number of suspects and witnesses to question and an enormous amount of documents to sift through. Due to the complexity of the issues and the expertise of the perpetrators, the authorities often also have to call in auditors and tax experts for the investigations. All these factors make criminal proceedings very lengthy (Neubacher 2020, p. 187). In order to conserve resources and to avoid

inflating the duration of commercial criminal proceedings, the commercial criminal divisions often offer ‘deals’ in which some charges are disregarded if confessions are made in other charges. However, this different treatment of economic criminals and other criminals inevitably leads to a dwindling reputation of the criminal proceedings in general (Burkatzki und Löhr 2008, p. 15). Furthermore, criminal proceedings can only be conducted to the extent that legal interests are also protected by criminal law. Although the first law to combat economic crime was enacted in Germany as early as 1976 (Schwind 2021, p. 646), there are still accusations today that legal norms are formulated in too vague a manner and are insufficient, and that this is accompanied by imprecise legislation (Bock 2019, p. 375). Increased asset forfeiture and the confiscation of the proceeds of crime, which a perpetrator would have to fear if they were discovered, could help here. This approach could have a particular influence on the perpetrator’s cost-benefit analysis before the offence (Meier 2021, p. 340). However, this is not the responsibility of companies, but of the judiciary and politicians, who must create an effective legal framework for this. Alternatively, the company can initiate its own investigation and implement and impose internal sanctions. The company can impose civil, labour and even criminal sanctions. Such sanctions imposed by the immediate environment of the perpetrator are usually more effective than criminal penalties. (Dannecker und Bülte 2020, p. 82). Internal investigations can help to assert civil and insurance claims and prevent repeat cases. Internal investigations are independent of possible criminal proceedings but can also be conducted in a similar manner (Süße 2018, p. 350). In addition to interviewing employees, premises may also be searched, documents seized and e-mails analysed. The investigating units then prepare protocols of interviews or investigation results, which are also used by law enforcement authorities. However, German courts have not yet reached an agreement on the use of evidence in criminal proceedings (Süße 2018, p. 354). However, it must also be clear that legally trained personnel are needed for internal investigations and that investigations by compliance, internal audit or corporate security, as well as by external law firms or consulting firms, are associated with a high expenditure of time and money. In the light of the criticism of the criminal proceedings, the question inevitably arises as to what companies can do to prevent crime and thus avoid economic crime within the company itself, in addition to conducting internal investigations, which often only begin once a legal violation has already occurred. The question also arises as to what role the communication of norms and values, in particular through value-oriented corporate policy, corporate ethics and ethically based codes of conduct, plays in the company.

### **Internal corporate crime prevention programmes to avoid economic crime**

The overarching framework is derived from value-oriented management within the framework of corporate governance. There is still no standardised global definition of corporate governance. Generally speaking, corporate governance is understood to mean the legal and factual framework for managing and supervising a company. According to the German Corporate Governance Code, good and responsible management of the company in the interest of the company (continued existence of the company and its sustainable value creation) requires not only legality, but also ethically sound, responsible behaviour (Regierungskommission 2022, p. 2). The purpose of corporate governance is thus to minimise information imbalances, eliminate conflicting goals and build trust by means of appropriate regulations (Velte und Graewe 2021, p. 1). Accordingly, corporate governance involves compliance with laws and regulations as well as recognised standards and recommendations, and the development of a company’s own guidelines. The prerequisite for this is the unconditional willingness of the company’s leadership to personally accept the standards to which the company is committed (tone at the top), as this is the only way to ensure that governance is actually practised (Harz 2012, p. 3). Corporate governance is intended to strengthen trust in the company’s management (Regierungskommission 2022, p. 2). By creating organisational arrangements and procedures that determine good corporate governance, incentives, constraints and motivation for criminal behaviour can be reduced or eliminated (Noll 2020, p. 18). Good, responsible and ethically sound corporate governance can also serve to communicate norms and values to employees in order to reduce the risk of economic crime in the company. To this end, the aim should be outlined of effectively preventing and punishing economic crimes that could be committed from within the company (Noll 2020, p. 195). Corporate social responsibility can be an important part of corporate governance. Corporate social responsibility is a voluntary

concept for corporate social responsibility that pursues the aspect of sustainability and links the three pillars of economy, ecology and social affairs with concrete entrepreneurial action. CSR thus encompasses a wide range of activities undertaken by companies in the areas of social, ethical and environmental responsibility, with which sustainable development is implemented in the company's day-to-day operations (Hlavica et al. 2017, p. 73). By taking CSR seriously and imposing social responsibility on themselves, companies can also help to prevent economic crime. This can also improve their image and maximise profits (Theile 2008, p. 417). Furthermore, good corporate governance also has a compliance management system. The focus of compliance is on adherence to laws, ordinances and regulations, as well as internally self-imposed and formulated rules and guidelines, which may substantiate and tighten laws and ordinances, but not disable or weaken them (Velte und Graewe 2021, p. 24). To ensure compliance, companies implement employees or departments that develop internal preventive and sometimes also repressive procedures to enforce internal rules, regulations and laws independently of government law enforcement agencies. This may be, on the one hand, the implementation of compliance training or the threat of criminal and labour law sanctions and, on the other hand, the operation of a whistleblower system (Meier 2021, p. 341). Furthermore, codes of conduct or codes of ethics are now par for the course, particularly in large companies. These self-imposed rules of conduct provide employees with corporate values and corporate rules and stipulate these for each employee. These codes of conduct are specified by corporate guidelines that are formulated for individual departments or tasks and contain detailed specifications (Velte und Graewe 2021, p. 28). The aim is to communicate the values and norms set out in them to employees and to serve as a guide for their decision-making and actions, particularly to avoid undesirable behaviour, especially behaviour that is criminally relevant. In this respect, company guidelines serve the purpose of internal social control and are thus an instrument of secondary crime prevention (Theile 2008, p. 411). Infringements of the Code of Conduct and behavioural guidelines must also be investigated and sanctioned by internal control mechanisms (audits, internal investigations, whistle-blower system). Only in this way can an effective prevention concept be achieved (Wachter 2012, p. 458). The purpose of the safeguards and controls provided by compliance is to ensure that the company's activities are in line with all social guidelines and values, as well as with morals and ethics. However, this requires practical implementation through appropriate training measures and monitoring of compliance with the company's internal ethics and compliance programme. Overall, the rules of conduct and ethical guidelines must be formulated, communicated and embraced in the company in a sufficiently specific manner (Hlavica et al. 2017, p. 72) Only by integrating the company's values into its business processes in a sustainable way can corporate ethics be stabilised and fraud successfully prevented (Thome 2004, p. 53) In this context, the communication of norms and values through an effective compliance management system is of great importance in terms of crime prevention. However, it should also be noted that an exaggerated compliance culture can have negative consequences. Excessive bureaucracy, in particular, can lead to demotivation and the development of a culture of mistrust (Noll 2020, p. 8). This, in turn, can have an impact on the entire corporate culture, which can influence not only the emergence of economic crime but also the success of compliance measures (Bussmann 2010, p. 70). A compliance system is therefore only effective and generates credibility among other stakeholders if it is operated seriously, without getting out of hand in bureaucracy. This is particularly not the case if compliance is used merely for reasons of delinking and for advertising purposes. Rather, a strong compliance system requires a firm conviction on the part of management and employees that compliance with laws and internal rules is part of a company's self-image (Grüninger 2016, p. 9). For this reason, values and integrity management is often implemented as a supplement to win over employees to a general value system that promotes a good reputation and suggests the integrity and fairness of a company to stakeholders by emphasising moral principles (Noll 2020, p. 211). Integrity management can be considered even more ambitious than compliance management. In the context of integrity management, companies want to use the intrinsic motivation of employees to act in a value-oriented manner and to do 'the right thing'. The employee should thus act according to the 'right' values of their own accord and out of full conviction. To this end, companies rely on targeted training to sensitise employees to the possibility of moral conflicts in their day-to-day work and to show them possible solutions (Noll 2020, p. 196). However, training for managers is far more important. This is because ensuring integrity in a company is a challenging and ongoing management task



that requires, in particular, a consideration of employees in terms of compliance and morale, but also self-reflection. To achieve this, it is essential that managers are trained in how to promote integrity in their area of responsibility and how to make the right decisions in conflict situations. This is because compliance and integrity can only succeed if executive management is aware of their role model function. (Grüniger 2016, p. 10).

## CONCLUSION/DISCUSSION

The decline of social values can be seen as a major cause of economic crime. In contrast, the willingness to commit economic crimes within the company is inhibited if there is a high level of acceptance of norms and values, as well as a strong emotional and social bond with the company. The study showed that communicating standards and values within one's own company has a high crime-preventing effect in the area of economic crimes with regard to the causes and possible prevention strategies. However, a prerequisite for successful prevention of crime is that the communication of norms and values is sustainably integrated into the corporate processes. A code of conduct is essential for this, as is corporate governance that puts it into practice, including 'tone at the top' and a supportive, efficient and controlling compliance management system and an integrity management system tailored to the corporate culture. These are prerequisites for systematically, preventively and sustainably counteracting fraudulent activities within the company. Internal corporate crime prevention concepts that are based on the communication of norms and values and implemented in the manner described are thus an appropriate instrument for crime prevention and thus for minimising corporate economic crime.

It is in the nature of things that the communication of norms and values in the company is only suitable for minimising economic crimes committed by internal perpetrators. Although there is often also a collaboration between the internal and external perpetrators, or crimes are committed entirely from the outside. The study also revealed that successful crime prevention consists of different puzzle pieces. Effectiveness is therefore not only dependent on the communication of norms and values or the introduction of measures to increase the risk of detection for perpetrators. Rather, successful crime prevention within a company can only be achieved if corporate governance, compliance management and integrity management are interwoven, and mutual functionality is guaranteed. The main focus here is on management. Compliance can only effectively counteract economic crime in a company if the workplace culture is also coherent. What is needed, therefore, is a vibrant culture of values that is characterised by the value of integrity and is supported by the company's management. It is also clear that effective and sustainable prevention of economic crime can only be achieved through a combination of state legislation and sanctioning on the one hand and corporate prevention and combating crime on the other.

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## УСТАНОВЯВАНЕ НА СТАНДАРТИ И ЦЕННОСТИ КАТО ИНСТРУМЕНТ ЗА ПРЕВЕНЦИЯ НА ПРЕСТЪПНОСТТА В КОМПАНИЯТА

**Резюме:** Целта на статията е да се проучи и да се отговори на въпроса дали и до каква степен икономическата престъпност може да бъде сведена до минимум чрез обучение в областта на стандартите и ценностите в компанията. За да се отговори на изследователския въпрос, е направен литературен обзор. Проучването показва, че упадъкът на социалните ценности може да се разглежда като основна причина за икономическата престъпност и че желанието за извършване на престъпления в рамките на предприятието се възпрепятства, когато е налице високо ниво на приемане на нормите и ценностите, както и високо ниво на социален морал и лоялност към предприятието. Проучването показва също така, че по отношение на причините и възможните стратегии за превенция съобщаването на нормите и ценностите в собствената компания има висок превантивен ефект в областта на икономическата престъпност. Предпоставка за успешна превенция обаче е комуникацията на стандартите и ценностите да бъде трайно интегрирана в процесите на компанията. От съществено значение за това са кодексът за поведение, корпоративното управление, което го прилага на практика, включително „тон на върха“ (ангажираност на ръководството), както и подкрепяща, ефективна и контролираща система за управление на съответствието и система за управление на интегритета, съобразена с корпоративната култура.

**Ключови думи:** икономическа престъпност; кодекс за поведение; корпоративно управление; управление на съответствието; управление на интегритета

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## RISK MANAGEMENT IN CRISIS SITUATIONS

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**Abstract:** Risk management in crisis situations is a key aspect that is of crucial importance for organisations and societies. Crises, whether in the form of pandemics, natural disasters or other unexpected events, pose immense challenges as they often have unpredictable and far-reaching effects on the social and economic fabric (Gerstacker, Blätter 2019, pp. 64–69; Fleßa, Kuntosch 2022, pp. 217–223). In such situations, risk management becomes a crucial tool for minimising losses, preserving resources and maintaining the reputation of organisations (Gerstacker, Blätter 2019, pp. 64–69). This article aims to explain the different approaches to risk management in crisis situations in order to develop a comprehensive understanding of the effectiveness and flexibility of different strategies. This paper is divided into several sections, each of which examines specific aspects of risk management. Firstly, the basics of risk management in crisis situations are defined. This is followed by brief analyses of risk management strategies in various countries. Finally, the paper looks at the challenges and future developments in risk management. The unpredictability of crises, technological and social changes as well as political framework conditions are identified as key challenges that need to be overcome. At the same time, current trends in risk management research and the importance of technology and innovation for future strategies are discussed. The aim is to develop a global approach that makes it possible to respond effectively to crises in an increasingly networked world.

**Keywords:** Risks; Risk Management System; Crises Situations; Challenges; Future Developments

## INTRODUCTION

Risk management is a crucial process that aims to identify, assess and manage potential risks in order to minimise the negative impact on organisations and societies. In crisis situations such as pandemics or natural disasters, risk management gains additional importance, as the unpredictability and urgency of such events require a rapid and effective response (Gerstacker et al. 2019). A systematic and documented approach to risks, as prescribed by the law on control and transparency in the corporate sector, is particularly important in times of crisis in order to recognise and counteract deviations from defined targets at an early stage (Gerstacker et al. 2019). By outlining the basics of risk management in crisis situations, it becomes clear that a systematic approach is required to effectively meet the challenges of such events. Both the minimisation of losses and the preservation of resources and reputation are key aspects that determine success or failure in times of crisis.

The importance of the topic can therefore be attributed to the fact that there is necessity of responding to globalization crises. The COVID-19 pandemic has most effectively shown that there is nothing like risk management if organisations must continue to exist and people stay healthy (Gerber, Wandjo 2023, pp. 349–376; Wahidie, Yılmaz-Aslan 2022, pp. 151–156). That is why, with reference to crisis management not only implies a set of onlooker's actions but also presupposes the existence of anticipatory strategies allowing to evaluate losses and threats at the initial stage (Gerstacker, Blätter 2019, pp. 64–69; Herrmann, Buspavanich, Oeser, Berger, Lech, Gellert 2023, pp. 26–34).

## RESEARCH METHODOLOGY

This article is primarily based on the methods of case studies, academic literature, press releases and experience reports from the private and public sectors. Analyzing case studies from different countries with regard to their risk management in crisis situations offers several advantages. On the one hand, the different approaches can generate a learning effect for other countries and thus avoid the repetition of mistakes.

Another aspect is the strengthening of international cooperation through the exchange of this information, which can lead to an increase in resilience through diversification.

The analysis of international case studies has been shown to result in a risk management approach that is more well-founded, more flexible and more effective in crisis situations. The case studies selected for this article were chosen to represent a broad range of existing crisis situations, including Germany, which was selected for its analysis of crisis management during the pandemic of 2020, Japan, which was selected for its handling of natural disasters, the USA, which was selected for its crisis management following various terrorist attacks, and South Korea, which was selected for its handling of health crises.

## **RESULTS**

### **Case studies from different countries**

#### **A. Case study 1: Germany (Analysis of crisis management during COVID-19)**

The COVID-19 pandemic presented Germany with unprecedented challenges that required robust crisis management. Germany responded with a combination of measures, including national lockdowns, testing strategies and vaccination campaigns. These measures aimed to contain the spread of the virus and protect the healthcare system from overload (Gerber et al. 2023). The rapid development and provision of vaccines was a decisive factor that made it possible to get the pandemic under control. Germany's federal structure also played an important role, as it allowed for flexible responses to regional centres of infection, but also led to coordination problems (Herzog et al. 2022).

#### **B. Case study 2: Japan (Dealing with natural disasters (e.g. earthquakes))**

Japan is known for its extensive measures to prepare for natural disasters, especially earthquakes. These measures include strict building codes, regular disaster drills and a sophisticated early warning system. These strategies are designed to protect human life and minimise property damage. The Japanese government has set itself the task of comprehensively educating the population about risks and preventive measures, which leads to a high level of awareness in society.

#### **C. Case study 3: USA (Crisis management after terrorist attacks)**

The terrorist attacks of 11 September 2001 presented the USA with enormous challenges in the area of crisis management. The immediate response included the mobilisation of rescue forces and the securing of endangered areas. In the long term, this incident led to fundamental changes in the country's security and risk management strategies. The introduction of the Department of Homeland Security and the tightening of security measures are direct consequences of these events.

#### **D. Case study 4: South Korea (Dealing with health crises (e.g. MERS, COVID-19))**

South Korea has distinguished itself through its proactive and technology-based approach to dealing with health crises. During the MERS epidemic in 2015, the country developed effective strategies to contain the spread of infectious diseases. This experience was used during the COVID-19 pandemic to implement comprehensive testing and tracing systems (Fleßa et al. 2022). The use of digital technologies to monitor infection chains played a central role in this.

### **Comparison of risk management strategies**

#### **1. Cultural and political influences**

The cultural and political framework of a country plays a decisive role in the design and implementation of risk management strategies. In Germany, for example, federal structures and decentralised decision-making processes influence the way in which crises are managed (Gerstacker et al. 2019). This often leads to a variety of approaches that are adapted to local circumstances, but also to a certain lack of uniformity in the response. In contrast, South Korea shows a centralised and coordinated approach based on fast decision-making processes and a high level of compliance among the population (Fleßa et al. 2022). These differences illustrate how cultural and political factors can influence the effectiveness and speed of implementation of risk management strategies.



## **2. Access to and distribution of resources**

Access to and distribution of resources are decisive factors for the effectiveness of risk management strategies. In Germany, well-equipped healthcare systems play a central role in coping with crises such as the COVID-19 pandemic (Gerstacker et al. 2019). These resources make it possible to react quickly to changing situations and make the necessary adjustments to protect the health of the population. In contrast, South Korea has shown how effective crisis management is possible even with more limited resources through the use of technology and innovation, such as comprehensive testing and tracking systems (Gerstacker et al. 2019).

### **Success factors for effective risk management**

#### **1. Community involvement**

Community involvement is a key success factor for effective risk management. In Japan, the population is regularly involved in disaster drills, which increases awareness of risks and promotes willingness to participate in crisis situations. This community involvement helps to ensure that risk reduction measures are widely accepted and effectively implemented. In South Korea, the government's transparent communication during the COVID-19 pandemic has strengthened public confidence and supported compliance with measures (Wahidie et al. 2022).

#### **2. Flexibility and adaptability**

Flexibility and adaptability are crucial in order to be able to react to rapidly changing crisis situations. In Germany, federal structures have both advantages and disadvantages in terms of flexibility, as they enable adaptations to local needs, but can also lead to delays (Gerstacker et al. 2019). South Korea has shown during the COVID-19 pandemic that rapid adaptability can be achieved through the use of modern technologies and clear communication strategies (Fleßa et al. 2022).

### **Challenges in risk management**

#### **A. Unpredictability of crises**

The fact that crises are unpredictable is another issue prominent in risk management. Crisis is by definition an unforeseen event which affects organisations and societies and which has substantial implications (Gerstacker, Blätter 2019, pp. 64–69). COVID19 is an example of when a threat can emerge suddenly and how challenging it is to be prepared for this kind of threat (Fleßa, Kuntosch 2022, pp. 217–223). This unpredictability means that risk managers need to be very agile and ready to adapt in response to changing information. Risk management must therefore consider possible development of efficient strategies that ease quick and effective response to the unforeseen accidents.

The need for the preparedness for response to a surprise entails often the readiness and preparedness to adjust the previous plans and strategies. In many cases, this means implementing a learning and improvement-oriented culture within the broader organisations. For instance, throughout the COVID-19 situation all around the world, most of the nations have been indefinitely shifting their health and safety measures to fit the current needs (Herzog, Beil, Kelly 2022, pp. 1409–1430). It is important to do so to address the dynamics of unexpected emergencies that may occur at any one time.

Last, but not least, the fact that crises are unpredictable makes cooperation between different actors very high, and coordination is necessary. These are ministries, departments, government agencies, NGOs, international organisations, civil society organisations among others. The COVID-19 pandemic has illustrated a need for international collaboration in order to address a crisis quickly (Wahidie, Yılmaz-Aslan 2022, pp. 151–156). Since resources can be shared and coordinated in a network and alliance fashion, the negative effects of unpredictable crises may be minimized.

#### **B. Technological and social changes**

Technology and social factors also form another threat that has a great potential impact when it comes to risk management. By exploring these linkages it will be possible to develop an understanding of operational technologies and the risks they present as well as their potential benefits. For instance, digital platforms



have supported operationalization of many industries during the COVID-19 world crisis (Gerber, Wandjo 2023, pp. 349–376). However, the implementation of such technologies also introduce new categories of risks for instance a cyber risk or data risk which must be addressed in risk management strategy.

Yet again, operational changes such as shifting demographics and changing social expectations affect the perception and management of risks. For instance, in the context of the pandemic, social networks, and digital communication can become effective for delivering information and community mobilisation (Herrmann et al. 2023, pp. 26–34). At the same time they have proven to be a source of many myths which make it hard to manage crises. Risk managers must therefore pay keen attention and analyse social trends and its implications on the risk exposure scenery.

Last but not least technological and social change challenges call for promotion of training and awareness among the employees of the organization. Technological training and handling of social change are fundamentals of risk management. What is critical for organisations to manage is the ability of their employees to address new demands and pressures that emanate from technological as well as social change.

### **C. Political framework and decision-making**

When it comes to risk management it is clear that political framework conditions are most relevant as they define the overall environment for action and determine possible courses of actions and their implications. During crisis situations, political measures play a decisive role to mobilise resources and orchestrate measures (Fleßa, Kuntosch 2022, pp. 217–223). The pandemic has proven that one of the critical factors of managing risks is the speed and efficiency of governments' activities.

Another issue they speak up about is that most political decisions take quite a long time to make they are hampered by bureaucracy. Large hierarchies reduce the speed in which response to threats is activated and this slows down risk management (Fleßa, Kuntosch 2022, pp. 217–223). Fast decision-making as a result of well-coordinated administrations and clearly assigned communication paths are thus indispensable for acting immediately in emergency cases.

Last but not least, political framework conditions also determine the distribution of resources needed for risk management. Who gets funded and what gets funded helps shape which risks can be managed and which steps can be taken. Risk management in the larger system therefore needs to be aligned very closely with political decision makers to ensure that resources are available and used well.

### **Future developments in risk management**

#### **A. Trends in risk management research**

In the present concerns of the risk management subject these scholars have seen that there is a tendency on focusing on the utilization of big data as well as AI in risk prediction for better operational efficiency in risk management. This approach facilitates strategic use of collected information to support decision making and in some cases acts as a replacement for other conventional approaches. AI in risk assessment has been found to have capabilities that allow it to identify what the observer cannot see, hence quick identification of the possible crises (Gantenbein 2016, pp. 387–406). As the same, there are some questions to the usage of such technologies from the ethical data protection points of view. Researchers are therefore trying to come up with measures that are as efficient as they are ethically warranted.

Another major tendency is the growth of interest in the systems' reliability and robustness. As a result, the emergent characteristic in the literature, of resilience, the ability of a system to recover quickly after a disruption, is deemed more important than before. The generally accepted approach previously was entirely precautionary and mainly preventive, but it is now fully realized that it is impossible to eliminate many risks. Instead, what a robust structure can assist to mitigate the detrimental effects of the messy scenarios. There are post hoc studies proving that those who allocate resources to resilience management cope with unpredicted circumstances effectively (Fleßa, Kuntosch 2022, pp. 217–223).

In the current literature, there has been a shift of emphasis on the part that communities play in managing risks. These communities are essential in risk identification of the local risks and risk combating mechanisms. The evidence suggests that for any risk management strategies to work, an engagement of the locals in decision making is helpful in ensuring their effectiveness (Herzog, Beil, Kelly 2022, pp. 1409–1430).

## **B. Importance of technology and innovation**

The further development of risk management is shaped decisively by technology and innovation. To that respect, the digitalisation favours the emergence of new strategies to monitor and control risks. Sensors and drones are used as technological tools to aid in real time data collection and analysis in a way that is better suited for responding to these emerging threats (Gerber, Wandjo 2023, pp. 349–376). These technologies can be useful for risk detection at a time when they are still on the level of risks rather than crises.

Technological advancement also poses other risks, which must be considered as well at one point. Of course, occupants rely on technology to build their lives, but in doing so, they create new kinds of risks, such as cybersecurity risks. Risk management strategies should therefore not only include the application of technologies but also include the protection of these technologies in the future (Wahidie, Yılmaz-Aslan 2022, pp. 151–156).

In conclusion, one can put it beyond any doubt that existing threat and risk factors, as well as opportunities for managing them, are closely connected with the advancements of technology and innovation. However, for these tools to be of the intended impacts, the use of these tools should be well planned and performed without introducing additional threats.

## **C. Need for a global approach**

The use of an international approach to approaches to risk management appears to be more suitable because most threats are not limited by state borders. The pandemic of COVID-19 proves that the problems of the whole world should be solved by the actions of the whole world. Globalisation and organisations are crucial for the organisation of actions and supply of assets during crises (Fleßa, Kuntosch 2022, pp. 217–223). In turn, development of international standards in RM can facilitate the enhancement of the efficiency of measures thus bringing consistency throughout the nations.

Global approach also makes it easy to determine how best to use resources within a country as resources can be taken internationally. One source of learning that countries can use and adopt is what works and what does not work in others' risk management. It can be especially useful for the countries with the limited budget since they can lean on the experience and the knowledge of others (Gerstacker, Blätter 2019, pp. 64–69).

Last but not the least, it insists on the global efforts towards eliminating the social and economical effect of crises. Anything in the world like climate change or pandemic needs an action from everyone as well as justice and fairness. The global society must make it possible for all nations in the globe to mitigate, prepare and respond to disasters (Herzog, Beil, Kelly 2022, pp. 1409–1430).

In sum, it can be said that the importance of applying approaches to risk management on the global level is tremendously high in terms of meeting the challenges of the present world. The shifty nature as well as the volatility of crises further talks of the fact that risk management must be responsive to change.

## **CONCLUSION**

Many businesses around the world are pursuing a global approach to risk management as threat and opportunities expand due to the integration of a global economy. As a result, future research should pay more attention to how new technologies and international collaboration could be applied to strengthen capacities for effective crisis management.

One key aspect that emerges from the case studies is the significance of cultural and political influences on risk management strategies. The different approaches taken in the countries analysed are strongly influenced by their political frameworks and social norms. For example, the effective use of technology and innovation in South Korea during health crises such as MERS and COVID-19 has shown the importance of flexible and adaptable risk management. This flexibility makes it possible to respond quickly to changing conditions and mitigate the impact of crises (Herzog et al. 2022; Wahidie et al. 2022).

The challenges posed by the unpredictability of crises and the rapid pace of technological and social change emphasise the need for a dynamic approach to risk management. The case studies have shown that successful crisis management often depends on the ability to communicate quickly and effectively to avoid confusion and maintain stakeholder confidence. This requires close collaboration between all stakeholders, including the community, which emphasises the importance of community-oriented risk management

(Wahidie et al. 2022).

In conclusion, the study of risk management strategies in different countries offers valuable insights for practice and at the same time shows where future research efforts can start. A global approach to risk management is becoming increasingly important as the world becomes more interconnected and challenges more complex. Future research should focus on how technological innovation and co-operation across national borders can be used to respond effectively to crises. The development of new models and theories that take into account the specific needs and conditions of different regions will be crucial to strengthen the resilience of societies and organisations to future crises (Fleßa et al. 2022; Herrmann et al. 2023).

The development of new models and theories that take into account the specific needs and conditions of different regions will be crucial to strengthening the resilience of societies and organisations to future crises (Fleßa, Kuntosch 2022, pp. 217–223; Herrmann et al. 2023, pp. 26–34).

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## УПРАВЛЕНИЕ НА РИСКА В КРИЗИСНИ СИТУАЦИИ

**Резюме:** Управлението на риска в кризисни ситуации е ключов аспект, който е от решаващо значение за организациите и обществата. Кризите, независимо дали са под формата на пандемии, природни бедствия, или други неочаквани събития, представляват огромно предизвикателство, тъй като често имат непредвидими и мащабни последици за социалната и икономическата структура (Gerstacker, Blätter 2019, pp. 64–69; Fleßa, Kuntosch 2022, pp. 217–223). В такива ситуации

управлението на риска се превръща в ключов инструмент за минимизиране на загубите, запазване на ресурсите и поддържане на репутацията на организациите (Gerstacker, Blätter 2019, pp. 64–69). Настоящата статия има за цел да обясни различните подходи към управлението на риска в кризисни ситуации, за да се развие цялостно разбиране за ефективността и гъвкавостта на различните стратегии. Статията е разделена на няколко части, всяка от които разглежда конкретни аспекти на управлението на риска. На първо място са дефинирани основите на управлението на риска в кризисни ситуации. Това е последвано от кратки анализи на стратегиите за управление на риска в различни държави. Накрая документът разглежда предизвикателствата и бъдещото развитие на управлението на риска. Непредсказуемостта на кризите, технологичните и социалните промени, както и политическите рамкови условия са определени като основни предизвикателства, които трябва да бъдат преодоляни. Същевременно се обсъждат актуалните тенденции в изследванията в областта на управлението на риска и значението на технологиите и иновациите за бъдещите стратегии. Целта е да се разработи глобален подход, който да направи възможно ефективното реагиране на кризи в един все по-свързан в мрежа свят.

**Ключови думи:** рискове; система за управление на риска; кризисни ситуации; предизвикателства; бъдещо развитие

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## OFFSHORE WIND ENERGY IN VIETNAM: A QUALITATIVE STUDY OF THE VIEWPOINTS OF LEADING EXPERTS ON THE REVISED ELECTRICITY LAW

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**Abstract:** *The study aims to explore the implications of the recently amended Electricity Law on offshore wind energy development in Vietnam. The study will highlight crucial elements in Vietnam's energy strategy, focussing on offshore wind development in the light of the amended Electricity Law. The research will follow the hypothesis that the provisions in the amended Electricity Law the development of offshore wind is hampered and the investments of foreign investors must be slowed down and therefore adapted. Therefore, the research question is: In what ways does the amended Electricity Law influence the offshore wind development in Vietnam? The methodology used is a PEST analysis with semi-structured Expert Interviews. The outcomes will present the experts' analytical perspective on the amended Electricity Law and its impact on offshore wind development in Vietnam.*

**Keywords:** *Electricity Law; Offshore Wind; Vietnam Energy Sector; Vietnam*

### INTRODUCTION

This paper evaluates the effects of the amended Electricity Law (AEL) No. 61/2024/QH15, effective from 01.02.2025, on offshore wind (OW) energy development in Vietnam. The study will further aim to point out and evaluate the challenges and advantages associated with this law. The hypothesis is that the provisions in the amended Electricity Law the development of offshore wind is hampered and the investments of foreign investors must be slowed down and therefore adapted. The research question is: In what ways does the amended Electricity Law influence offshore wind development in Vietnam?

### RESEARCH METHODOLOGY

To answer the research question, the author chose a qualitative methodology because it will provide deep insights into the subjective perspective of the interviewees to gain solid research findings (vgl. Rulsin et al., 2022, pp. 22–23). It also ensures a more comprehensive analysis of the complex implications of the amended Electricity Law on OW development in Vietnam. To ensure data accuracy, a semi-structured Expert Interview guide will be a trustworthy, comprehensive methodology and ensure a structured workflow and systematic reliability in research (vgl. Kallio et al., 2016, p. 9). Therefore, the PEST analysis questions will provide the structure. The unique perception, individual experience, and context of individuals enrich the depth and quality of qualitative data (vgl. Naz, Gulab and Aslam, 2022, pp. 42–43). The corresponding research tasks are:

1. The implementation qualitative interview with PEST analysis with the aim of recording subjective perspectives of the stakeholders.
2. The creation of an interview guide.
3. Identification of suitable interview partners.
4. Collecting and evaluating the interview data.
5. Transcribe the answers using grounded theory/coding to categorize and label data to identify patterns, themes, and concepts.
6. Presentation and discussion of the results.

Political, economic, social, and technological factors drive strategic decision-making, and understanding external factors is a meaningful analysis technique that accommodates flexibility (vgl. Cox, 2021, p. 3).

The structure and questions in Table 1 are chosen to comprehensively explore the political, economic, social, and technical impacts of the amended Electricity Law in Vietnam. Each section aims to gather



insights from key experts to fully understand the law's effect on the offshore wind energy market in Vietnam. This structured approach enables the capture of essential factors that influence the offshore wind sector in relation to this legislation.

*Table 1. Interview questions: Viewpoints of Leading Experts on the Revised Electricity Law and its Impact on Offshore Wind Energy in Vietnam*

<b>Introduction</b> <ol style="list-style-type: none"> <li>1. Could you please introduce yourself and your expertise regarding renewable energy in Vietnam?</li> <li>2. How long have you been involved in renewable energy development in Vietnam?</li> </ol>
<b>Section 1 – Political</b> <ol style="list-style-type: none"> <li>3. How will the amended Electricity Law influence the political landscape for Offshore Wind in Vietnam?</li> <li>4. What specific policies or incentives are needed to accelerate domestic offshore wind development in Vietnam?</li> <li>5. Could you share examples of successful policy initiatives related to wind power development in other countries from which Vietnam can learn?</li> <li>6. What challenges do you see in the amended Electricity Law when implementing these policies in Vietnam?</li> </ol>
<b>Section 2 – Economic</b> <ol style="list-style-type: none"> <li>7. What economic impacts do you foresee related to the amended Electricity Law for offshore wind development in Vietnam?</li> <li>8. How will the amended Electricity Law impact the costs of offshore wind energy in Vietnam and its competitiveness in the electricity market?</li> <li>9. How does the amended Electricity Law influence offshore wind's economic viability and profitability?</li> <li>10. What challenges will arise with the amended Electricity Law for international and domestic developers?</li> <li>11. What are the potential economic benefits of the amended Electricity Law in terms of offshore wind development in Vietnam?</li> </ol>
<b>Section 3 – Social</b> <ol style="list-style-type: none"> <li>12. How might the amended Electricity Law affect local communities and social acceptance of offshore wind projects in Vietnam?</li> <li>13. What are the potential social benefits of offshore wind development for the Vietnamese population, particularly in job creation and economic opportunities?</li> <li>14. Does the amended electricity law address social disparities in regions where offshore wind is foreseen to be implemented?</li> <li>15. How do stakeholders perceive the social implications of offshore wind development under the amended electricity law?</li> <li>16. What role do public perceptions and community engagement play in successfully implementing offshore wind?</li> </ol>

#### Section 4 – Technological

17. What advancements in technology are being driven by the amended Electricity Law to support the growth of offshore wind in Vietnam?
18. What technological challenges are offshore wind developers facing under the amended Electricity Law, and how can they be addressed?
19. In what ways does the amended Electricity Law facilitate or hinder innovation for offshore wind technology in Vietnam?
20. Are technological efficiency and effectiveness enhancements for offshore wind in Vietnam sufficiently addressed in the amended Electricity Law?

#### Conclusion

21. From your perspective, what are the top three recommendations for Vietnam regarding the amended Electricity Law related to offshore wind?
22. Do you have any additional insights or resources that would benefit this research?

In the context of the preliminary investigation, involving different actors in achieving a high-quality result is helpful. 3 types of interviewees are used.

1. Interviewee 1: A senior researcher of a leading Vietnamese organization anchored in the government apparatus and whose main responsibility for electricity market planning is the subject.
2. Interviewee 2: A Country Manager Vietnam of an international offshore wind project developer with planning activities in Vietnam.
3. Interviewee 3: One of the top international associations for the worldwide development and promotion of offshore wind energy.

The interviews were conducted in January 2025 in Vietnam, based on pre-proven interview questions with key stakeholders from the offshore wind energy sector, both domestic and international. The interviews have been transcribed and analysed by coding identify thoughts, opinions, similarities and contrasts but also connections, following grounded theory.

#### Political Examination

The AEL will shape the future of Vietnam's electricity market, especially OW development. The interviewees shared their thoughts on whether this law change could potentially impact the market and whether experience from foreign countries can be beneficial.

#### Sub-theme 1: Policy need assessment

The interviewees emphasized the need for pricing mechanisms for electricity from OW energy, requirements for implementation guidelines, land use planning, transparent regulations on market access, and strategies to unlock green growth in Vietnam's industry.

**Pricing:** The interviewees emphasize the need for a price framework, introduction of unified standardizations, and attractive framework conditions to attract foreign investments.

*„...offshore wind needs a lot of international financing as well. So Vietnam needs to attract those international finance in order to develop the industry” – Interviewee 2*

**Land use planning:** The interviewees emphasise the need for legally binding regulation in planning.

*“...we just have the electricity law, but we still need other decree and circular to guide on the way the government will implement offshore wind. So we need a whole set of regulation frameworks for it.” – Interviewee 2*

**Governance policy structure:** The interviewees highlight the need for market development programs, regulated procedures for approval in the application process, regulations for the lease of sea land, and

developments and adjustments in the power purchase agreement with the energy supplier.

*“The whole route to market on the regulation involving the whole permitting process, seabed leasing, PPA auction, breed development, all the technical standards need to be in place and many others.” – Interviewee 2*

### **Sub-theme 2: International Experience and Takeaways**

Since Vietnam is currently still in an early stage of OW development, there is a necessity and opportunity to incorporate experience and minimize mistakes through the learning curve of highly developed countries.

**Policy framework:** The interviewees emphasise that coordinated government action and a solid legal framework led to market growth and brought clear procedures and processes.

*“We can also see the example of Philippines with this market that probably had a similar situation with Vietnam. In the Philippines, the government, especially the president, has shown very strong support for the industry. And he directs the ministry of energy and also the ministry of the government to work together to move ahead.” – Interviewee 2*

**Incentive structure:** The interviewees emphasize that a stable electricity price system for OW electricity, such as the contract for difference (CFD) in England and the feed-in tariff in Taiwan and Germany, reduces the perception of investment risks. This system forms an important basis and should, therefore, be implemented in Vietnam.

*“Germany could be mentioned here as one of the first markets worldwide for offshore wind. And Taiwan could be mentioned as the first market in Asia for offshore wind. And in both countries, an attractive feed-in tariff was introduced for the first projects.” – Interviewee 3*

**Long-term incentive structure:** In order to reduce the costs of OW in the long term, it is advisable to introduce bidding procedures after the market has established itself in order to achieve low prices through a competitive situation of the bidders, which reduces government costs, which generates further growth.

*“In the near future, after 2030, when offshore wind in Vietnam becomes a major industry, we should apply bidding processes for offshore wind development because we are not there yet.” – Interviewee 1*

**Sub-theme 3: Hurdles in deploying the AEL:** The interviewees confirm several important challenges and uncertainties regarding pricing incentives, financing risks, and power purchase contract risks that can result in OW investments not being directed to Vietnam.

*“One challenge is that there is no tariff that has been set yet for offshore wind projects. There are initial ideas for nearshore projects. And we also think for these nearshore projects, the tariffs probably are too low for a successful project implementation.” – Interviewee 3*

**Policy and Financial Constrains:** The interviewees emphasize additional challenges due to disadvantageous regulations for foreign investors in OW, especially for pilot projects. These regulations also reduce Vietnam’s ability to exploit international knowledge and access financing opportunities.

*“We think that Vietnam should open. And we already see that in electricity law. They already opened the door for FDI company to invest into offshore wind in Vietnam. Because we see that this is a new industry. And which is also a billion-dollar investment per project. So it’s easy to make mistakes. So Vietnam should use the expertise and the knowledge of international developers who have done this before in other markets. And use their skills to help the local companies” – Interviewee 2“*

**Establishing a strong, competitive local market:** The interviewees emphasize the challenges of developing local value chains. They also emphasize the importance of developing one’s own resources and addressing and dealing with location-specific OW challenges.

*“One of the key criteria Vietnam considers for offshore wind is security. You see, the first article focuses*

on security for Vietnam, and this is a major challenge, especially because offshore wind farms are located very far from shore.” – Interviewee 1

**State Defense issues and compliance hurdles:** The interviewees emphasize an existing risk related to the approval process and associated process steps, but also the approval problems and security concerns associated with planning near military areas.

*“The permitting process need to be issued clearly as well. To give the developers the confidence to develop and to invest in this market.” – Interviewee 2*

**Concerns about AEL’s advantages on OW development issues:** One interviewee shared thoughts and concerns about a positive outcome for the sector related to AEL.

*“Unfortunately, we see a legal framework that is unlikely to have a positive impact on the development of offshore wind.” – Interviewee 3*

**Beneficial state measures:** The AEL clarifies that OW may significantly contribute to the country’s strategic energy orientation. According to the interviewee, as a basis for further developments in the legal framework, the AEL will support this and possibly economic growth.

*“I think that the amended electricity law is a great signal for the offshore wind industry in Vietnam. I think this is the first time offshore wind has its own chapter in a law. It shows how important the government views the industry and the technology” – Interviewee 2*

### **Economical examination**

The AEL impacts not only the OW sector but also investment hurdles, economic prospects, financial sustainability, and cost-effectiveness. The interviewees mentioned the difficulties in obtaining funds, the possibility of industrial growth, and lasting economic advantages.

#### **Sub-theme 1: Economic advantages:**

The development of OW in Vietnam supports sustainability, economic growth, and electricity security.

**Workforce and supply chain development:** The interviewees see a potential for OW to improve value creation and port construction and related economic sectors in particular to benefit positively from it.

*“Offshore wind also creates opportunities in the supply chain, as Vietnam can develop and provide some components for offshore wind projects within the country.” – Interviewee 1*

**New market development and the potential to be a regional centre.** The interviewees see the potential for a new industry to emerge in Vietnam, which would serve not only its own supply but also chains beyond Vietnam.

*“...the potential economic benefit of electricity law for offshore wind in Vietnam is it can create a new industry model for Vietnam. And we’re not talking just project. We’re talking about the supply chain to be able to set up in Vietnam.” – Interviewee 2*

**Net-zero and coal phase-out.** The interviewee discussed how OW can contribute to achieving the country’s climate goals and how a coal phaseout can succeed through the use of renewable energies.

*“(...there’s) a Vietnamese commitment for net zero in 2050, so it’s also we need one of the power to supply for Vietnam, which is a good impact for power supply; ...they can replace some part in for coal-fired power plant. At that time the coal-fired power plant maybe decommissioned, so with one of the replace for this” – Interviewee 1*

#### **Sub-theme 2: Obstacles for International and Domestic Developers/Investors**

In addition to the great potential, there are also economic and governance challenges.

**Uncertainties:** The interviewees confirm that working with state-owned companies is a major challenge for international developers and investors.

*“In the draft cert, it probably mentions something about FDI companies have to partner with an SOE, and with the ownership of SOEs at a minimum of 5%. I think that’s also a challenge, but not impossible to do because the government has some concern.” – Interviewee 2*

**Economic content:** The interviewees share the view that project developers face a major challenge in achieving sustainable margins due to high initial costs that are offset by low electricity tariff prices.

*“For domestic companies, they need to have experience. They have done offshore wind projects before. For domestic companies right now, I think that they can show the experience like some near-shore wind projects in Vietnam, some intertidal projects in Vietnam. But those are the challenges for those companies.” – Interviewee 2*

**Restricted availability to global expertise and state assistance:** The interviewees note that local companies lack access to international know-how and government support, making competition with international companies more difficult.

*“For domestic companies, they need to have experience. They have done offshore wind projects before. For domestic companies right now, I think that they can show the experience like some near-shore wind projects in Vietnam, some intertidal projects in Vietnam. But those are the challenges for those companies.” – Interviewee 2*

### **Sub-theme 3: Implications for cost reductions and market position**

The market result will be improved by increasing price competition.

**PPA Viability:** According to interviewees, the financial viability of PPAs is highly needed and needs to be developed because they reduce investment risks.

*“We expect cost increases because of the increased project risk and also time delays because of this. Because we always think risk is more or less equal to money, so to cost.” – Interviewee 3*

### **Sub-theme 4: Financial feasibility and profit:**

To attract investors, OW must offer a positive prospect in terms of profit, bankability, and financial feasibility.

**Financial returns and divers implementations:** The interviewees note how OW, together with other sectors of the economy, is expanding its sectors and helping other sectors to grow.

*“...maybe we haven’t seen before—but I think it’s we have a profit there when we have, you see, it’s maybe when we combine together with the aquaculture to provide some product because you know, Vietnam (...has a) long beach distance so we can finalize the fishery & can combine with the offshore wind. It’s one of thing, and another it’s a maybe you can apply for housing if we have a flood of electricity” – Interviewee 1*

**Safety concerns and financial uncertainties:** An interviewee notes how safety concerns affect sustainable profitability.

*“We have potential, but you know, to exploit offshore wind, we need to identify which area is suitable for the load because in some it’s a high potential (...but there’s) the concern about the security” – Interviewee 1*

### **Social Examination**

The AEL aims to improve social situations positively by improving public perception and workforce creation.

### **Sub-theme 1: Public Perceptions and Encouragement**

The interviewees commented on public acceptance, issues related to the impact on nature, land rights



and national security, and the need for transparent communication.

**Necessity of public participation and acceptance:** For successful OW development it is essential to include needs for public acceptance.

*“I think that the law will increase the level of acceptance of offshore wind in Vietnam. Because once the law has been issued and one other detailed regulation issue, I can see that during the process of working on this, the National Assembly and the government have been thinking very clearly about the impact the industry is going to create for other stakeholders as well, not just for the energy industry.” – Interviewee 2*

**Ecological and safety aspects:** According to an interview, OW is understood as positive for the environment and it also needs to be brought more to the fore, as it also contributes to safety-relevant aspects.

*“The government has been thinking a lot about protecting the environment and also national security as well” – Interviewee 2*

**Community issues and demand for enhanced dialogue:** The interviewees believe that public doubt is rising due to a lack of local participation, little communication about project effects, and worries about transmission lines.

*“From our view, this is a missed opportunity to build up a new economic sector for Vietnam together with the Vietnamese people and industry. And from our perspective, acceptance is unlikely to increase in this way for offshore wind” – Interviewee 3*

## **Sub-theme 2: Impact on labor market**

Since OW promises fundamentally positive effects on the economy, the respondents discuss the sustainability of new jobs.

**Regional Business and Workforce Development:** The interviewees outline regional businesses. They plan to expand into OW and establish long-term employment opportunities in production, logistics, and maintenance.

*“If Vietnam can develop the whole industry, not just the product, but develop the industry that goes along with it, then there could be a lot of jobs to be created. There will be a lot of economic impacts to be created for local companies.” – Interviewee 2*

**Renewable Energy for Economic Growth:** The participant points out that OW is to be understood in the close context of economic growth and extends to other areas.

*“...the production of green electricity also will attract more industry, which in turn will create more jobs.” – Interviewee 3*

**Restricted and temporary employment restrictions:** Some of the interviewees have the view that the labour market effect will be short-term and will mainly concentrate on the areas of construction and installation. This also paints a mixed picture of the AEL's impacts.

*“I think for socio, as I mentioned (...before) about the job creation and economic opportunities, I think it's not so big because you we cannot enjoy too much in this because I haven't seen many companies (...say) offshore wind in Vietnam can create many jobs, but it's only in the (...sector) of prepare one and installation, and we know at this time by 2030 we cannot too much job for offshore wind because in Vietnam only (installation & prep jobs) but the job is not too much (limited).” – Interviewee 1*

## **Sub-theme 3: Social inequalities**

Questions persist about whether OW development will be fairly communities throughout Vietnam.

**Monitoring and policy engagement:** The respondent notes that OW development should be monitored and reviewed by engaged ministries to ensure a fair and balanced distribution.

*“When offshore wind projects are being implemented, any decision related to offshore wind projects will need the comments from many related ministries, like the Ministry of Agriculture, the Ministry of Natural Resources and Environment, and the Ministry of Finance as well. So, the government has done this in a way that the government views offshore wind to be such a big impact industry that needs to be reviewed carefully project by project.” – Interviewee 2*

**Insufficient social emphasis and imbalanced economic distribution:** Interviewees respond that the economic advantage may not reach local communities due to a lack of regulations addressing social inequalities.

*“I don’t think the amended electricity law specifically addresses social disparities in regions where offshore wind will be implemented.” – Interviewee 1*

#### **Sub-theme 4: Stakeholder outlook on social effects.**

Overall, stakeholders are committed to OW development, but they also raise questions about whether the social effects are carefully integrated.

**Stakeholder standpoint and minimal immediate effects:** The respondents think that stakeholders have a positive and supportive function, but the perception of social impact on local communities is low.

*“In my experience, I’ve talked with a lot of stakeholders from people from many different ministries, from people within the National Assembly, people even we talked to even the Central Economic Committee of the party, and also we talked to the local community, the fishermen, different groups. We talked with the private sectors, we talked with experts like scientists who study about not just the energy industry, but study the seabed and the ocean economy of Vietnam. Everybody viewed it as a very good industry for Vietnam to work in.” – Interviewee 2*

**Consistency with Vietnam’s Maritim Economy Plan:** The respondent emphasises how OW fits into Vietnam’s strategic Marine economy plan.

*“Vietnam is considered moving (growing), Vietnam is very, very considering the ocean economy strategy of the country. So offshore wind, in my view, generally got a very positive support from all parts, all stakeholders in” – Interviewee 2*

#### **Technological Examination**

The AEL can touch technological development. The interviewees point to technological opportunities but also hurdles and refer to the need for detailed regulations and legal basis, but also for the local development of human resources and also for improvement in the expansion of the transmission grid.

#### **Sub-theme 1: Technological development related to the AEL**

The interviewees reflect potential technological improvements related to the AEL for OW.

**Electrical grid:** One of the interviewees confirmed the need for modernization to improve the network infrastructure to utilize OW.

*“Maybe we change a lot of things about the technology. This is very important for offshore wind, like transmission from offshore to onshore. We are using heavy DC; maybe the technology will (...improve) a lot. And we will see in the future when Vietnam will apply for heavy DC from north to south or something from Asia. Some high potential for renewable energy, like Binh Thuan or Ninh Thuan area, to transmit from the high potential for to the low center, like Ho Chi Minh City or in the north center. Maybe in the near future we might apply for heavy DC technology.” – Interviewee 1*

**Insufficient precision:** The interviewee also states that the AEL identifies the need for technological upgrades and improvements but does not point in any direction for results.

*“I think that this question has not been answered very clearly in the law. To be honest, we will probably*

*need to see more decree and circle (back) to see it (innovation).” – Interviewee 3*

### **Sub-theme 2: Technological obstacles**

The interviewees commented on hurdles and difficulties regarding local value creation and value chains and grid integration.

**Technological dependency:** The country has a lack of expertise and manufacturing capability. There is a need for capacity building in these areas.

*“...it’s (all) import technology, equipment. We only (...fulfil) some needs like the material building and some needs. I think before (...we got) some technology from China and G7...I think is a big challenge for Vietnam” – Interviewee 1*

**Obstacles in power system integration:** The interviewees share their thoughts on the diversity of the connection of the OW projects with the national transmission system.

*“The grid connection also will be a challenge.” – Interviewee 3*

**Absence of support for technological development:** The AEL does not specify any mechanisms or incentives for its own technology improvement or modernization, which leads to difficult integration and competitive disadvantages.

*“To overcome those challenges, appropriate incentives and support from Vietnam is necessary. They should take into account the international experience. This should be the basis to overcome such kind of [technological] challenges.” – Interviewee 3*

**Absence of Consideration of Site Conditions:** No consideration of different site conditions, such as water depths or wind speeds, is considered.

*“We have project-specific challenges such as wind conditions or water depths. These are currently not taken into account” – Interviewee 3*

**Sub-theme 3 Advancement:** The AEL creates a solid basis for striving for further development. The AEL will be followed by rules and regulations that could make this possible.

### **Enabling innovation and integration:**

Improved regulatory and investment guidelines can lead to technological improvements and developments that improved OW integration entails.

*“It really supports the development of the industry, which will eventually support the development of innovation in this company for the industry.” – Interviewee 2*

## **CONCLUSION AND IMPLICATION FOR OW DEVELOPMENT IN VIETNAM**

The AEL marks a notable achievement in the Vietnamese electricity market, particularly in the OW sector, demonstrating the nation’s willingness to increase the share of renewable energy sources in the energy mix. However, alongside these positive developments, there are considerable obstacles and hurdles, including limited market access for international overseas project investors in the OW field, as well as capital constraints and insufficient, inconsistent guidelines, laws, and policies. To ensure the establishment of the Vietnamese OW market, it is essential to implement financial incentive mechanisms, develop requirements for technological norms and specifications, and foster cooperation between international and domestic enterprises, organisations, and agencies. OW can play a critical role in economic growth and is closely tied to job creation; therefore, it is crucial to involve provincial authorities and local population and society in developing OW projects, ensuring they also benefit from these initiatives. Given various factors, including geographic location, excellent wind conditions, and political will, Vietnam has the potential to emerge as a regional leader in OW, aligning its electricity-intensive economic growth with climate goals.

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## ВЯТЪРНА ЕНЕРГИЯ В ОТКРИТО МОРЕ ВЪВ ВЬЕТНАМ: КАЧЕСТВЕНО ИЗСЛЕДВАНЕ НА ВЪЗГЛЕДИТЕ НА ВОДЕЩИ ЕКСПЕРТИ ОТНОСНО ИЗМЕНЕНИЯ ЗАКОН ЗА ЕЛЕКТРОЕНЕРГИЯТА

**Резюме:** Проучването има за цел да изследва последиците от наскоро изменения Закон за електроенергията върху развитието на офшорната вятърна енергия във Виетнам. Проучването ще подчертае ключови елементи в енергийната стратегия на Виетнам, като се фокусира върху развитието на офшорната вятърна енергия в светлината на изменения Закон за електроенергията. Изследването ще следва хипотезата, че разпоредбите на изменения Закон за електроенергията възпрепятстват развитието на офшорната вятърна енергия и инвестициите на чуждестранните инвеститори трябва да бъдат забавени и адаптирани. Следователно изследователският въпрос е: „По какви начини измененият Закон за електроенергията влияе върху развитието на офшорната вятърна енергия във Виетнам?“. Методологията, използвана в проучването, е PEST анализ с полуструктурирани експертни интервюта. Резултатите ще представят аналитичната перспектива на експертите по отношение на изменения Закон за електроенергията и неговото въздействие върху развитието на офшорната вятърна енергия във Виетнам.

**Ключови думи:** Закон за електроенергията; офшорна вятърна енергия; енергиен сектор на Виетнам; Виетнам

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PSYCHOLOGICAL DIAGNOSTICS AND ITS APPLICATION IN TRAFFIC  
PSYCHOLOGY

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**Abstract:** *This paper focuses on the practical significance of psychological diagnostics. The areas of application for psychological diagnostics can vary depending on the psychological subdiscipline. Psychological diagnostics is also particularly relevant in traffic psychology. In summary, traffic psychology is an application-oriented discipline. It attempts to transfer the basic findings of psychology to mobility and road traffic (Fastenmeier & Gstalter 2021). For example, to assess reaction time, stress tolerance, orientation, attention and concentration with a specific test system as part of the so called medical-psychological examination (MPE). With the help of psychological diagnostics, data can be obtained for specific decision-making purposes (Schug 2021). For example, to make a decision about whether or not a driver should get their license back after a drunk driving offense with a blood alcohol level over 1.6.*

**Keywords:** *traffic psychology; psychological diagnostics; performance testing; attention; concentration; ability to react; stress tolerance*

## INTRODUCTION

The possible applications of psychological diagnostics are incredibly diverse: attention, concentration, intelligence, personality, creativity, social and emotional intelligence, stress, depression and burnout are just a few of the topics covered by psychological diagnostics.

According to the epilogue of Kubinger's textbook (2019), the absence of the possibilities of psychological diagnostics would be analogous to comparing how a doctor would practise without the means of modern medical diagnostics. Despite these possibilities, certain principles should also be observed in order to maintain the quality of psychological diagnostics not only in theory but also in practice.

In summary, (test) diagnostic procedures can be evaluated according to various criteria in order to determine the quality of these procedures. "Does the test measure what it is supposed to measure?" is a question that the important quality criterion of validity, for example, attempts to answer. The main quality criteria include not only validity, but also objectivity and reliability. Objectivity of execution, objectivity of evaluation and objectivity of interpretation are the fundamental aspects of objectivity.

Depending on the point in the diagnostic process, a different type of objectivity comes to the fore. Reliability deals with the question of whether the diagnostic procedure records what it measures accurately and with as few measurement errors as possible. Here, too, different types are distinguished (e.g. test repetition, parallel test method, internal consistency). Unalterability, standardization (calibration), test economy, scaling, reasonableness, fairness and usefulness are regarded as secondary quality criteria. The Test Board publishes certain recommendations on assessment criteria for test procedures (Kersting 2006).

There are different types of tests: the most important distinction is often made between personality and performance tests. However, there is diagnostic content that cannot be easily categorized.

Creativity, social and emotional intelligence are contents that refer to both personality and performance. These are therefore referred to as hybrid characteristics. Health psychology and clinical diagnostics deal, among other things, with stress, depression and burnout. Diagnostic procedures to assess orientation, reaction, concentration and attention are also used in the field of traffic psychology diagnostics. The aim is to determine whether the required mental capacity for safe driving is present or whether abnormalities in driving behavior are to be expected. In this context, traffic psychology in general is described as the science of the behavior of road users (Fastenmeier & Gstalter 2021). In summary, traffic psychology is an



application-oriented discipline. It attempts to transfer the basic findings of psychology to mobility and road traffic (Fastenmeier & Gstalter 2021).

Psychological diagnostics forms the basis for scientifically sound, psychological and thus high-quality work results in the psychological profession. With the help of psychological diagnostics, data can be obtained for specific decision-making purposes (Schug 2021).

Methodical work is an important unique selling point of psychology. Psychological diagnostics provides support in how this can be achieved and implemented in a specific individual case with the help of specific diagnostic procedures.

Often, when it comes to psychological diagnostics, people only intuitively think of aptitude diagnostics or clinical diagnostics. However, the areas of application are diverse and range from rehabilitation diagnostics, developmental diagnostics in early childhood, forensic-psychological or legal-psychological diagnostics, health-psychological diagnostics, neuropsychological diagnostics, gerontopsychological diagnostics to traffic-psychological diagnostics.

## **RESEARCH METHODOLOGY**

What would traffic psychologists do if they had to decide whether a client should get their driver's license back after a drunk driving offense as part of a traffic psychological assessment?

- What steps need to be taken? What is the procedure?
- Which test procedures appear suitable? What is the quality of these procedures?
- Which questions are relevant in the psychological exploration interview?
- What basis is there for making a decision?

Why does a decision have to be made at all? In the case of diagnosed alcohol dependency or abuse, is it not generally better to withdraw the driver's license permanently as a precautionary measure?

All these questions are relevant when dealing with psychological diagnostics in-depth and in an application-oriented manner.

The goal is to create a practical guide for daily work in traffic psychology that takes into account current developments in traffic psychology, such as the discussion about speed limits or the possible legalization of cannabis, or current traffic psychology research topics, such as distraction in traffic, fatigue in traffic, aggression in traffic, and the special group of older road users in assessment practice. Among other hypotheses, the question of whether current political and social discussions are reflected in the professional development of standards for traffic psychological assessments will be answered.

The paper is based on the principles of qualitative research, and quantitative methods will also be applied to some extent. The main research method will be selected descriptive case studies from the professional practice of traffic psychology. This will be preceded by a theoretical overview of the current state of research in the field of psychological diagnostics and, in particular, traffic psychological assessment.

## **RESULTS**

To clarify the doubts of the authorities regarding the client's fitness, a medical-psychological examination (MPE) was carried out in accordance with the questions raised in the case study. The MPE includes a performance test, a detailed psychological exploration interview, a medical examination and diagnostic questionnaires. In principle, the MPE can be ordered by the driving licence office for various reasons. These traffic-related issues are precisely defined by law:

- driving under the influence of alcohol at more than 1.6 per mille
- multiple drunk driving incidents regardless of the per mille level
- driving under the influence of drugs
- more than eight points in the central traffic register in Flensburg

As part of the MPE, certain test procedures were used to test concentration and perception, as well as reaction speed and attention. During the medical examination interview (anamnesis), the doctor will get an overview of the patient's health history, illnesses, medication and current state of health. Often, as part of an alcohol or drug control program, it must be demonstrated that no drugs have been consumed or alcohol

has been drunk for a long time.

The personal psychological interview with the psychologist is the focus of the examination: the findings obtained during the examination are generally usable. Mr. S. was willing to talk and cooperative, so that the necessary background information to answer the official questions could be obtained. It seems to be particularly relevant here whether the client gets entangled in contradictory statements. The aim is not to clarify any legal questions of guilt. Rather, the psychologist is interested in how well the respective traffic incident and its personal causes have been dealt with. Furthermore, the exploratory interview attempts to find out what consequences and conclusions the client has drawn from the past. The credibility and authenticity of the client play a crucial role here. The medical-psychological examination assesses the applicant's overall fitness to drive. Fitness to drive refers to the general, situation-independent ability to drive a vehicle. This means that one must generally be physically and mentally capable of driving a vehicle (Schneider, Frister & Olsen 2010, p. 410). This also includes cognitive abilities such as responsiveness, orientation, resilience, concentration and attention (Thomas 2023, p. 52). The responsible driving license authority then receives the MPE report as a decision-making aid, which consists of a medical examination and a psychological examination (see Thomas 2018, p. 54). It is necessary to consult with the medical expert to check, for example, whether positive behavioral changes that were noted in the psychological interview, for example, correspond to the physical condition that was examined in the medical examination.

As a legal framework condition, it should be noted that the planned descriptive case-by-case analysis refers to real expert opinion cases from practice. These expert opinion cases should therefore always be considered anonymously and confidentially, under all applicable data protection and confidentiality regulations.

### ***Excerpt from a psychological assessment***

#### *Question of the investigation:*

“Can it be expected that driving motor vehicles and consuming alcohol in a manner that impairs driving safety can be sufficiently separated?”

#### *Overview of the background:*

Mr. S. was asked by his driving license authority to provide an aptitude assessment for the granting of a driving license for categories A, A1, AM, B, L. The following information relevant to the reason for the examination could be found in the official file:

11.11.2016: driving a vehicle under the influence of alcohol at around 23:10 with a car; breath alcohol concentration 0.43 mg/l

24.12.2016: intentional driving without a license in coincidence with intentional use of a vehicle without a liability insurance contract at 4:30 p.m. and drunkenness in traffic – due to alcohol; blood alcohol concentration at 7:33 p.m. 1.01 ‰ (...)

#### *Psychological examination interview:*

The content and course of the traffic-psychological discussion were determined by the reason for the examination and the official questions. Mr. S. was given the opportunity to present all the facts and aspects relevant to the assessment from his own point of view. If anything was unclear, the expert asked follow-up questions and repeated questions if necessary. Contradictory facts were clarified and an attempt was made to resolve them.

The psychological interview lasted 70 minutes. (...)

#### *Personal details:*

The 34-year-old examinee is single, not in a steady relationship and has no children. He works as a freelance online marketing manager and receives additional benefits from the job center. When asked about his hobbies, Mr. S. said that he cycles, plays computer games and looks after his cat.

#### *Regarding the background:*

How did the drunk driving come about? It all happened within a period of three months, during which his ex-girlfriend broke up with him and he took refuge in alcohol. He still loved her and couldn't bear his feelings, so he took this path.

*Regarding his previous alcohol consumption:*

What was his alcohol consumption during the week and at the weekend in the years before the drink-driving offense? Months and years before that, he had worked in the trades: solar energy systems and in a car repair shop. An after-work beer was part of that, it had crept in, then the consumption increased. (...)

### **Performance testing**

An important component of the MPE, in addition to the detailed psychological exploration interview, the medical examination and the diagnostic questionnaires, is the so-called performance testing. As part of the MPE, the client is now given various established performance tests from the Vienna Test System to assess attention, concentration, orientation, stress tolerance and reaction. Thus, certain requirements for mental performance in relation to driving fitness are necessary. Driving requires a complex interplay of cognitive, motor and emotional abilities.

– *Attention:* Drivers must be able to process multiple pieces of information at the same time, to focus their attention on the driving task for an extended period of time, and to avoid distractions (BAST 2019, p. 10).

– *Ability to react:* Drivers must be able to react to traffic situations and unforeseen events with single and multiple demands in a manner that is inappropriate to the situation, precise, and skillful (BAST 2019, p. 10).

– *Stress tolerance:* Drivers must be able to maintain their attention when stimuli occur at a high frequency (cf. BAST 2019, p. 10).

– *Concentration:* Drivers must be able to actively suppress disruptive stimuli in order to be able to solve the respective driving task at hand due to distraction or misinterpretation (BAST 2019, p. 10).

– *Orientation:* Drivers must be able to remember traffic rules in the respective visual environment, i.e. in the traffic area, and to be able to safely avoid hazards from traffic situations with little time expenditure (BAST 2019, p. 10).

The examination of the psychophysical performance capabilities that are important for motorized road use was carried out in the form of individual tests on a computer-controlled test device (Vienna Test System, Schuhfried company) with programmed instructions and test specifications on the screen. Overall, it seems sensible to use only standardized performance tests. The selected procedures are standardized with regard to the conditions of their implementation and the results have been checked (validated) for their informative value in real traffic behavior. The selection of the procedure is based on the requirements of the assessment criteria and, depending on the reason for the examination, the previous history and the driving license category, the number and type of tests to be carried out.

The exclusive use of standardized performance tests is of essential importance when preparing expert reports. Standardized or calibrated performance tests are characterized by the provision of norm values. The norm values are the test results of a representative population group. It is only through standardization that the test procedure can be used for the psychological diagnosis of individuals. The test results can thus be compared with those of the reference group. In this way, it is possible, for example, to determine whether a test subject's intelligence or attention performance is below or above average compared to the values of the representative reference group (Döring 2022, p. 427).

The individual procedures carried out are described below: The test for measuring attention and concentration (COG/S11) is used to measure concentration and attention under monotony. The task description is as follows: Four simply structured characters of varying complexity are presented unchanged next to each other for a certain period of time. Below them, changing comparison characters appear that are only slightly different from the models or are identical to a model character (60 tasks). The subject indicates by pressing a button whether the respective comparison character is identical to the model (green button) or not (red button). The next comparison character appears immediately after the reaction. The processing time for each comparison task can be freely selected. The test subject thus determines the

pace of performance and the required execution time. The mean time required for the correct rejection of non-identical characters is measured and evaluated. The test can only be evaluated if at least 85% of the characters were answered correctly, otherwise it can be assumed that the test subject was unable to regulate their work pace appropriately.

Furthermore, the test is used to measure resilience and reaction capacity (DT/S1). Diagnosed areas are reactive resilience, attention and reaction speed. Therefore, colored light signals of different colors are displayed on the screen in alternation, as well as two different sound signals (250Hz and 1000 Hz) presented via headphones. The subject must press a response button of the same color as the light signal, press the left or right foot pedal, or press the reaction buttons assigned to the different sound signals. The default time is individually adjusted and corresponds to the client's average reaction time determined from the last 8 reactions (adaptive test specification). The test takes six minutes to complete.

The test for measuring visual perception (ATAVT/S1) is used to assess visual orientation and the ability to gain an overview. After a short beep, the subject is shown images of traffic situations for a short time, which they should look at carefully and remember. After each picture has been presented, the respondent must indicate which of five traffic objects (pedestrians, cars, two-wheelers, traffic signs or traffic lights) was visible in the picture. The difficulty level of each traffic situation presented (complexity and presentation time) is based on the individual performance of the respondent in the tasks completed so far (adaptive test presentation). The test takes six minutes to complete.

Under certain circumstances, the test to measure reaction time (RT/S3) is also used. The areas diagnosed here are reaction speed for simple and complex visual or acoustic signals: a yellow and a red light signal are displayed on the screen simultaneously or alternately. An acoustic signal (2000 Hz) can be presented together with one of these light signals via headphones. The subject must react only to one of the conceivable combinations, namely to the simultaneous presentation of the yellow light signal and the sound signal (critical stimulus combination), by releasing a sensor and pressing a button. A total of 48 stimuli are presented, 16 of which require a reaction. The test takes nine minutes to complete.

The Line Tracking Test – Screening Form (LVT/S3) can also be used in the assessment. Areas diagnosed here include selective attention and visual orientation. 18 graphics with nine interwoven lines each are presented one after the other after an exercise phase with 8 tasks. The subject's task is to follow the path of a line marked with a red arrow with his eyes from its upper beginning (arrow marking) to its lower end and to select the correct code number of the determined end point from the 9 alternatives. The test subject can choose the time for the task. The number of correctly solved items within this time limit is measured and evaluated.

## CONCLUSIONS

The aim was to evaluate the significance of psychological diagnostics for the field of psychology, also in terms of its practical relevance. In particular, traffic psychological diagnostics was discussed. Psychological diagnostics involves the systematic collection of data. The areas of application for psychological diagnostics are very diverse. One field in which psychological diagnostics plays a major role is traffic psychology. Some of the first empirical studies in psychology dealt with traffic-related issues (Münsterberg 1913).

After presenting the theoretical foundations of psychological diagnostics in general, the field of traffic psychology was focused, to assess the ability to react, concentration, attention, orientation and stress tolerance. The examination of the psychophysical performance capabilities that are important for motorized road use was carried out in the form of individual tests on a computer-controlled test device (Vienna Test System, Schuhfried company) with programmed instructions and test specifications on the screen.

Focus of the paper was, among other things, to highlight the innovations in psychological diagnostics, particularly in the field of traffic psychological diagnostics. In doing so, traffic psychological assessment of driving fitness by a computer-controlled test device is to be considered from the point of view of current challenges.

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## ПСИХОЛОГИЧЕСКА ДИАГНОСТИКА И НЕЙНОТО ПРИЛОЖЕНИЕ В ПСИХОЛОГИЯТА НА ДВИЖЕНИЕТО

**Резюме:** Тази статия е посветена на практическото значение на психологическата диагностика. Областите на приложение на психологическата диагностика могат да варират в зависимост от психологическата поддисциплина. Психологическата диагностика е от особено значение и в психологията на движението. В обобщение, психологията на движението е дисциплина, ориентирана към приложение. Тя се опитва да пренесе основните открития на психологията към мобилността и пътното движение (Fastenmeier & Gstalter 2021). Например да се оценят времето за реакция, устойчивостта на стрес, ориентацията, вниманието и концентрацията със специфична тестова система като част от т.нар. медико-психологическо изследване (МПИ). С помощта на психологическата диагностика могат да се получат данни за специфични цели при вземането на решения (Schug 2021). Например, за да се вземе решение дали даден водач трябва да получи обратно шофьорската си книжка след нарушение за шофиране в нетрезво състояние с концентрация на алкохол в кръвта над 1,6‰.

**Ключови думи:** психология на трафика; психологическа диагностика; тестване на ефективността; внимание; концентрация; способност за реагиране; устойчивост на стрес

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## **SCHOOL PRINCIPALS' RESILIENCE IN THE EDUCATION SYSTEM**

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**Abstract:** *This article explores the resilience of school principals in facing modern educational challenges. It highlights three key dimensions: personal resilience, involving adaptability, optimism, and stress management; managerial resilience, emphasizing distributed leadership and workload balance; and community resilience, focusing on partnerships with parents and local authorities. The study underscores the need for mentoring, professional development, and institutional support to strengthen principals' ability to lead effectively, even in times of crisis.*

**Keywords:** *Personal Resilience; Managerial Resilience; School; Education*

### **INTRODUCTION**

This study examines the resilience of school principals within the modern education system, highlighting the increasing complexity of their roles. School leaders face numerous challenges, including high workloads, administrative pressures, and the demand for innovative pedagogical leadership. Resilience is a key factor in helping principals navigate these challenges, allowing them to adapt, recover from setbacks, and maintain effective leadership. This paper explores different dimensions of resilience – personal, managerial, and community-based – and presents strategies to enhance principals' ability to lead successfully in dynamic educational environments.

### **RESEARCH METHODOLOGY**

The research adopts a qualitative approach, analyzing existing literature and case studies related to school leadership and resilience. Data was gathered from academic journals, policy reports, and interviews with experienced school principals. The study focuses on identifying key factors contributing to resilience, including personal traits, organizational structures, and external support systems. By comparing various leadership models and resilience-building strategies, the research aims to provide actionable recommendations for improving school principals' well-being and performance.

### **RESILIENCE IN THE 21ST CENTURY**

Resilience is considered in life skills literature an essential element that increases emotional and social well-being and enables people to navigate life's challenges. It includes the ability to adapt and respond flexibly to difficulties, recover from setbacks, and identify with others. Recognizing the importance of relationship skills alongside self-awareness, resilience involves a mindset that reframes problems as opportunities for growth and values proactive approaches. Resilience is dynamic, changes in people's lives, and is recognized as a critical attribute for effective learners.

Therefore, it has a special importance for school principals in their roles in educating their students as well as in leading the educational staff in the teaching challenges of the 21<sup>st</sup> century (Vella & Pai 2019).

Our world is gradually becoming more and more globalized and offers multiple choices. The ability to successfully navigate life through transitions and uncertainty about the future requires grooming a generation that is not afraid of these challenges.

Resilience means getting up after we have failed, after we have fallen in our mission. Resilience allows

us to try again and again. Therefore, Students are required to develop personal and interpersonal skills in a rapidly changing world with a global emphasis (Godman, 2024). These skills are not decreed by fate and can be honed through practice and learning (Wosnitza, Peixoto, Beltman, & Mansfiel 2018).

Studies indicate that people who demonstrate social and emotional competence, along with a forward-looking perspective, are more resilient. Adding these skills to the staff and student's toolboxes will equip them with better tools for the world of employment and adulthood.

*In a few hundred years, when the history of our time is written from a long-term perspective, it is likely that the most important event that those historians will see is not technology, not the Internet, not e-commerce. It is an unprecedented change in the human condition. For the first time – literally- substantial and rapidly growing numbers of people have choices. For the first time, they will have to manage themselves. And society is totally unprepared for it. Drucker, P. F*

School principals who manage to navigate even difficult circumstances effectively are characterized by the following personal qualities: Courage and persuasion, when steadfast in their beliefs and values, able to persevere and show commitment for an extended period, optimistic, open-minded, and flexible.

However, personal qualities are not enough. They need to present a clear vision for the school and a plan that serves as a beacon guiding them on their way. So that they can connect and explain the route they are following considering the values and the goal they were leading (Day & Johansson 2008).

However, even school principals who manage to lead such a complex and demanding system may pay a personal price. They pay for long working hours – which limit personal and family time and causes emotional and mental stress – both from the need from the system to achieve results and from the desire to provide solutions to teachers and students. At times this load leads to increased stress levels. As part of the work, they are required to address many areas – budgetary, educational, and pedagogical aspects and even maintenance-related issues. This need for school principals to juggle multiple responsibilities makes it very difficult to build their personal resilience (Li, Zhang, Vankemmelbeke, & Hecht 2012).

School principals operate in a system characterized by a prominent hierarchical structure. Over the past few years, they have been trying to change the face of this reality and making attempts at characterizing it in a more decentralized way (for example: building a management team to lead processes in schools). However, the school principal is often required to take the lead and address both internal and external factors. Sometimes a school principal is professionally isolated within their own school. This feeling of being “alone” makes it difficult for them to hone their resilience because an essential part of resilience is belonging to something bigger than myself (Grossmeier 2022).

### **BUILDING A SPACE THAT SUPPORTS RESILIENCE FOR SCHOOL PRINCIPALS**

To support the school principals, we must assist them and provide them with support. Firstly, by building a support system that allows them to be among equals. A network of peers is key to a place where they can share experiences, resources, and strategies for overcoming obstacles.

New school principals need mentoring and professional development programs where experienced leaders will give and teach them in the light of their experience how to cope with the challenges of the system (Day, et al. 2011).

Mental health and stress management programs, which will help principals balance work and school (Day & Johansson 2008). Allocating resources, including developing and bringing forces to cooperative leadership, to alleviate loneliness.

Feedback and evaluation, with recognition and appreciation, are also significant parts of the perceptions of the principal's administrative ability and building resilience throughout the job (Li, Zhang, Vankemmelbeke, & Hecht 2012).

Within the school, an optimal connection with the community surrounding the school must be developed, as well as a positive school culture that supports and values cooperation and continuous improvement, in a pleasant and comfortable environment.

These external supports are required to include the entire fabric of the school principal's life – family, friends, mentors, and community members. The support of the parents is also important and allows for

a necessary sense of belonging within the framework of building the resilience of the school principal (Grotberg 1995).

### **BUILDING PERSONAL RESILIENCE**

In today's dynamic and complex work environments, personal resilience is becoming increasingly essential for school principals to effectively navigate challenges. Personal resilience refers to a person's ability to bounce back from adversity, maintain well-being and adapt positively to stressful situations (Wescott 2019). Building personal resilience among school principals involves a multifaceted approach that combines cognitive, emotional, and behavioral strategies.

Personal protective factors are essential in honing resilience in people. They are characteristics that boost positive development and adaptation in people at risk (Wiener 2003). Supporting personal characteristics are self-esteem, problem-solving skills, optimism, adaptability, and a sense of purpose and meaning (Grotberg 1995). In difficult moments, returning to our core and to what we recognize as the values that accompany us, support us in moments of crisis and enable better coping with challenges (Covey 2004).

Personal skills and resources, including personal skills, effective communication, and emotional regulation are also key aspects for a school principal to be able to mobilize internal and external support when needed (Grotberg 1995).

This personal resilience can be developed through workshops, lectures and personal mentoring processes that will help school principals to lead and advance the educational teams and students alike in the 21<sup>st</sup> century. By developing an understanding of their strengths, weaknesses, and emotional triggers, school principals can better regulate their responses to stressors and maintain a sense of calm during turbulent times. Mindfulness exercises, such as meditation and deep breathing exercises, can help school principals cultivate awareness of the present moment and reduce stress levels (Sharp & Jennings 2016).

### **BUILDING MANAGERIAL RESILIENCE**

The work of a school principal has become more and more complex in recent years. School principals are faced with an increasing number of complex tasks that must be completed in shorter periods of time with fewer available resources (Dulude & Milley 2020). As an example, school principals have taken on more active responsibility for the health and well-being of students and staff, especially during times like the COVID-19 epidemic (Anderson 2020).

The unprecedented transition to virtual learning has added to the workload of school principals. Moreover, the technological reality makes school principals feel that there is a requirement for them to be available 24 hours a day due to increased technology-based communication, which blurs the line between work and home life. There is an expectation that school principals will be available all the time, which can lead to work intensification (Pollock & Hauseman 2019).

These factors contribute to the intensification of work experienced by school principals and highlight the challenges they face in managing their duties effectively. Thus, structural changes must be implemented in the educational administration that can help alleviate the challenges school principals face in several ways.

Action should be taken to promote growth thinking and adaptive coping strategies, which can improve the personal resilience of school principals. Encouraging school principals to see failures as learning opportunities and challenges as growth experiences fosters a sense of optimism and perseverance. Expanding the school principals' toolbox with effective coping mechanisms, such as problem-solving skills, time management techniques and positive framing, empowers them to proactively cope with stressors and maintain productivity and well-being in the face of adversity (Dweck 2006).

A growth mindset must be cultivated. We must teach a school principal to embrace challenges as opportunities for growth and learning. See failures as temporary and focus on developing skills to overcome obstacles (Masten A. S. 2001). See the past as a space to identify lessons and strengths acquired. Additionally, building strong relationships and seeking help and guidance from trusted people during difficult times. Assistance from good people and the ability to Know when to ask for help is critical in the school principal's functions in the 21<sup>st</sup> century (Ungar 2014).

Self-care must be practiced daily – prioritizing self-care activities such as exercise, healthy eating, adequate sleep, and relaxation techniques to maintain physical and emotional well-being (Masten A. S., 2001). It is also important to develop coping skills such as mindfulness, setting realistic goals but still being able to change. We must develop in them their gratitude for positive aspects in their life. In times of crisis this will help them (Bertsia & Poulou 2023).

The study also shows that the leadership style of a school principal has a significant influence on the resilience of the staff. By way of distributed leadership, we create a space of a climate that nurtures initiative. An initiative climate significantly predicts organizational resilience and plays an intermediary role in the connection between flexibility, agility and problem solving among the teaching staff (Grant 2008). Distributed leadership has the potential to foster a climate that fosters initiative and organizational resilience in schools. School principals should assign leadership roles to teachers to increase initiative and resilience within the school environment (Limon, Dilekç & Demirer 2021).

School principals should encourage distributed leadership practices by empowering teachers and staff to take on leadership roles and responsibilities. This can help distribute decision-making, foster collaboration, and build a more resilient organizational structure. A culture must be created that values and encourages initiative among teachers and staff, which in turn will increase resilience. School principals need to provide opportunities for autonomy, innovation, and proactive problem solving to foster an environment where people feel empowered to take initiative (Grant 2008).

By implementing structural changes that allow for a formal and meaningful division of leadership tasks, principals can share responsibilities with other school staff members, and reduce their workload. Introducing legislative changes that allow school principals to delegate tasks more effectively can help ease their sole legal responsibility for all school activities, thus reducing their emotional workload (Pollock, Nielsen, & Singh 2023).

Policy changes can also be implemented that change job expectations to better support school principals in their teaching and leadership roles in the curriculum. This is achieved by allowing other team members to focus on administrative and financial aspects and can help ease the burden on school principals (Armstrong 2021).

Strive to build effective communication and trust between all interested parties, including teachers, staff, students, and parents, essential for enabling an inclusive environment that tolerates failures and enables the distributed leadership way to experiment with new tools and ways to change and improve the school. So that in times of crisis, everyone in the school will feel comfortable breaking boundaries and experimenting with new ways to cope with the hardship (Vassilis 2004).

Research on the mediating role of initiative climate in the relationship between distributed leadership and organizational resilience in schools has several implications for Policymaker's, school principals, and educators who aim to foster a more resilient organizational culture:

Policymakers can use the findings to bolster policies that support distributed leadership practices and promote a climate of initiative within educational institutions. By incorporating these principles into policy frameworks, Policymaker's can encourage schools to adopt leadership structures that enhance resilience (Limon 2021).

They also could design leadership training programs that emphasize distributed leadership and the importance of fostering an initiative climate. By providing professional development opportunities focused on these concepts, principals can equip leaders with the skills and Knowledge needed to promote resilience in their schools (Zhao 2010).

By considering these implications and taking proactive steps to incorporate distributed leadership and an initiative climate into their practices, policymaker's, school principals, and educators can contribute to fostering a more resilient organizational culture, better equipped to navigate uncertainty and thrive in dynamic educational environments (Limon, Dilekç & Demirer 2021).

## **BUILDING SCHOOL-COMMUNITY RESILIENCE**

Children and families having a low socioeconomic status face many risk factors that can affect their well-being and development: Poverty and lack of employment opportunities, which can lead to poor access



to resources such as quality education, health care and housing. These factors may contribute to economic instability and financial distress for families and affect the general well-being of the children (Miller & Ohlin 1985).

The public and community space may be characterized by high levels of crime, violence and social disturbances, which create stressful and unsafe living conditions for children and families. To these can also be added poor health services, which leads to health gaps and challenges in providing a partial response to medical needs (Garnezy 1991).

These risk factors highlight the complex challenges faced by children and families in the community. It is of great importance to address these issues to promote personal and community resilience. Researchers offer several strategies to strengthen resources and defense mechanisms for healthy development in communities (Wang & Gordon 2012). Recognizing the importance of cohesive and supportive communities that provide opportunities for healthy human development. Social organizations such as health services, childcare facilities, job training programs, religious institutions and recreational facilities play a vital role in supporting residents and reducing social problems.

It is important to emphasize the role of families in fostering resilience by providing caring, structured environments, maintaining high expectations for children's behavior and encouraging active participation in family life. Strong relationships with adults, care and affection are emphasized as critical factors in promoting resilience (Bell 1987).

Religion and faith also have significance in building resilience in the lives of at-risk students. Religious beliefs and relationships with religious figures and communities can provide criteria, standards, expectations and support for children's behavior across different ethnic groups and social classes. It is necessary to create in the communities, in the appropriate places, a space for the observance of everyone's religion and to bring supporting figures (Masten, Morison, Pelligrini, & Tellegen 1990).

Promoting coordination and integration of services between schools and community organizations to provide ongoing support without artificial interruptions allows seeing the "whole child" throughout the year (Holtzman 1991). This includes vertical coordination over time and horizontal coordination between agencies, to ensure children and families are provided with comprehensive and continuous assistance.

School-community partnerships while encouraging cooperation between schools, businesses, labor unions, health resources, social agencies, and local government to create coordinated efforts that meet the needs of at-risk youth. Establishing coordinating agencies and improving communication between interested parties can facilitate effective community engagement. By implementing these strategies and fostering supportive environments at the family, community, and institutional levels, resources and protective mechanisms that promote healthy development and resilience in inner communities can be enhanced (Kirst & McLaughlin 1990).

Communities have a crucial role to play in supporting schools. The presence of social organizations that support healthy human development, provide services and maintain standards and criteria for good citizenship can contribute to positive outcomes for residents. In addition, effective collaboration between schools and communities can bolster the support system for at-risk students. These connections between schools and the community also assist in raising resources, promoting positive attitudes and behaviors and ensuring the success of the students' learning. Emphasis is placed on coordinating school and community services to create an integrated network of resources and protection mechanisms for children and families. This approach aims to provide continuous support and opportunities for disturbed healthy development (Wang & Gordon 2012).

## **CONCLUSION**

Throughout this article, I brought options for strengthening the managerial resilience of school principals at the various levels. From the policy makers, local authorities to the principals themselves and even to the school staff and the community. These structural changes aim to create a more supportive and collaborative environment for school principals, allowing them to focus on their core responsibilities and reduce the negative impact of increased workload on their well-being.

The study findings related to empowering the work and resilience of school principals can be applied



to support the well-being of school leaders in various educational contexts in the following manners:

Educational institutions can use the findings to reinforce structural changes that distribute leadership tasks more effectively, while reducing the workload imposed on individual school principals.

School boards and Policymaker's can use the study's recommendations to push and lobby for legislative changes that allow principals to delegate tasks and share responsibilities with other team members, thereby promoting a more balanced workload.

Educational authorities could consider revising policies to redefine the roles and expectations of school leaders, allowing them to focus on instructional and curriculum leadership while delegating administrative tasks to other staff members. They can use the research insights to prioritize mental health support for school leaders, recognizing the impact of increased workload on their well-being and promoting access to resources to manage stress and prevent burnout more efficiently.

Encouraging collaboration by putting emphasis on the importance of collaborative leadership models, educational institutions can foster a culture of teamwork and shared responsibility among school leaders, while promoting a supportive environment that prioritizes well-being.

By applying the findings of this study, the involved parties can take proactive steps within several educational contexts to support the well-being of school leaders, address work empowerment challenges, and thus create a more sustainable and resilient leadership environment.

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## УСТОЙЧИВОСТТА НА ДИРЕКТОРИТЕ НА УЧИЛИЩА В ОБРАЗОВАТЕЛНАТА СИСТЕМА

**Резюме:** Статията изследва устойчивостта на директорите на училища пред съвременните образователни предизвикателства. Тя подчертава три ключови измерения: лична устойчивост, свързана с адаптивност, оптимизъм и управление на стреса; управленска устойчивост, фокусирана върху разпределеното лидерство и баланса на натоварването; и обществена устойчивост, която акцентира върху партньорствата с родители и местни власти. Изследването подчертава необходимостта от наставничество, професионално развитие и институционална подкрепа за укрепване на способността на директорите да ръководят ефективно дори по време на кризи.

**Ключови думи:** лична устойчивост; управленска устойчивост; училище; образование

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AMENDED LAW ON ELECTRICITY AND ITS IMPLICATION FOR OFFSHORE  
WIND DEVELOPMENT IN VIETNAM

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**Abstract:** *The study aims to research and analyze the impact of the amended Electricity Law on offshore wind development in Vietnam. The study will provide a background of Vietnam's energy landscape and show the electricity mix and demand. It will refer to the role of renewable energy and offshore wind in the energy mix. It will also outline key points in Vietnam's energy strategy by reflecting on offshore wind development based on the amended Electricity Law. The research will follow the hypothesis that the amended Electricity Law will significantly impact offshore wind development in Vietnam by creating a regulatory basis to support offshore wind investments in this technology in the Vietnamese market. Therefore, the research question is: How does the amended Electricity Law impact offshore wind development in Vietnam? The methodology used is the critical review of the law. The novelties and the results will display an analytical viewpoint on the amended Electricity Law offshore wind development.*

**Keywords:** *Electricity Law; Offshore Wind; Vietnam Energy Sector; Vietnam*

## INTRODUCTION

This paper aims to analyze the impact of the amended Electricity Law (AEL) on Offshore Wind (OW) energy development in Vietnam. The study will also help identify and analyze the challenges and benefits of this law. The hypothesis is that the amended Electricity Law will significantly impact OW Development in Vietnam by creating a regulatory basis to support investments in this technology in the Vietnamese market. The research question is: How does the AEL impact the OW Development in Vietnam?

The National Assembly (NA) approved the amended Electricity Law No. 61/2024/QH15 on 30.11.2024. The law will be effective from 01.02.2025. It has been an amendment to the original law from 2004 and can be understood as a regulatory basis for the electricity sector in Vietnam. It introduces significant development changes to modernize Vietnam's electricity sector and promotes sustainable electricity sources. One crucial aspect is the development of renewable energy (RE). It touches on several different areas (see Fig.1):

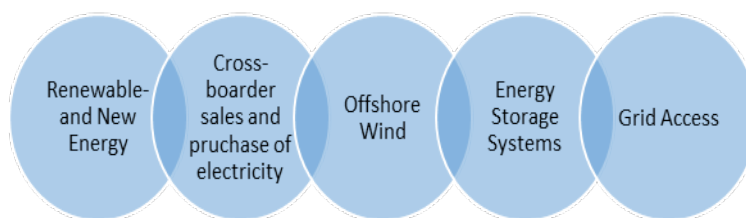


Fig. 1. Core Areas amended Electricity Law from 30.11.2024 (Authors Representation)

In the RE and New Energy (NE) area, the AEL sets the ground for a new framework to make the investment more attractive, which still needs to be developed in detailed regulations and implemented (vgl. ESG News, 2024). NE plays a unique role here, as nuclear power (NP) has been named for the first time since 2016 when Vietnam's development of an NP plant was stopped. It is also considered an option for

and regulate

for the energy mix and has been integrated into the AEL (vgl. baochinphu, 2024). Hoang (2024) states that another building block in the AEL is cross-border sales and the purchase of electricity, intended to enable the trade of surplus electricity and the purchase of electricity from neighboring countries. In addition, the AEL presents new regulations and procedures for offshore wind, including regulations on the transfer of ownership, the definition, and the role of state-owned enterprises (SOEs). Energy Storage Systems (EES) have also been given an important role. This is important when relieving the statly grid, which has another advantage for investors: independence from Power Purchase Agreements (PPAs) with Electricity Vietnam (EVN). The regulations also foresee improved grid access for RE and NE projects to ensure a sustainable and low-CO<sub>2</sub> power supply (vgl. Hoang, 2024).

For the Vietnamese OW energy market, the AEL means that a step has been taken in developing a regulatory framework to implement Power Development Plan 8 (PDP8) (vgl. Trade.Gov, 2023). This forms a basis for the processing of approval processes. The AEL also provides a basis for the network integration of OW, as the elaboration of regulations can be assigned to the corresponding state authority based on this document. In addition, initial regulations define the participation of foreign project developers and investors and show special features of the function of state-owned enterprises (SOEs).

Based on a critical analysis of the AEL concerning OW in Vietnam, this study aims to determine whether the aspects enshrined in the law affect OW investments in Vietnam or entail ambiguities or risks. The strengths and weaknesses of the law are to be highlighted.

## BACKGROUND

Vietnam's ambitions to increase industrialization are accompanied by high economic growth. The real GDP averaged 6.35% between 1985 and 2023 (TheGlobalEconomy, 2024). An increasing electricity demand accompanies this growth. The following chart shows the increase in demand between 2000 and 2022 and clearly shows that the industrial sector is growing the most. Total electricity demand increased from about 30 terra watt hours (TWh) to 240 TWh during this period (see Fig. 2), with the most significant increase in the industrial sector (vgl. IEA, 2024, p. 12).

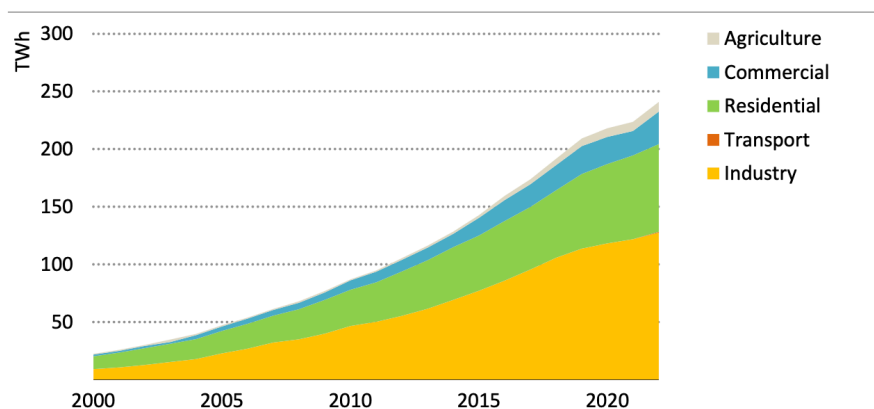


Fig. 2. Electricity Demand Vietnam (Source: IEA, 2024)

Electricity market planning aims to bring electricity demand into balance with the energy mix. This planning was carried out in Vietnam in the Power Development Plan (PDP), currently in its eighth version, PDP8. It has been considered a guiding document in the energy market for 10 years. Concerning the integration of RE in the energy mix, Vietnam already has a share of over 50% RE in the power grid (see Table 1). The unique feature here is the high proportion of hydropower, which can be described as “old” RE in Vietnam. In contrast, wind and solar power have only gained importance over the last decade.



Table 1. Overview of national power sources in 2023 (EVN, 2024)

Source type		Percentage (%)	
1	Hydropower		28.83
2	Coal-fired thermal power		46.17
3	Gas turbine		9.38
4	Oil-fired thermal power		0.45
5	Imported		1.49
6	Wind power		4.05
7	Solar power		9.16
8	Biomass power	853.00	0.30
9	Other sources	453.00	0.16
TOTAL			100.00

RE is significant in Vietnam, as Vietnam has entered into an area of tension between industrialization, a very high increase in electricity demand, and an obligation of decarbonization to be climate-neutral by 2050 (vgl. BloombergNEF, 2025). This means that when planning to expand electricity generation, the most significant importance is to be as low in CO<sub>2</sub> as possible. Therefore, Vietnam's overall energy strategy is crucial to support economic growth further and meet the country's climate goals.

The PDP 8 outlines ambitious goals to increase the share of RE to become CO<sub>2</sub> neutral by 2050 (vgl. PricewaterhouseCoopers, 2023). This trend supports the vision of a coal phase-out, an increased share of RE, and investments in new technologies such as energy storage systems, hydrogen energy, and ammonia. It also enhances self-sufficiency by reducing imports such as coal. The following representation displays the total installed Generation Capacity in Giga Watt (GW) by PDP 8 until 2030 and with a vision until 2050. It shows the minimum and maximum scenario (see Fig. 3) of the electricity sector supply to meet the demand. In both scenarios, a clear dominance of RE plays a substantial role.

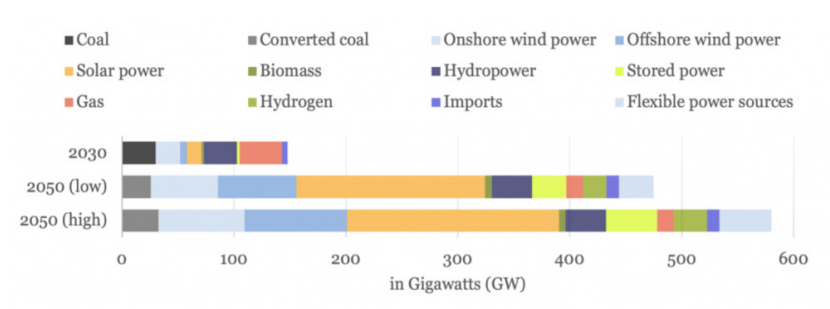


Fig. 3. Projected installed electricity capacity PDP8 (greenfdc, 2023)

## RESEARCH METHODOLOGY

The Methodology will be a Critical Document Analysis of AEL concerning OW development. It will be based on an official translation from Vietnamese to English to ensure accuracy and reliability in interpreting the original text. The critical evaluation aims to identify the strengths and weaknesses of the AEL regarding the implications of OW. The study focuses on key statements of the text that are directly related to the analysis. The analysis will gain insights that should serve as a baseline to understand the newest regulatory developments on OW in Vietnam and the impact on the planning.

### Critical Analysis of the AEL regarding OW development in Vietnam

Chapter I Article 1 states that: "This Law governs electricity development planning, power project investment and construction; development of new and renewable energy; electricity operating licenses; competitive electricity market and power trading; dispatching and operation of the national power



system; protection of electrical infrastructure and safety in the electricity sector; rights, obligations, and responsibilities of agencies, organizations, and individuals in electricity operations and consumption; and state administration of the electricity sector.” Detailed regulations aim to modernize the electricity sector to accelerate RE expansion and make them sustainable. The following overview shows regulations that affect OW Development.

**Chapter I, General Provisions**, regulates legal applications in Article 5. State Policies on Power Development, No.9 Regarding Policies on renewable and new energy power development, b: “Sector-specific incentives and support mechanisms shall be established ... in accordance with the requirements of periodic socio-economic development requirements; special incentives, support policies, and breakthrough mechanisms shall be implemented for offshore wind power development...”.

These general provisions on the regulation of the application of law state that specific incentives, support policies, and mechanisms should be implemented to develop OW. The measures are intended to provide investment incentives for participation in the competitive market. The importance of OW is thus underlined. On the other hand, no concrete and legally binding incentives have yet been shown, so it will only be possible to say in the future, after the publication of detailed rules, to what extent the market will benefit.

**Chapter II, Power Development Master Planning, Plan for Power Supply Network Development and Power Project Construction Investment.** The primary directives affecting OW are articles 18 and 19. Article 18 is about the Selection of Investors. The core of this article is that investors in commercially operated power generation projects are not identified through land rights auctions or bidding processes. However, OW projects enjoy a special status and are exempt from this rule, dealt with below in Clause 2 of Article 29. Article 19 deals with bidding processes and investor selection, although it should be noted that OWs are excluded from this.

Articles 18 and 19, therefore, refer to the selection of OW investors. Article 18 states that there is no provision for auctions of land use rights or bidding competition for OW. In addition, Article 19 states the exception for OW, which is that even if several bidders are interested in the location, no auction or bidding process will be carried out in the case of OW. Therefore, these special conditions distinguish OW projects significantly and benefit from other commercial power generation projects. Concerning efficiency and effectiveness, it can be critically noted that the OW project does not use an efficient method for selecting investors like other energy generation projects. Therefore, one can question whether the existing rules promote or hinder market transparency and fairness in the awarding of contracts. The exemption from OW can be perceived as a market distortion. Whether a lack of market transparency is conducive to creating an investment-friendly climate, especially for foreign investors, is questionable. By favoring SOEs, transparency and fairness in selecting investors can be questioned. It must be ensured that these investments are encouraged and not hindered.

**Chapter III, Renewable Energy and New Energy Power Development**, is divided into two sections. Section I is Renewable Energy and New Energy Power Regulation. At the core and key principle of this chapter is Article 20 of OW. This states that OW has a priority. The consideration of national defense and security and maintaining national border and maritime sovereignty is also in the foreground and is dovetailed with OW development. OW projects are clearly defined as site projects in Vietnam’s territorial waters OW projects with turbines located beyond six (06) nautical miles from the shores’ low water mark. The award report, which organizes the approval, investment, and development process, specifies that the ranking list of project applications is made in the following order. Projects with the highest priority are grid-connected projects, followed by projects on self-consumption of electricity and the production of green hydrogen and green ammonia for their own country. Lastly, projects on electricity export, green hydrogen export, and green ammonia export.

The impact of this Chapter’s Section I is substantial for OW, as OW is given an enormously high priority, and Vietnam creates a basis for exploiting the wind potential of the coast, which bears the potential to reduce fossil fuels. It also provides planning that is aligned with national interests, such as energy security.

Energy security will strengthen economic growth and sustainability in the energy sector. In addition, the possibility of generating electricity, green hydrogen, and green ammonia will be exported. The definition of OW can mean a cut for projects that already have pre-planning but do not go beyond the six-nautical mile definition and are no longer classified as OW projects. It is also critical to include the enclosure of the OW planning with International Borders and Naval Sovereignty. Therefore, military considerations or safety considerations can limit an OW project. The new OW definition can be a disadvantage for companies already starting preliminary planning if located within the 6-sea-mile zone. It no longer has the status of an OW project and would, therefore, have to be terminated or planned as a nearshore project with entirely different framework conditions. It can be questioned in principle whether these regulations promote OW investments or hinder them.

**Section II, Offshore Wind Power Development Regulations**, has several articles that significantly impact OW development.

Article 26 General provisions state that OW projects must demonstrate national defense, security, and information compliance. This includes considering and integrating laws on the production and use of equipment and all data activities such as creation, transmission, and cross-border data exchange and storage. OW projects must comply with Vietnamese law and maritime safety regulations and standards. Vietnam complies with the rules and practices to ensure that they do not contradict agreements with other countries and international organizations, as Vietnam has agreed on various international treaties. The Government and Policy mechanisms should lead to long-term minimum contracted electricity delivery for grid-connected projects to ensure stable demand-supply planning. Such projects may receive exemptions or discount rates for the maritime land fees and usage charges. SOEs are exempt from providing project performance guarantees and, if necessary, receive government loans that exceed the usual credit limits. In addition, control mechanisms are adopted within the regulation framework to ensure the electricity supply's security. Socio-economic factors of the investment objectives are to be taken into account. Both foreign and domestic investors are subject to eligibility criteria that regulate ownership shares and contribution limits. If insufficient national regulations exist, international rules and standards may be integrated. The government will establish mechanisms for coordinating processes between individual authorities. Any transfer of project rights must also follow national defense, security, and other relevant legal provisions.

On the one hand, Article 26 means that OW projects in Vietnam have to meet national security, defense, and information security requirements. Therefore, this set of rules is intended to provide security for the country and investors. This standardization will promote the safe and efficient development of such projects. Stately, companies are prioritized and favored in the first step. International standardization is considered supportive if national standards are unavailable, e.g., for building or planning regulations. In implementing the project, coordination and supervision is the responsibility of the national government authorities. The design of single-cell guidelines will show in the future how binding rules are in the single-cell system. It is, therefore a fundamental step towards defining the legal and economic framework conditions. The regulations on the transfer of business and capital shares in the development project may make private companies disadvantaged, as it may be possible for a SOE to carry out a complete planning phase without external financing. A private company, on the other hand, cannot do this in most cases. Usually, financing loans and consortia from different investors are transferred to the project company in the planning phases to maintain this volume. If this is not the case, private companies that rely on investor consortia will be affected. Therefore, it can be said that this article provides more advantages for SOEs than for private companies.

Article 27 states that the site surveys must follow marine law, environmental laws, and international treaties and practices. Only SOEs are prioritized to conduct site surveys. Except for socio-economic conditions, the government can decide to include other entities. This step requires a prime minister's (PM) approval. SOEs have to finance the costs for the survey themselves and are allowed to invest in the surveyed area. Regarding management and usage of survey data, all survey information, data, and results are mandatory and managed under state agencies and have to be treated confidentially following the law.

This article thus regulates organizational aspects of site investigations for OW projects. Site

investigations must meet legal requirements following international and national standards. It must be emphasized that only SOEs are prioritized for these investigations to ensure the integrity of these projects from a legislative point of view and to preserve the confidentiality of the information obtained from the site investigation in the sense of the national interest. However, it also means that if a project developer wants to conduct a site survey per the law, they will not be able to remain the owner of this data, but state-owned companies will receive it. This is probably hard for a foreign project developer to accept as he finances the survey and has to hand over the results by law. It also follows the question of site exclusivity and whether investors who pay for the complete preliminary investigation of the site do not have data exclusivity at least receive exclusivity after they have contributed an additional budget to the site financing.

Article 28 states that SOEs can decide on a bidding process regarding investor selection or investment approval. Investors who have conducted a survey can submit an institution application if the study area is following the PDP. The applications must comply with the applicable law, and the assessment authority providing them must obtain written statements from all ministries and authorities involved.

Article 28 is significant in that it sets out the investment rules and the approval criteria, particularly the selection of OW investors. SOEs are given priority for application. This means that this article contains an unequal distribution between state-owned companies and private international developers regarding the possibilities in the first phase of building a project efficiently by an internationally experienced project developer. SOEs are given preference but are comparatively inexperienced, as they have not yet been able to develop a learning curve. This article can mean a worse position for international developers. Still, the state's goal of efficient and economic development can also be questioned if experienced companies are excluded in this phase. However, the involvement of local authorities also leads to decentralization at the provincial level, where it can be critically questioned whether the necessary expertise is available there to accompany such projects in the approval process or further complicates the processes. It should also be noted that the involvement of many ministries and authorities leads to an inefficiency in the approval process. Additional complexity and effort in the approval process could lead to delays and extra costs.

Article 29. Selection of Investors for Offshore Wind Power Projects, “No. 1. The selection of investors for offshore wind power projects shall be conducted as follows: a) For public investment projects: in accordance with public investment legislation; b) For public-private partnership investment projects: in accordance with public-private partnership investment legislation; c) For commercial investment projects: in accordance with general investment legislation. No. 2. With the exception of projects requiring investment policy approval from the National Assembly, the PM shall have the authority to simultaneously approve both the investment policy and investor selection for the following commercial offshore wind power investment projects: a) Projects exempted from investor selection through bidding due to national defense and security concerns, as advised by the Ministry of National Defense or the Ministry of Public Security; b) Projects eligible for simultaneous approval of investment policy and investor selection as prescribed in Point a, Clause 1, Article 28 of this Law. No. 3. For commercial offshore wind power investment projects not covered under Clause 2 of this Article that intend to sell electricity to the national power grid, investor selection shall follow this Law and bidding legislation. The ceiling price specified in the bidding documents must not exceed the maximum generation price bracket established by the Ministry of Industry and Trade. The winning bid price shall be the maximum electricity price for subsequent negotiations between the electricity buyer and the bid-winning investor. Bidding documents shall be prepared in compliance with applicable laws and include the following: a) A draft power purchase agreement that has been mutually agreed upon between the bidding organization and the electricity buyer; b) Applicable incentive mechanisms and policies as prescribed in Clause 3, Article 26 of this Law. No 4. The government shall establish regulations regarding the following matters, taking into consideration socio-economic development conditions, development and investment attraction objectives in each period, electricity market development conditions, and the need to ensure electricity supply security: a) Qualification requirements for bidding participants; b) Investor selection procedures for offshore wind power projects to meet the planned development objectives and sector-specific investment attraction requirements; c) Procedures for negotiating and executing commercial investment project agreements and power purchase agreements with successful bidders as prescribed in Clause 3 of this Article.”

Article 29 regulates the transparent award of contracts based on the regulations, procedural guidelines, and regulations for bidding procedures. It aims to create transparency and increase trust in the selection process. Flexibility for private and public investors is anchored and theoretically allows for different investment models. Safety-relevant aspects are equally important in addition to economic efficiency. However, it should also be noted that this design requires the involvement of many state actors, making the overall process very complex. In addition, conflicting state regulations against international standards can lead to contradictions and ambiguities. This is especially true when international investors or project developers want to initiate a project. The PMs prioritization of SOEs and the design of investor selection and approval policies can be understood as dominance and preference for SOEs. This puts internationally experienced project developers in a worse position and overrides the market forces of the competition, which would lead to the best market result.

**Chapter V is about Competitive Market and Electricity Trading, Section 3, Electricity Prices and Electricity Service Prices.** Article 51. Electricity Service Prices, No. 8. “Based on the specific characteristics of the power plant at each period, the Minister of Industry and Trade shall decide on the following contents: a) The application of the power generation price framework for offshore wind power plants as prescribed by this Law, power plants as prescribed in Clause 2 of this Article; b) A multi-component electricity pricing mechanism, including components such as capacity charge, energy charge, fixed charge, variable charge, or other price components (if any)”.

This section covers the electricity prices supplied by OW. The design of the price framework describes the composition of several components of the electricity price. This signals flexibility in the pricing process. These flexibility advantages probably tend to favor flexibility for Vietnam. Investors also have no indication in this article in what amount a possible tariff can be designed. Only an initial idea about the mechanism for setting tariffs is communicated. In particular, the flexibility could also be used to distort the market and generate competitive advantages that could then call fairness into question. The multi-tiered pricing approach can also lead to ambiguity when involving different institutions due to the complexity and possible expenditure corridors. Concerning regulatory control, it is good that prices comply with the legal framework, but independence and political influence cannot be ruled out. It is also necessary to examine whether this mechanism provides sufficient incentive for investors or can hinder investment.

**Chapter VIII: Protection of Electrical Power Facilities and Safety in the Electrical Sector. Section 1. Protection of Electrical Power Facilities and Electrical Safety.** Article 68. “Safety Protection Corridors for Power Facilities. No 4. Safety protection corridors for offshore power facilities constitute part of the sea area allocated for power projects. The use of sea areas within these corridors must: a) Ensure efficient and sustainable use of marine resources; b) Safeguard people, power facilities, and other legitimate marine exploitation and utilization activities as prescribed by law; c) Protect marine species, wildlife, and migratory birds following biodiversity laws and relevant international treaties to which the Socialist Republic of Viet Nam is a party”.

The implications of this article for OW development in Vietnam are to be highlighted. The protection of specific marine corridors is anchored to make optimal use of marine resources and protect them, with a high priority on environmental protection. Strict safety regulations are included for OW projects and safeguards to protect people and the OW facilities. Compliance with all biodiversity requirements is also an essential requirement. In this respect, this section is of high priority for environmental protection.

## CONCLUSION AND IMPLICATION FOR OW DEVELOPMENT IN VIETNAM

OW developers and investors are not selected by a purely public awarding process. OW projects are considered by the AEL as a key pillar of Vietnam’s RE planning, interlinked as an instrument of defense, security, and sovereignty. The framework now formed by law sets regulations based on which detailed implementation regulations will follow. SOEs are given the sovereignty to carry out site surveys, which means that, on the one hand, there is a lack of competition for site surveys. On the other hand, SOEs do not yet have a learning curve; therefore, there is no possibility of carrying out the surveys efficiently and



economically optimally. Private investors, especially international investors, do not have sovereignty over the data of their potential study area. This means these private companies create value at their own risk and are forced to share this data with the SOEs, which are also prioritized based on this law. This fact underlines the state priority of these projects and, on the other hand, does not show any security mechanisms such as site exclusivity for private investors. It is in line with the country's strategic aim. Articles 27 and 29 describe the two-step selection process of investors and define which developer can conduct a site survey. SOEs have sovereignty over this, and in the second stage, investors are selected. Due to the enormous costs of such investigations, without site exclusivity in the second step but participation in a bidding process in the second step, which can result in another bidder receiving the space, the investor of the survey bears the complete risk of completely losing his funds for the preliminary planning. Therefore, this article is a significant obstacle for international private companies. In addition, the preferential treatment of SOEs does not treat foreign investors equally; instead, it puts them in a worse position and provides them with a one-sided risk. This can be seen in particular concerning the rights of investigation. Likewise, the definition of offshore wind beyond six nautical miles excludes some already existing pre-planning. These projects are no longer classified as OW. This can also lead to projects bearing increased foundation and cable infrastructure costs due to the increased water depth, thereby requiring an increased electricity tariff. In the current state, the law secures national interests; foreign companies are not excluded per se, but they are less critical, and the incentive mechanisms are insufficient and obstructive. On the one hand, prioritized SOEs have no experience or learning curve. Still, without the cooperation of foreign investors, there will be little prospect of efficient implementation, resulting in a low electricity tariff. Therefore, it can be stated that the national aim of 6 GW OW by the year 2030 will be insufficient support, as it distorts competition between state-owned enterprises without any effort and efficiency gains and the more efficient international OW industry. This law thus raises questions about the efficiency targets and the contribution of OW to the energy mix in 2030.

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## ИЗМЕНЕНИЯТ ЗАКОН ЗА ЕЛЕКТРОЕНЕРГИЯТА И ОТРАЖЕНИЕТО МУ ВЪРХУ РАЗВИТИЕТО НА ОФШОРНИТЕ ВЯТЪРНИ ЦЕНТРАЛИ ВЪВ ВЬЕТНАМ

**Резюме:** Проучването има за цел да проследи и анализира въздействието на изменения Закон за електроенергията върху развитието на офшорната вятърна енергия във Виетнам. Проучването ще предостави информация за енергийния пейзаж на Виетнам и ще покаже микса и търсенето на електроенергия. То ще се позове на ролята на възобновяемата енергия и офшорния вятър в енергийния микс. То също така ще очертае ключовите моменти в енергийната стратегия на Виетнам, като отрази развитието на офшорния вятър въз основа на изменения Закон за електроенергията. Изследването ще следва хипотезата, че измененият Закон за електроенергията ще окаже значително въздействие върху развитието на офшорния вятър във Виетнам, като създаде регулаторна основа за подкрепа на инвестициите в тази технология на виетнамския пазар. Ето защо изследователският въпрос е: „Как измененият Закон за електроенергията влияе върху развитието на офшорната вятърна енергия във Виетнам?“. Използваната методология е критичният преглед на Закона. Нововъведенията и резултатите ще дадат аналитична гледна точка за развитието на офшорната вятърна енергетика на базата на изменения Закон за електроенергията.

**Ключови думи:** Закон за електроенергията; офшорни вятърни генератори; енергиен сектор на Виетнам; Виетнам

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**SOCIAL-EMOTIONAL HANDICAP IN THE CONTEXT OF INCLUSION:  
CHALLENGES AND PERSPECTIVES FOR PARTICIPATION IN SOCIAL LIFE****Jana Johnson***University of Library Studies and Information Technologies*<https://doi.org/10.70300/YDVP8725>

**Abstract:** *This article analyses the challenges and perspectives of social participation of people with social-emotional disabilities in the context of inclusion. Based on a qualitative expert interview with Winfried Klaes, which was conducted as part of a dissertation, the effects of early childhood stress experiences on the development of self-regulation skills are analysed and the central limitations of current educational approaches that focus on autonomy and self-determination are highlighted. The results show that traditional educational methods are often ineffective or counterproductive for those affected, as lasting neurobiological changes (in particular dysregulation of the stress systems) make independent self-regulation considerably more difficult. Klaes defines four central factors in the development of a social-emotional handicap: early stress, disturbed developmental windows of neuronal maturation, chronic stress experience and epigenetic changes. These factors make the usual expectations of autonomy within current inclusion concepts unrealistic. The article calls for a fundamental change of perspective in education and social policy. Attachment-oriented, neuro-systemic and process-oriented interventions are recommended, which are individually tailored to provide long-term stabilisation. Klaes also proposes the official recognition of social-emotional disabilities in accordance with Section 2, Paragraph 1 of Book IX of the German Social Code as well as adjustments to training and funding. In conclusion, the article emphasises the need for a socio-political consensus on the definition of social-emotional disability in order to establish appropriate support services. The study has limitations as it is based on the perspective of a single expert. Future research should integrate further expert opinions as well as the perspectives of educators, those affected and carers.*

**Keywords:** *Social-emotional Handicap; Inclusion; Early Childhood Stress; Self-regulation; Paradigm Shift in Pedagogy*

**INTRODUCTION**

In recent decades, current educational theory has developed an increased focus on enabling all people, regardless of their individual abilities and needs, to participate in society on an equal footing. One area that deserves particular attention in this context is social-emotional disabilities. People with this type of impairment face considerable challenges when it comes to integration into educational, work and social contexts: While perceptible aspects, of a physical or cognitive nature, of disability are often the focus of inclusive endeavours, the physically invisible effects of social-emotional difficulties on participation in social life are often misinterpreted. The reason for this is common educational practice, which focusses on autonomy and self-determination as a goal, whereby self-regulation and personal responsibility are assumed. However, recent research clearly indicates that people with a social-emotional handicap in particular have considerable difficulties in developing these self-regulation skills at all due to early childhood experiences of deprivation and stress (Klaes 2019; Klaes & Johnson 2016a, 2016b). John Bowlby (2006) and Mary Ainsworth et al. (2015) already showed that early attachment experiences form a central basis for the long-term development of emotional stability. If children are exposed to chronic stress from birth, this experience of stress often leads to persistent dysregulation of the stress systems on a neurobiological level (Hostinar & Gunnar 2013). The hypothalamic-pituitary-adrenal axis (HPA axis) in particular is permanently affected by this, which makes long-term and independent self-regulation in later life considerably more difficult or can even lead to mental and physical illnesses (Charmandari et al. 2005; Gunnar & Quevedo, 2007; Hostinar & Gunnar 2013). From a neuroscientific perspective, Strüber (2016) and Uvnäs-Moberg (2016) also show that secure attachment experiences are necessary for the development of neuronal structures that later enable independent stress regulation. According to Klaes and Johnson (2016a), if this foundation is not sufficiently developed, this leads to a long-term social and emotional disability, which they define as a social-emotional

handicap. As a result, traditional pedagogical approaches, which presuppose self-regulation and personal responsibility, reach their limits here.

Instead, sustainable social participation of those affected requires special and customised support measures that take into account individual needs and impaired neuronal development (Johnson 2019; Klaes 2019). An exclusive focus on autonomy and self-determination, without taking into account the neurobiological and developmental prerequisites, therefore often leads to excessive demands, exclusion and ultimately to the intensification of existing disadvantages.

This article examines the perspectives for the participation of people with social-emotional disabilities in the context of inclusion. It is based on the analysis of an expert interview with Winfried Klaes, an experienced psychologist, family therapist, supervisor and organisational consultant, who played a key role in coining the term social-emotional handicap. Based on these findings, the aim of the article is to analyse the context-dependent and overall political effects of social-emotional handicaps. The results should serve to provide new professional impetus and highlight necessary structural changes that will enable a sustainable improvement in the participation and integration of affected people in society and the world of work.

## **RESEARCH METHODOLOGY**

A qualitative research approach in the form of a written qualitative expert interview (Schiek 2022) was chosen in order to capture these complex relationships more precisely. This interview was conducted as part of a dissertation with the psychologist Winfried Klaes, a renowned expert who played a key role in defining and establishing the term social-emotional handicap. Klaes has extensive practical experience with affected children, adolescents and young adults. The interview was based on four central guiding questions based on the SPSS method according to Helfferich (2011), which focussed on recording the state of knowledge about social-emotional handicaps, their underlying causes and principles, effective intervention measures and existing gaps in research and practice. The evaluation was carried out using a content-structuring qualitative content analysis according to Kuckartz (2020) in order to identify central statements on challenges and perspectives with regard to social participation in the context of inclusion.

### **Limitation**

The study is based on the perspective of a single, albeit recognised, expert. Future research should include other experts as well as the views of educators, those affected and carers in order to achieve more comprehensive results.

## **RESULTS**

The following results provide an insight into the key findings of the expert interview and illustrate the challenges of current educational practice. Winfried Klaes sees a change in the way social-emotional handicaps have been viewed in recent decades. At the beginning of the 2000s, a significant increase in children and young people with socially conspicuous and emotionally uncontrolled behaviour was observed, which has since pushed the professional help system to its limits. While these observations were initially seen as an individual problem, it was increasingly recognised that this was a social phenomenon. Advances in developmental neurobiology and neuroscience have contributed significantly to the understanding that the focus has shifted to the interaction between the social environment and the development of the child's brain, taking into account the significance of early stress. Klaes argues in favour of a clear distinction between a serious developmental impediment and a manifest social-emotional handicap in which the neuroplastic capacity of the brain is significantly impaired by massive early childhood stress.

Klaes identifies four central principles that are essential for understanding social-emotional disabilities in contrast to other disorders. Firstly, early-life stress plays a decisive role, especially in the first two years of life, as it leads to brain morphological changes in the brain. Secondly, it can lead to a disruption in the opening and closing of sensitive developmental windows, particularly in the right hemisphere, which impairs the development of self-regulating networks in the long term. Thirdly, the permanence of the stress experience in the form of a chronic and emotionally unfiltered influence on early brain maturation processes is fundamental. Fourthly, epigenetic effects play a decisive role insofar as early stress experiences leave lasting changes in gene expression that impair stress regulation and can even be passed on transgenerationally.

Klaes argues that these four factors are interrelated and can occur over time, which ultimately causes the development of a social-emotional handicap.

The analysis of the interview with Winfried Klaes makes it clear that the current pedagogical approaches, which pursue autonomy and self-determination as their primary goal, are not suitable for people with a social-emotional handicap. He explicitly emphasises that this prominent objective is unrealistic and even counterproductive for the affected group due to the neurobiologically determined and permanent deficits in self-regulation. Early childhood stress experiences and deprivation lead to permanent neuronal changes, particularly in stress regulation via the hypothalamic-pituitary-adrenal axis (HPA axis), which make long-term independent self-regulation significantly more difficult or impossible, as Gunnar and Quevedo (2007) also point out in their studies.

According to Klaes, the inclusion of affected people with social-emotional disabilities poses considerable challenges. Traditional educational interventions (such as incentive and reward systems or purely behavioural therapies) often only show limited effectiveness – if any at all – as essential functional systems such as the motivation and curiosity system and action control are barely responsive in those affected by automated stress experiences. On the contrary, the well-meaning use of such methods, which do not address the causes, can increase the pressure of demands and lead to a more pronounced form of behavioural abnormalities.

The current paradigm of inclusion with its focus on self-determination and personal responsibility therefore increases the risk of pushing people with a pronounced social-emotional handicap beyond their own limits, which can inadvertently lead to exclusion. Winfried Klaes questions whether this approach is appropriate for these people, as early childhood stress experiences can have a lasting impact on the development of self-regulation skills, which are, however, a prerequisite for the current goals of education.

According to Klaes, this creates an area of tension: to what extent must pedagogy differentiate itself in order to meet the diverse needs of all learners? Are current pedagogical concepts still up-to-date at all, and how can educational institutions find a balance between the required autonomy on the one hand and the provision of necessary support and guidance on the other?

The discussion about inclusion is closely linked to this. Klaes strongly warns against trying to force inclusion at all costs, as this can quickly overwhelm people with social-emotional disabilities and ultimately lead to exclusion. The current inclusion paradigm, which emphasises self-regulation, independence and self-realisation, proves to be inappropriate in many cases, which raises the question: How can we prevent inclusion efforts from unintentionally leading to the exclusion of certain groups of people?

Klaes sees the perspective for improved participation of people with social-emotional disabilities in the consistent application of the findings resulting from the synthesis of traditional attachment theory and current neuroscientific research. He argues in favour of prioritising interactive approaches to building attachment and co-regulation that are tailored to the social-emotional developmental age of those affected and incorporate basic communicative pathways. He refers to the “concept of systemic stress regulation” (now part of “neuro-systemic practice”), which combines body- and action-orientated forms of intervention. What is important here is a process-oriented approach that aims less to achieve specific goals and more to expand the scope of action of those affected by stabilising them emotionally through external long-term help. Klaes emphasises the need for openness in terms of time and the establishment of settings in which help can be coordinated and ideally provided “from a single source”. He sees great potential in the implementation of effective interventions and forms of setting organisation in existing social institutions such as the elementary sector, schools, child and youth welfare and integration assistance.

In order to counteract exclusion through inappropriate inclusive approaches geared towards autonomy and self-determination, Klaes calls for a political paradigm shift towards the systematic recognition of long-term support needs. As a central overall political consequence, he proposes officially recognising the social-emotional handicap as an independent form of disability in accordance with Section 2, Paragraph 1 SGB IX and establishing institutionalised long-term support measures under social law.

However, Klaes currently sees the greatest challenge in the fact that existing findings from brain research have so far only been insufficiently integrated into social work practice. A synthesis of traditional attachment theory according to Bowlby (2006) and Ainsworth (2015) and current neuroscientific findings



(e.g. Strüber 2016) would be necessary in order to develop customised measures. He therefore calls for a stronger interlinking of neuroscientific research and educational practice as well as an adaptation of training programmes and funding logic in the area of social policy.

Last but not least, Klaes emphasises the lack of social acceptance and common understanding of social-emotional disabilities. He argues in favour of a professional and political consensus on when and how a social-emotional handicap must be defined in order to ensure appropriate and long-term support services.

In conclusion, it can be said that a sustainable improvement in the situation of people with social-emotional disabilities can only be achieved through a holistic perspective and the personal and institutional commitment of all those involved. In practice, concrete recommendations for action and increased political support are needed in order to successfully implement long-term measures.

## CONCLUSIONS

The analysis of the interview clearly shows that the existing inclusive concepts, which focus primarily on autonomy and self-determination, do not meet the needs of people with social-emotional disabilities. A paradigm shift is needed in order to recognise social-emotional disabilities politically and under social law as an independent form of disability and to create long-term support structures that enable sustainable social participation in the first place.

Inclusive practice requires more differentiation: in addition to reflexive and individually adapted autonomy, co-regulative, attachment-oriented services for certain groups must also be recognised. A close interlinking of neuroscience, attachment theory and social pedagogy is necessary for this and should be integrated into training programmes. Educational and social policy must therefore make the transition from short-term success-orientation to long-term, process-oriented care concepts. Funding systems and evaluation logics must be adapted in order to recognise sustainable stabilisation as a goal. The complexity of social-emotional disabilities requires interdisciplinary cooperation between neuroscience, psychology, education and social work in order to develop interventions. Targeted educational work is necessary to increase social acceptance, create understanding and reduce stigmatisation instead of reinforcing it.

**But are we as a society really ready to initiate the necessary changes that are required for true inclusion of people with social-emotional disabilities, or do defensive behaviour and well-intentioned declarations of intent remain the norm?**

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## СОЦИАЛНО-ЕМОЦИОНАЛНОТО УВРЕЖДАНЕ В КОНТЕКСТА НА ПРИОБИЩАВАНЕТО: ПРЕДИЗВИКАТЕЛСТВА И ПЕРСПЕКТИВИ ЗА УЧАСТИЕ В СОЦИАЛНИЯ ЖИВОТ

**Резюме:** В тази статия се анализират предизвикателствата и перспективите за участие в социалния живот на хората със социално-емоционални увреждания в контекста на приобщаването. Въз основа на качествено експертно интервю с Винфрид Клаес, проведено като част от дисертационния труд, се анализират последиците от стресовите преживявания в ранното детство върху развитието на уменията за саморегулация и се изтъкват основните ограничения на настоящите образователни подходи, които се фокусират върху автономността и самоопределението. Резултатите показват, че традиционните образователни методи често са неефективни или контрапродуктивни за засегнатите лица, тъй като трайните невробιολογични промени (по-специално дисрегулацията на стресовите системи) значително затрудняват независимата саморегулация. Клаес определя четири централни фактора в развитието на социално-емоционалния недостатък: ранен стрес, нарушени прозорци на развитие на невронното съзряване, хронично преживяване на стрес и епигенетични промени. Тези фактори правят нереалистични обичайните очаквания за автономност в рамките на настоящите концепции за приобщаване. Статията призовава за фундаментална промяна на гледната точка в образованието и социалната политика. Препоръчват се интервенции, ориентирани към привързаността, невросистемни и процесни интервенции, които са индивидуално съобразени, за да осигурят дългосрочна стабилизация. Клаес предлага също така официалното признаване на социално-емоционалните увреждания в съответствие с раздел 2, параграф 1 от книга IX на Германския социален кодекс, както и корекции в обучението и финансирането. В заключение статията подчертава необходимостта от социално-политически консенсус по отношение на определението за социално-емоционално увреждане, за да се създадат подходящи услуги за подкрепа.

Проучването има ограничения, тъй като се основава на гледната точка на един експерт. Бъдещите изследвания следва да включват допълнителни експертни мнения, както и гледните точки на педагози, засегнати лица и настойници.

**Ключови думи:** социално-емоционално увреждане; приобщаване; стрес в ранна детска възраст; саморегулация; промяна на парадигмата в педагогиката

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THE ROLE OF DEMOGRAPHIC DATA IN INFORMATION PROCESSES FOR  
RESIDENTIAL REAL ESTATE INVESTMENT DECISIONS

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**Abstract:** *Despite the general consensus of the relevance of demographic data for residential real estate investments, there is a general lack of knowledge about how this data is actually integrated into investment-related information processes within real estate firms. Therefore, this paper investigates how population dynamics are considered and operationalized in residential real estate decision-making. For this purpose, fifteen semi-structured expert interviews with professionals from various investor segments have been conducted in order to assess how demographic indicators shape the relevant analytical framework of investors, such as for market assessment or portfolio management. The results provide support to the relevance of demographic data but reveal significant variation in how they are interpreted and applied. While some firms translate demographic trends into concrete planning actions (e.g., modular housing or senior-friendly design), others use demographic data primarily for market monitoring. This points to the need for a more distinguished investigation of the role of such data that takes into account the unique investor types and their preferences. The study contributes to providing theoretical and practical insights into how investors use demographic data in the information process for residential real estate investments.*

**Keywords:** *Demographic Change; Residential Real Estate; Investment Decision-Making; Information Processes*

## INTRODUCTION

Demographic change is a key element that is impacting society but also housing markets across Europe. In Germany, developments such as population aging, shrinking household sizes, and migration dynamics have created new opportunities and challenges for residential real estate investors. It is considered that these trends not only influence long-term demand patterns but also affect the way investment opportunities are identified, evaluated, and implemented (Krämer 2016; Marešová et al. 2015; Scharmanski, Wiencke 2017; Schürt 2017). Despite the relevance of demographic trends for housing markets, there is limited empirical understanding of how such data are actually processed and applied within the firms' information systems and decision-making processes or routines. Existing literature generally emphasizes the role of demographic data for various analytical tools such as location screening or market analysis (e.g. Alda, Hirschner 2016) but fails to capture how demographic indicators are specifically integrated into internal information flows, planning instruments, and investment logic at the firm level.

Against this background, this paper investigates how demographic indicators are used within the information processes of residential real estate investors. Using a rather exploratory approach that relies on semi-structured expert interviews with practitioners from different segments of the residential sector, the paper investigates how population-related data are interpreted, prioritized, and operationalized across various decision phases. Hereby, the main focus is on the relevance of the demographic data to the investment decisions. It is an aim of the study that the results contribute to a more practice-oriented understanding of this issue. The remainder of the paper is structured as follows: Section 2 outlines the theoretical background; Section 3 presents the methodological approach; in Section 4 are the key empirical findings and discussion; and Section 5 concludes with a summary of the results and directions for future research.

## LITERATURE REVIEW

Defined as the scientific study of population structures and developments, demography has traditionally focused on statistical models and actuarial projections but has over time evolved into an interdisciplinary field

that integrates sociological, economic, or other dimensions (Dudel 2018; Künemund 2013). Demographic indicators such as population growth, household sizes, migration patterns and ageing directly influence key investment parameters. These include market and location analytics, risk assessments and usage concepts. As such, demographic data serve not only as background statistics but as an active driver of long-term investment strategies in the housing sector. This part shows the role of demographic data in residential real estate investment in more detail below and also its relevance in the investment process.

### **The Role of Demographic Data in Real Estate Investment**

Population development and aging have a profound impact on housing markets. In Germany, population growth has been stagnant or declining for decades, with the number of deaths exceeding births consistently since the 1970s (BiB 2025). However, a slight recovery in population figures was observed after 2010, which is fully attributable to sustained net migration. For example, in 2015, a net addition of 1.1 million was observed (BAMF 2023). Looking into the future, projections by Destatis (2021) show that future demographic development will be highly sensitive to assumptions regarding fertility, life expectancy, and migration flows. However, it is in any case expected that the old-age dependency ratio will increase significantly after 2030, driven by both low fertility rates and rising life expectancy (Krämer 2016; Marešová et al. 2015).

Other demographic determinants are household size and the growing trend of stronger singularization. While total population figures may remain relatively stable, the number of households continues to rise, largely due to declining average household size. This trend reflects broader social developments such as delayed family formation, urbanization, longer life expectancy, and the growth of non-traditional living arrangements etc. (Arnold 2017; Scharmanski, Wiencke 2017; Schürt 2017).

The migration patterns already mentioned can either be internal or international. Internal migration within Germany is marked by persistent flows toward metropolitan regions such as Berlin, Hamburg, or Munich (Stawarz, Rosenbaum-Feldbrügge 2020). These flows are primarily driven by labor market dynamics and contribute to the growing demographic divergence between urban and rural areas (Lahner, Neubert 2016). Also, while many rural regions, especially in East Germany, continue to experience depopulation, well-connected suburban areas near metropolitan cities like Berlin have gained renewed relevance due to existing traffic infrastructure that enhances mobility (Schürt 2017). Regarding international migration, Germany's net migration surplus amounted to 5.4 million people between 2015 and 2023 (BAMF 2023). Here, research from international studies shows a link of immigration to rising housing prices in large cities (Bourassa, Hendershott 1995; Ley, Tutchener 2001), although empirical findings remain mixed about this relationship. Some studies report demand-side pressures concentrated in lower-income segments (Saiz 2003), while others find neutral or even dampening effects due to spatial segregation or differences in housing consumption patterns (Accetturo et al. 2014; Akbari, Aydede 2012; Sanchis-Guarner 2017). Generally, the effect of immigration appears to be context-dependent and moderated by local housing supply or labor market dynamics.

Finally, changing preferences or lifestyle dynamics add another layer of depth and complexity to demographic impacts. For example, the COVID-19 pandemic accelerated shifts toward remote work and work flexibility, potentially increasing interest in suburban housing formats (Fadinger, Schymik 2020; Waizenegger et al. 2020). Simultaneously, older people seek housing solutions that maintain autonomy while accommodating for the need of the necessary care, such as assisted living or multigenerational arrangements (Efremidis 2017). In addition, sustainability preferences can be observed in the realm of real estate (Feige et al. 2013), which is partly a demographic issue of relevance for different age cohorts, as younger people generally have shown more interest in it (Ziesemer et al. 2021).

### **Relevance of Demographic Data in the Information Process**

Demographic data play a central role in real estate investment analysis, particularly through their function as soft location factors. Unlike hard factors such as transport infrastructure, demographic characteristics cannot be modified in the short term and thus constitute fixed parameters in location evaluation. These factors are relevant on both the macro level, where they inform regional market dynamics and long-term planning



assumptions, and the micro level, where they directly influence the attractiveness of individual sites to target user groups (Alda, Hirschner 2016). On the macro level, demographic data guide location screening and portfolio allocation. Regions with aging populations, declining household sizes, or high net migration may offer opportunities or pose risks depending on infrastructure capacity and housing stock adaptability. On the micro level, demographic indicators such as local purchasing power, household composition, and socio-economic status determine the tenant structure and the corresponding demand profile (Scharmanski, Wiencke 2017). For instance, a high share of single-person households with academic backgrounds may indicate a demand for compact but high-quality rental units in well-connected urban quarters. Therefore, insights from location screening can not only be used for site evaluation but also for tenant targeting and pricing strategies.

Furthermore, demographic data are vital for market analysis, which is conceptually and practically linked to the location assessment. The immobility of the asset ties every investment to a specific location and the corresponding context, thereby fixing the relevant market (Ertle-Straub 2019). Here, market analysis integrates demographic forecasts, socioeconomic data, and behavioral patterns to assess demand on both macro and micro scales. This includes projections of household formation, income distribution, vacancy trends, and the evolution of target groups (Greiner 2017). The analysis often combines data from local expert committees, internal investor databases, and market intelligence providers to assess both the quantitative volume and the qualitative nature of future demand (Brauer 2019).

As a result, the outcomes of the location and market analysis directly informs the functional and architectural concept of the property. This applies especially during the project development phase, where demographic patterns shape the formulation of the functional use concept. This concept translates demographic needs into spatial and design features, e.g., flexible layouts, accessible floor plans, or multigenerational living formats. These features then serve as a planning basis for architects and as a risk-mitigation tool for investors (Alda, Hirschner 2016). Demographic data thus supports the future-oriented usage flexibility and third-party usability of residential real estate units (Kurzrock 2017). In saturated markets, these factors gain additional importance, as users become more selective and less willing to compromise on quality and suitability (Schneider, Völker 2002). Here, demographic alignment can become a decisive criterion for competitiveness, affecting both long-term project viability and resale value.

Economic feasibility analysis forms another key element of investment analysis for residential real estate. It evaluates expected returns, cost structures, and cash flows, hereby relying on instruments such as internal rate of return (IRR), equity multipliers, or discounted cash flow models (Farragher, California 2008). Since demographic variables directly shape market demand and user behavior, they also influence the plausibility and robustness of the underlying financial assumptions for the economic feasibility analysis (Alda, Hirschner 2016). For example, a declining household size may imply a need for more but smaller units, which in turn affects both revenue projections and unit-level development costs. Also, an aging population may imply increased operating costs for accessibility through retrofitting the units or a reduced tenant turnover, both of which impact cash flow forecasts and therefore real estate economics.

Portfolio management must also be mentioned as an analytical tool, which consists of strategic, qualitative, and operational layers. While strategic portfolio management deals with allocation and risk balancing, the qualitative layer focuses on market and trend analysis, including demographic dynamics. This enables investors to identify regional shifts, assess the long-term viability of asset classes, and reposition the portfolio accordingly. The operational layer then deals with the portfolio in terms of its operations such as regarding the use facility management to enhance profitability (Brauer 2019; Brendgen, Pannwitz 2011). Demographic data are thus not only relevant to structure individual investment cases but also to optimize the portfolio in terms of risk–return efficiency and in terms of its strategic, qualitative, and operational layer.

Using a more granular perspective, it can be shown that demographic data are embedded in a series of specific sub-processes within the information processes that are implemented by the real estate firm. These can include location-based benchmarking, user requirement modeling, development forecasting, or scenario planning (Lange 2019). Each of these tasks also depends on access to timely, structured, and context-sensitive demographic information. The integration of this information into asset and portfolio management is understood to facilitate the achievement of specific investment objectives and to contribute to increased

efficiency. Consequently, well-structured information processes can be regarded as an indispensable element of effective real estate management.

## **RESEARCH METHODOLOGY**

This study employed a qualitative research design based on semi-structured expert interviews. The aim is to understand how demographic data are perceived and integrated into the decision-making processes of different residential real estate investors. The approach that is taken is particularly suitable for capturing context-specific and practice-based knowledge that is not readily accessible through standardized surveys (Bogner et al. 2014). Experts possess specific knowledge valuable to the research conducted due to their function or experience (Hitzler 1994; Misoch 2019).

Specifically, in the context of the doctoral research, fifteen interviews were conducted with professionals representing a diverse sample of investor types, including small and large private housing firms, municipal housing companies, institutional investors, and others. The selection followed a random sampling strategy with the aim of selecting a variety of investors from different backgrounds. The sample was developed using a commercial real estate market database (Listenchampion), from which a set of companies was randomly drawn. After initial contact, expert interviews were conducted via telephone between December 2024 and February 2025. A structured interview guide was used to address the research themes. Interview transcripts were evaluated through a deductive qualitative content analysis, which allowed thematic evaluation.

## **FINDINGS/DISCUSSION**

The qualitative interviews basically show the existence of four central themes in relation to the role of demographic data in the investment processes of residential real estate companies. The insights reflect both similarities across investor types and context-specific differences regarding the relevance of considering demographic data.

### **Population Growth and Aging**

Demographic indicators such as population growth and aging were widely mentioned as key strategic variables by the respondents. For example, companies that engaged in senior housing development reported close monitoring of these trends to guide land acquisition, architectural planning, and service model design. Here, the aging of the population was viewed not only as a driver for new development but also as a reason to retrofit existing housing stock, especially in regard to accessibility and adaptability. However, in saturated urban markets, these demographic trends do not pose much risk to the investors in terms of vacancy or construction, but provide signals for the existence of niches for investments. Therefore, population development is not considered a relevant issue in this type of market environment, while the steadily aging population offers an opportunity to provide for long-term planning stability.

### **Household Size and Singularization**

The decline in average household size, notably the rise in single-person households, was perceived as a structural shift in demand. Firms reported a growing focus on small-scale units such as for single users, particularly in dense urban areas. However, some countertrends were observed as well in the case of cities, where costs have become high. Here, shared living formats are gaining popularity, especially among younger and lower-income tenants. This constitutes a potential trend that has been mentioned recently in the literature as well (Kohl et al. 2024). Therefore, official demographic statistics may fail to adequately grasp the actual housing realities.

### **Internal and International Migration**

Internal and international migration were consistently described as critical elements that impact regional housing dynamics in particular. Most respondents associated migration with rising demand for housing in metropolitan areas, with a strong attention to urban hotspots facing structural shortages. At the same time, residential units that are located in smaller cities or in more remote areas are less impacted by this trend. Therefore, the trends in migration determine the growth areas in terms of market demand:

*“Internal migration within Germany determines which cities grow and which remain stagnant.”*  
(Interview#4)

*“[International migration leads to a demand for housing that is expected to persist.”*

(Interview#7)

However, there was also a qualitative impact mentioned in the interviews, which mirrors the findings from the literature. In particular, there is a strong relevance of the context in which migration is present and strong, as mediated by local labor markets, infrastructure availability, and integration policies. For example, there are concerns in terms of social impacts by migration, which are relevant for those firms that are exposed to these areas with their residential investment portfolio:

*“Migration increases the number of tenants but can also lead to social tensions and raise the demand for social housing.” (Interview#11).*

*“Migration is an important issue for us from a social perspective. However, it has no implications for our housing portfolio.” (Interview#12).*

### **Preference Shifts and Housing Formats**

Demographic change was also evaluated as of influence regarding tenant preferences and corresponding living formats. Interviewees reported increased interest in alternative or novel forms of housing such as co-living, student apartments or senior housing with service integration. These formats are described as especially relevant among younger tenants but also for the elderly as they seek flexibility or community-oriented environments. Nevertheless, traditional housing formats still dominate tenant demand and therefore also investment decision-making. As such, the trend towards novel housing formats must generally be considered a type of niche.

Also, while sustainability concerns were generally acknowledged, they were depicted by the respondents more as compliance issues or ESG obligations rather than being primary tenant-driven concerns. This is probably due to the nature of sustainability leading to higher costs of living for the tenants. Regardless of this, housing firms exhibit a visible emphasis on developing more sustainable offerings of housing.

### **Discussion**

The findings of the study confirm the strategic relevance of demographic data in residential real estate investment processes but also show variations in how such data are operationalized. While previous research has emphasized the importance of demographic factors for the analysis in terms of the micro and macro view as a matter of principle (Alda, Hirschner 2016; Ertle-Straub 2019), this study demonstrates that firms integrate these factors into their investment decisions with varying degrees of depth and specificity. This is particularly due to their strategic orientation and the geographic positioning of the firms. In line with the theoretical perspectives on location analysis (Alda, Hirschner 2016; Lange 2019), the results imply that demographic variables are treated as fixed soft factors for site selection and market assessment. However, the study adds empirical insight by highlighting how some companies actively translate these variables into planning, like for example regarding the development of novel housing designs or changed renovation strategies to cater to senior tenants.

One unexpected insight concerns the disconnect between the statistical indicator of the average household size to real-life housing needs. Here, some of the interviewees have pointed to the observation of structural overcrowding in some urban areas. As a result, this observation challenges the widespread assumption that singularization uniformly translates into demand for smaller housing units. It suggests the need for a more differentiated demographic modeling approach that incorporates the actual realities, particularly regarding the socio-economic segmentation in urban contexts. Moreover, while preference shifts such as co-living or senior housing with service integration were acknowledged, some respondents considered them as niche trends rather than core drivers of market change and investment logic.

From a theoretical standpoint, the study contributes to providing a more in-depth view on the relevance and the interconnection of population dynamics and residential real estate investment. As such, the study provides enrichment to firm-level information architectures as well as the integration of demographic data into planning, evaluation, and investment screening. By providing evidence for a differentiated and context-dependent approach, it becomes evident that the corresponding information processes of the investors need proper design to reflect these findings. Given the variability in the use of the data across investor types, the study also indicates the need for further theorization of how external demographic signals are interpreted and acted upon within firms of different organizational aims and regional activities. Practically, the findings highlight the importance of aligning demographic analytics in a flexible and adaptive manner; but with a

strong emphasis on the firms' core investment areas or geographical focus.

## CONCLUSIONS

This paper has evaluated the role of demographic data in the information processes that are used by investors for residential real estate investment decisions. Based on a qualitative study of expert interviews, the results show that demographic indicators such as population growth, aging, singularization, or migration patterns are generally integrated into firm-level decision routines, although in various ways. While a general relevance for analytical tools like location or market analysis can be stated to exist, it became clear that the indicators have a different relevance to planning and investment decision-making. The application is therefore inconsistent and context-dependent in some parts.

The study therefore contributes to providing current empirical insight into how demographic trends are processed. It has highlighted the importance of using demographic insights to develop adaptive use concepts but it has also shown that there is little relevance of some of the data in saturated markets. This became also visible with respect to the role of immigration, for which it was found that areas are very differently impacted by it. Therefore, demographic data shows strong differences in terms of its unique relevance.

Despite these insights, the study is limited by its qualitative scope and sample size. Future research could explore the role of differences across investor types or could examine in more detail how the demographic information is technically implemented into the diverse set of analytical tools that firms use. This could include a consideration of how demographic data are gathered, prioritized, filtered, and interpreted within internal information systems, and which organizational resources, routines or tools are required for or supportive to this process.

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## РОЛЯТА НА ДЕМОГРАФСКИТЕ ДАННИ В ИНФОРМАЦИОННИТЕ ПРОЦЕСИ ПРИ ВЗЕМАНЕТО НА РЕШЕНИЯ ЗА ИНВЕСТИЦИИ В ЖИЛИЩНИ НЕДВИЖИМИ ИМОТИ

**Резюме:** Въпреки общото съгласие относно значението на демографските данни за инвестициите в жилищни недвижими имоти, съществува липса на знания как тези данни се интегрират в информационните процеси, свързани с инвестициите в недвижими имоти. Ето защо настоящата статия разглежда как демографската динамика се взема предвид и се операционализира при вземането на решения в областта на жилищните недвижими имоти. За тази цел бяха проведени 15

полуструктурирани интервюта с експерти от различни сегменти на инвеститорите, за да се оцени как демографските показатели оформят съответната аналитична рамка на инвеститорите, например за оценка на пазара или управление на портфейла. Резултатите потвърждават значението на демографските данни, но разкриват значителни различия в начина, по който те се тълкуват и прилагат. Докато някои фирми превръщат демографските тенденции в конкретни планови действия (например модулни жилища или дизайн, подходящ за възрастни хора), други използват демографските данни предимно за наблюдение на пазара. Това сочи необходимостта от по-задълбочено проучване на ролята на такива данни, което да отчита уникалните типове инвеститори и техните предпочитания. Проучването допринася за предоставянето на теоретични и практически познания как инвеститорите използват демографските данни в информационния процес при инвестициите в жилищни недвижими имоти.

**Ключови думи:** демографски промени; жилищни недвижими имоти; вземане на инвестиционни решения; информационни процеси

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## **THE FUNDING OF JOB CENTERS – STRUCTURES, DISTRIBUTION AND ADMINISTRATIVE COST BUDGET**

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**Abstract:** *The funding of job centers in Germany is based on a complex interplay between federal and municipal funds. A key financial instrument is the administrative cost budget, which covers the operational expenses of job centers and ensures their functionality. The funds come from both the federal budget and municipal contributions, with the exact distribution depending on various factors, including legal regulations and regional conditions. In addition to administrative costs, funding is allocated for employment integration measures and unemployment benefits (Bürgergeld). The distribution of funds follows a predetermined allocation and needs-based system, which is regularly adjusted. At the same time, job centers face challenges such as rising costs, regional disparities, and the need to optimize administrative processes. This article analyzes the financing mechanisms, existing problems, and possible reform approaches.*

**Keywords:** *Administrative Cost Budget; Labor Market; Job Centers; Policy*

### **INTRODUCTION**

This article aims to systematically analyze existing published knowledge and information. From a methodological perspective, it employs a form of literature analysis. Generally, literature analyses can be described as summaries of existing knowledge. The focus of this research project is on already published works that are examined in relation to a specific research question. The value of such literature analyses lies in the accumulation and systematic examination of existing research on the topic.

This analysis particularly relies on publicly accessible sources from governmental institutions and research organizations, including reports from the Federal Audit Office, information from the Federal Ministry of Labor and Social Affairs, statistical data from the Federal Employment Agency, and current studies from the Institute for Employment Research (IAB). Initially, the current state of research and available information is reviewed. Finally, future prospects are considered.

### **RESEARCH METHODOLOGY**

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### **RESULTS**

The structure of labor market administration in Germany has undergone multiple changes over the past decades, with the Hartz IV reform in 2005 being a significant turning point. During the 1990s, social assistance was managed by municipalities, while unemployment benefits were administered by the Federal Employment Agency. With the introduction of Social Code II (SGB II), these systems were merged, and

newly established job centers became the main points of contact for employable benefit recipients. This reform not only altered administrative structures but also had profound effects on the financing of labor market policies, as federal and municipal funds were combined for the first time.

With the introduction of SGB II, a paradigm shift occurred: in addition to passive financial support, a stronger focus was placed on the active promotion of unemployed individuals. Since then, numerous adjustments have been made to the financing and management of job centers to increase the effectiveness of labor market measures and optimize administrative efforts. These adjustments have included changes in fund distribution and the introduction of new control mechanisms for evaluating the success of job centers.

### **Funding Structure of Job Centers**

The funding of job centers is based on several key pillars that cover different areas of responsibility:

#### **1. Integration Funds**

These funds are intended for the active promotion of unemployed individuals and include a wide range of measures to improve employability, such as:

- **Training programs:** Funding for qualification programs to enhance job prospects.
- **Employment subsidies:** Financial incentives for companies to hire long-term unemployed individuals.
- **Integration programs:** Initiatives such as the “Job Turbo”, aimed at accelerating the integration of specific groups, such as refugees.

#### **2. Administrative Cost Budget**

These funds cover the operational expenses of job centers, including:

- **Personnel costs:** Salaries and training for employees to ensure professional counseling and job placement services.
- **Material costs:** Expenses for rent, office equipment, IT systems, and administrative infrastructure.
- **Digital infrastructure:** Investments in modern job-matching platforms and AI-supported job placement systems to improve efficiency.

#### **3. Municipal Funds**

Municipalities primarily cover costs for housing and heating (KdU) under § 22 SGB II, which constitute a significant portion of total expenditures. Additionally, they finance various social services under § 16a SGB II, including:

- **Debt counseling** to support recipients with financial difficulties.
- **Addiction counseling** to help individuals overcome substance abuse issues that hinder employment.
- **Psychosocial support** for individuals with special social or psychological challenges.

#### **4. Special Programs**

In addition to regular funding structures, there are temporary special programs financed by the federal government or federal states, targeting specific groups such as:

- Long-term unemployed individuals facing significant employment barriers.
- Single parents requiring specialized support programs.
- Refugees needing specific qualification measures.

#### **5. European Funding**

Another important funding source is European funds, particularly from the **European Social Fund (ESF)**, which finances projects to enhance qualification and labor market integration for disadvantaged groups.

### **CONCLUSIONS**

Demographic changes pose major challenges for labor market policies in Germany. An aging population leads to rising social expenditures as more individuals become dependent on social benefits. At the same time, the shrinking workforce increases demands for labor market placement and qualification programs. To address these developments, sustainable funding and management strategies for job centers are required.

One critical factor for the future of job centers is **digitalization**. The increased use of artificial intelligence



and automated processes could improve administrative efficiency and optimize workforce deployment. AI-driven job-matching systems and digital advisory platforms could tailor individual support measures more precisely to the needs of job seekers. However, implementing such solutions requires significant investments in IT infrastructure and employee training.

Given upcoming elections in Germany, job center funding is becoming an increasingly important political issue. The growing demand for labor market services and qualification programs increases financial requirements. Some political stakeholders advocate for increased federal funding to ensure adequate support for benefit recipients and strengthen job centers for future challenges. Others propose a **results-oriented funding approach**, where job centers receive funding based on measurable success indicators, such as sustainable employment rates.

Another debated issue is the **privatization of certain labor market services**. Increased cooperation with private providers could introduce innovative concepts for labor market integration. However, strict quality controls would be necessary to prevent profit-driven models from undermining labor market policy goals.

To ensure the long-term efficiency and effectiveness of job centers, **comprehensive reforms** in funding and management are essential. A stable and needs-based financing model should regularly adjust administrative cost budgets to actual requirements, particularly considering rising personnel and administrative costs. Investments in **digitalization and automation** should be expanded to improve efficiency. Additionally, **closer cooperation between labor market policies and educational institutions** could help bridge qualification gaps.

Overall, the funding of job centers will remain a central issue in the German labor market policy in the years to come. A sustainable model must balance public investments, digital transformation, and targeted labor market support to ensure that job centers remain effective and adaptable to future challenges.

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## ФИНАНСИРАНЕ НА БЮРАТА ПО ТРУДА – СТРУКТУРИ, РАЗПРЕДЕЛЕНИЕ И БЮДЖЕТ ЗА АДМИНИСТРАТИВНИ РАЗХОДИ

**Резюме:** Бюрата по труда в Германия се финансират чрез различни механизми, които се координират както на федерално, така и на общинско равнище. Основен елемент на това финансиране е бюджетът за административни разходи, който покрива оперативните разходи на бюрата по труда. В настоящата статия се анализират произходът на финансовите ресурси, тяхното разпределение и ролята на участващите институции. В нея се разглеждат също така предизвикателствата и подходите за реформи, които имат за цел да осигурят устойчивост на финансирането на бюрата по труда в бъдеще.

**Ключови думи:** бюджет за административни разходи; пазар на труда; бюро по труда; политика

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## MANAGING INFORMATION PROCESSES IN REAL ESTATE INVESTMENT UNDER CONDITIONS OF DEMOGRAPHIC CHANGE

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**Abstract:** *Demographic change presents a growing challenge for residential real estate investment, yet the literature offers limited insight into how demographic data are operationally embedded within the actual internal decision-making processes. This paper addresses that gap by investigating how demographic indicators are processed, interpreted, and applied in investment-related information systems. Drawing on fifteen expert interviews with firms from the German real estate sector, the study explores three inter-related dimensions: demographic data integration, analytical capacity of firms, and the analytical infrastructure. The findings basically confirm the perceived relevance of demographic information but reveal considerable variation in terms of its systematic use across the different firms. While some firms employ structured planning tools and advanced forecasting methods, others rely largely on knowledge gained from general experience or on relatively basic tools and methods for investment analysis. Key barriers include limited staff expertise, inconsistent data systems, and technological or other resource constraints. The research further shows that demographic data serve dual purposes: They are used both for a more socially oriented service alignment and for return-driven investment approaches.*

**Keywords:** *Demographic Change; Residential Real Estate; Information Processes; Analytical Capabilities*

### INTRODUCTION

While the importance of demographic data in residential real estate investment is widely acknowledged (Alda, Hirschner 2016), the literature offers limited insight into how such data are concretely used within internal decision-making processes. As such, it remains unclear how demographic indicators are processed, interpreted, and applied within organizational information systems and investment routines; but also which organizational resources and capabilities are required for this task. It can be argued that this lack of detail constitutes a relevant research gap, which is particularly relevant in the context of demographic change (Krämer 2016; Schroven 2015).

This study addresses the research gap by investigating the role of demographic data in information processes related to residential real estate investment. Using data from expert interviews, a focus on three dimensions has been selected: data integration, analytical capacity, and digital infrastructure. The paper is structured as follows: Section 2 outlines the theoretical background, followed by Section 3, which presents the methodology, followed by empirical findings and a discussion. Finally, Section 5 concludes key results and implications.

### LITERATURE REVIEW

This chapter provides the theoretical foundation for analyzing how demographic data are addressed within information processes in residential real estate investment. It is divided into two parts. Section 2.1 outlines the general role of information processes in real estate decision-making, focusing on data sources, analytical procedures, and the integration of digital tools. Section 2.2 builds on this foundation by examining the specific relevance of demographic data. It discusses how demographic trends such as aging, migration, and household singularization are integrated into location screening, market analysis or other analytical tools of real estate investment analysis.

### Information Processes in Real Estate Investments

Information processes represent a foundational component of investment decision-making and have

become increasingly strategic in the context of residential real estate. Typically, such processes begin during the planning phase, where information is gathered systematically from internal and external sources, followed by stages of evaluation, decision, implementation, and post-investment monitoring (Becker, Peppmeier 2022). From a management perspective, information processes must be handled potentially across all organizational functions (Spindler 2022) in order to prevent risks and to optimize opportunities (Ertle-Straub 2019).

In real estate investment, these processes are formalized through real estate research, which provides market-relevant intelligence and supports investor decision-making through structured analysis. Real estate research serves as a critical input for strategic portfolio management, as it enables the anticipation of market developments, assessment of site-specific opportunities, and optimization of investment performance (Ertle-Straub 2019). Information management, in this sense, spans the entire investment lifecycle, which ranges from the identification of viable properties through financing and operation, and extends to exit strategies.

Lange (2019) mentions eight key subprocesses in the information processes that are relevant for real estate investments, each of which requires specific information flows. These include market and location analysis, alignment with investor objectives, tenant needs, development forecasting, project planning, business case development, assessment management reporting, and reassessment analysis of the property. These information loops provide a systematic foundation for aligning investment goals with operational action and can serve to enhance portfolio efficiency and strategic fit. However, the quality and relevance of the underlying data significantly influences the usefulness of information processes. Here, a fundamental distinction must be drawn between primary and secondary data (Brauer 2018). Secondary data, such as statistics from government agencies or market reports by consulting firms, are typically easier to obtain but may lack specificity or timeliness. Primary data, on the other hand, are gathered directly via surveys or observations and allow for tailored, high-resolution insights, albeit at higher cost and effort (Grimmer 2014). The decision to engage in primary research therefore depends on the adequacy of existing secondary information. Furthermore, a broad array of data sources informs residential real estate decisions, ranging from macroeconomic and demographic statistics to site-level documents and transaction data can be used. These include public registers (e.g., land ownership), real estate platforms (e.g., ImmobilienScout24), credit institution databases (e.g., Pfandbrief-bank transaction records), architectural data, energy performance certificates, and user preference surveys (Arnold 2017; Krüger, Rosdücher 2017; Scharmanski, Wiencke 2017). Here, the relevance of the data depends on the nature of the investment and whether it concerns development, acquisition, refurbishment, or a portfolio realignment.

Information gathering typically begins in the early project phases, such as during site selection or transaction due diligence (Brauer 2019; von Erdély 2022). In the case of revitalization or repurposing projects, the information needs may resemble those of new developments due to the substantial redesign involved (Kurzrock 2017). Continuous data collection also remains essential throughout the holding period and forms the basis for real estate controlling practices, such as performance monitoring, reporting, and portfolio optimization (Krüger, Rosdücher 2017). Typical metrics used for investment monitoring include vacancy rates, rental levels, tenant turnover, maintenance costs, and cash flow indicators. These are compiled and analyzed within asset management systems to support investor decisions regarding capital allocation, renovation timing, or divestment strategies. Increasingly, more advanced analytical tools are applied to interpret such data, including statistical models and digital dashboards (de Vor, de Groot 2011; Ho et al. 2021). Generally, the integration of digital technologies plays a central role in enhancing the efficiency and transparency of information flows. Enterprise software and facility management platforms enable real-time tracking of maintenance schedules, budget adherence, or compliance (Ehrenheim 2017; Lange 2019). These tools also bridge operational and financial perspectives, and allow for a broader management at the level of the operational asset but also with respect to strategic concerns. More recently, machine learning algorithms have emerged as valuable tools in property valuation and investment forecasting. Here, various methods and techniques can model complex relationships between property features, market trends, and demographic variables, thereby outperforming conventional appraisal methods in certain contexts (Ho et al. 2021; Pérez-Rave et al. 2019). These approaches are particularly useful for institutional investors managing large, diverse portfolios that require scalable and automated valuation solutions (Hjort et al. 2022; Steurer

et al. 2021). Demographic data can be integrated into these models to improve predictive accuracy and guide development planning (Ho et al. 2021; Rafiei, Adeli 2016).

Despite these advancements, several barriers limit the consistent and effective use of information processes in practice. Key challenges include incomplete or inconsistent data, legal and technical constraints on data access, and integration difficulties when combining disparate data sources (Ehrenheim 2017; Gehring, Gabriel 2022). Also, organizational and technological limitations can hinder progress as well. High implementation costs, limited digital literacy amongst staff, and poor interoperability between IT systems reduce the effectiveness of new information infrastructures (Oluwunmi, Agara 2023; Ullah, Sepasgozar 2018). For example, communication gaps between technical and non-technical personnel have been mentioned as a key constraint, particularly in cross-functional decision environments (Gehring, Gabriel 2022).

In response to these issues, several best practices have been proposed in the literature. These include the implementation of robust data governance frameworks, staff training programs in digital tools, the adoption of scalable open-source platforms, and the creation of interdisciplinary project teams (Huang 2022; Reinhartz-Berger et al. 2024). For example, an early involvement of end users in system designs and roll-out phases can improve acceptance and effectiveness.

### **Demographic Data in Information Processes within Real Estate**

Demographic change in Germany constitutes a long-term structural trend with substantial implications for residential real estate markets. Current developments include population aging, singularization trends, regional and international migration but also a shift in housing preferences that can partly be explained by demographic changes (BAMF 2023; Waizenegger et al. 2020; Wilke 2019; Ziesemer et al. 2021). This in turn shapes demand patterns, location attractiveness and design requirements. For example, aging and declining household sizes are reinforcing the demand for compact, accessible, and flexible housing solutions (Marešová et al. 2015; Scharmanski, Wiencke 2017).

Generally, demographic data play a key role for the real estate investment process. At the macro level, such data is used in location screening, although it also plays a vital role at the micro level of the investment as well. Here, it can assess tenant structures, market capacity, and the fit between the unit and the relevant tenant preferences (Alda, Hirschner 2016; Scharmanski, Wiencke 2017; Schneider, Völker 2002). It is therefore used for market analysis as well as for the analysis of the functional use of the property (Alda, Hirschner 2016; Kilb, Weigold 2017). Here, general population trends basically translate into architectural and spatial planning decisions, which may include the development of multigenerational housing, accessible design features, or adaptable floor plans (Kurzrock 2017).

Given the role of demographic data so far with respect to location, market, and usage concepts, it can be stated that there is also an impact on economic feasibility assessments. As demand structures shift due to population changes, assumptions regarding occupancy, turnover, or operating costs are subject to change and must be adjusted accordingly. This in turn might impact revenue expectations or unit cost structures, thus cash flow projections and return metrics, which are used in economic feasibility assessments (Alda, Hirschner 2016; Farragher, California 2008). Beside that, there is a further potential impact on portfolio management as well, as data are assessed on their qualitative, strategic, and operational impact on the real estate portfolio (Brendgen, Pannwitz 2011; Lange 2019).

Therefore, although demographic variables are clearly recognized as investment-relevant across different types of analysis, there is no standardized framework for how this information should be processed, evaluated and included in the investment decision-making process. This gap highlights a key limitation in current practice, which is not yet adequately addressed. Also, the topic becomes even more relevant with the advent of the technological advances in data analysis that have been observed in the recent past (Ho et al. 2021).

### **RESEARCH METHODOLOGY**

To explore how demographic data are managed within real estate firms, this study applied a qualitative methodology centered on expert interviews. This approach was chosen in the context of doctoral research



in order to gain insight into the design and the routines of internal decision structures and the role of information systems, while also considering the challenges and opportunities in the context of existing organizational capacities. With respect to the interviews, the core objective was to understand how demographic information are used in practice and how they are embedded into the data environments, analytical routines, and the decision-making logic.

For this purpose, a total of fifteen interviews were conducted with professionals from various segments of the residential property sector to provide for some variety in the sample. The sample includes firms of different sizes, geographical focuses, or business objectives. Participants were selected randomly and considered suitable if they had an industry affiliation and the corresponding experience in the market. The search for eligible interview partners was made via an industry list of German firms with contact being made directly with the firms after the selection. Interviews were carried out between December 2024 and February 2025 via telephone, using a semi-structured interview guide. The interview guide covered core themes related to the role of demographic data in the information processes for real estate investments. The analysis of the data was made via content analysis with transcripts of the interviews being reviewed, while thematic categories were addressed in order to obtain the sufficient insights. Themes specifically include (1) the integration of demographic variables in the decision-making processes, (2) the role of specialized personnel and analytical capabilities, and (3) the configuration or design of information systems.

## **FINDINGS/DISCUSSION**

The interview findings are presented across three thematic domains: (1) the integration of demographic data into decision-making processes, (2) the availability and role of specialized personnel, and (3) the use of analytical tools and information systems. These themes correspond to the core assumptions of the empirical investigation.

### **Integration of Demographic Data into Decision-Making Processes**

Across all firms interviewed, demographic data was generally recognized as a relevant determinant for investment-related planning and analysis. Specific influences such as age structures, household compositions, or migration flow impacts are thus considered important inputs for a better understanding of long-term future demand dynamics and location development potential. In this regard, the respondents emphasized the role of demographic information for such types of analysis, including the calculation of scenarios:

*“[D]emographic data is especially relevant when calculating scenarios and identifying opportunities and risks.” (Interview#13)*

The quote above can be taken as evidence for a structured analytical approach to data analysis. However, other participants described demographic data use as being implemented in a more informal manner based on localized knowledge or on prior experience:

*“Our main sources are empirical values from previous projects.” (Interview#5)*

Despite this recognition, the actual integration of demographic indicators into decision-making procedures varies. Some respondents have pointed to uncertainties, especially in the case of suddenly changing parameters:

*“Demographic developments play an important role; however, accurate forecasts are often difficult because the parameters can change unexpectedly and rapidly. Migration, in particular, should be mentioned here, as we did not anticipate it in this form many years ago.” (Interview#4)*

Additionally, the underlying purpose of using demographic data was reported to differ slightly

depending on the unique organizational focus. This focus can include a more demand-driven and service-oriented approach in providing relevant residential units to tenants but also a focus that is more directed towards investment risk management objectives.

### **Specialized Personnel and Analytical Capabilities**

The second thematic focus concerned the availability of internal expertise for the analysis and interpretation of demographic information within a firm. Some interviewees amongst the larger firms or the institutional investors confirmed that dedicated personnel with data-related competencies are critical in terms of turning demographic insights into actionable planning parameters:

*“Our research team plays a crucial role in identifying core parameters for economic viability.”*  
(Interview#1)

*“[Market research] uses various methods to evaluate the demographic impacts on housing markets.”* (Interview#13)

Nevertheless, other experts reported a reliance on experience-based knowledge and acknowledged that data expertise is generally lacking within their firms or remains underdeveloped:

*“Market analyses are currently mainly experience-based. Building more data expertise in the future would be beneficial.”* (Interview#3)

This is to be considered a limiting factor as well:

*“Qualified staff is essential, but we often lack the resources for in-depth analysis.”* (Interview#4)

Despite the constraints by the lack of qualified personnel, some interviewees described current efforts to strengthen internal capabilities through training and digital skill development:

*“We see digitization as an opportunity for more efficient processes and are actively developing the relevant skills through training.”* (Interview#6)

Overall, the findings for this theme support the assumption that human capital plays a central role in contributing to proper decision-making processes via demographic data analysis. Also, where analytical capacity is limited by organizational constraints and the lack of resources, the integration of demographic insights tends to be superficial or informal.

### **Use of Analytical Tools for Systematic Information Processes**

The third thematic area covers the role of digital tools and analytical infrastructure with respect to the analysis of demographic data. Here, some of the experts reported on the use of forecasting models, planning software, or database systems to support investment analysis.

*“We use advanced analytical tools models for market and portfolio analysis.”* (Interview#1\_Q11)

It was even mentioned that there is a use of complex methods in the realm of artificial intelligence that are mentioned in the literature (e.g. Ho et al. 2021) are selectively applied in order to obtain economic value from superior insights:

*“In addition, we have been using AI-based approaches for some time now, particularly cluster analyses and predictive modelling, to detect changes in housing demand at an early stage. For example, we analyze large datasets on household structures, mobility, and income to identify regional growth markets. Furthermore, neural networks are employed to derive more accurate forecasts for rental and purchase price developments based on historical market data.” (Interview#15)*

However, despite the identification of the existence of these sophisticated approaches, many firms indicated that their technological setup remains rather basic. Standard tools such as Excel, internal templates, or administrative datasets were commonly used especially by smaller firms that operate within a limited geographical range. This in turn clearly shows that, while the use of sophisticated methods of analysis becomes more available, there is also a rather wide spread in terms of sophistication and actual integration. Generally, the use of demographic data becomes more systematic, where advanced tools and digital workflows are available, but this condition is not yet met on an industry-wide basis.

### **Discussion**

The empirical findings clearly provide evidence for an inherent analytical value of demographic data in residential real estate investment decisions. Across all interviews, demographic variables were thus acknowledged as important inputs for economic or risk assessment. However, the actual use of the data was observed to be very different across the firms. While several organizations reported on using demographic data within structured planning and forecasting routines, others still rely primarily on a rather experience-driven approach rather than on proper data analysis. This points towards a discrepancy across the firms concerning their analytical approach. Related to this, a dual function of demographic data was detected; as well as some firms using it in order to align the services with the needs of the tenants, while others are using it with a stronger focus on return objectives. It can thus be stated that the use of demographic data analysis varies not only in scope but also in purpose.

The findings have further confirmed that human capital in the form of analytical experience or capabilities assumes a decisive role in enabling data-based information processes. Here, firms with internal research departments or analytics capacity are better positioned to process demographic trends systematically. This supports the assumption that digital transformation in real estate investment is not only a technological challenge but also an organizational challenge that relies heavily on the role of resources. Regarding the use of sophisticated analytical tools, an equal divide between the firms was identified. Therefore, the adoption of such tools remains inconsistent. While some firms experiment with complex models, others continue to rely on traditional tools, e.g. by using spreadsheets for analysis. This finding hereby mirrors the finding already obtained for the role of staff qualification and analytical capability. Therefore, the findings are in line with the constraints that are mentioned in the literature, particularly in terms of staff qualifications and digital infrastructure, which serve as key barriers (Gehring, Gabriel 2022; Ullah, Sepasgozar 2018).

In summary, the results equally show the relevance of demographic information in residential real estate while also highlighting the gap in its actual use in practices. This has both theoretical and practical implications. Conceptually, it suggests a need to refine existing models of information processing in real estate under conditions of demographic change (particularly with respect to the needs and capabilities of different types of firms). Practically, it points to the importance of investing in analytical skills, IT infrastructure and related resources.

Concerning the limitations, it can be stated that the present study does not allow for an in-depth investor-type variation. Although differences between investor types are clearly visible, this difference was not systematically analyzed. Therefore, a more targeted research approach would be required to explore this issue in depth. Future research could particularly focus on typologies of investor behavior or the organizational maturity level in demographic data integration.

### **CONCLUSION**

This paper has evaluated how demographic data are integrated and analyzed within information

processes in residential real estate investment firms based on the empirical evidence from expert interviews with industry representatives. It was shown that the actual use of demographic information for the purpose of decision-making in the residential real estate sector is in some part inconsistent and to a large extent shaped by organizational aims, resource constraints and corresponding capabilities.

The analysis was performed along three central themes. First, it was evaluated what general role demographic data assumed within the investment process. Second, the presence of qualified personnel was investigated. It was found that such presence significantly influences whether and how demographic information is used in the information processes of the firms, with smaller firms generally lacking necessary resources. Third, the state and role of analytical tools was evaluated regarding their potential for a systematic data use of demographic information. Here, a gap in the sophistication of the analytical approach was detected.

The findings therefore highlight a visible divide between the perceived importance of demographic information and their structural operationalization within the information systems of real estate firms. While some firms are characterized by a rather high proficiency in terms of raw analytical capability, others still rely on manual practices and implicit knowledge gained mostly from experience. This heterogeneity of firms has yet not been properly addressed in the literature and also provides practical implications towards the role of analytical capabilities, training, or the role of improvements in data infrastructure.

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## УПРАВЛЕНИЕ НА ИНФОРМАЦИОННИТЕ ПРОЦЕСИ В ИНВЕСТИЦИИТЕ В НЕДВИЖИМИ ИМОТИ В УСЛОВИЯТА НА ДЕМОГРАФСКИ ПРОМЕНИ

**Резюме:** Демографските промени представляват все по-голямо предизвикателство за инвестициите в жилищни недвижими имоти, но литературата предлага ограничена информация за това как демографските данни се интегрират в реалните вътрешни процеси на вземане на решения. Настоящата статия запълва тази празнина, като проучва как демографските показатели се обработват, интерпретират и прилагат в информационните системи, свързани с инвестициите. Въз основа на 15 интервюта с експерти от сектора на недвижимите имоти в Германия проучването разглежда три взаимносвързани измерения: интегриране на демографските данни, аналитичен капацитет на фирмите и аналитична инфраструктура. Резултатите потвърждават основно възприеманата значимост на демографската информация, но разкриват значителни различия по отношение на нейното систематично използване в различните фирми. Докато някои фирми използват структурирани инструменти за планиране и усъвършенствани методи

за прогнозиране, други разчитат до голяма степен на знания, придобити от общия опит, или на относително основни инструменти и методи за инвестиционен анализ. Основните пречки включват ограничената експертиза на персонала, несъгласуваните системи за данни и технологичните или други ограничения на ресурсите. Проучването показва още, че демографските данни служат за две цели: те се използват както за по-социално ориентирано съгласуване на услугите, така и за подходи към инвестициите, насочени към възвръщаемост.

**Ключови думи:** демографски промени; жилищни недвижими имоти; информационни процеси; аналитични способности

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