

# Managing the Challenges of Today's Economic Landscape

**Emin Akçaoğlu and Rainer Wehner**  
*Editors*



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# **Managing the Challenges of Today's Economic Landscape**



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# 1

## Managing the Challenges of Today's Economic Landscape

*Emin Akçaoğlu and Rainer Wehner*

### 1.1 Introduction

The global economic landscape is constantly evolving, presenting both opportunities and challenges for governments, businesses, and individuals. In recent decades, the world has witnessed significant shifts in economic dynamics globally due to factors such as technological and scientific advancements, geopolitical tensions, and health crises. To navigate this ever-changing terrain successfully, it is crucial to understand and effectively manage the challenges of today's economic landscape.

One of the most profound changes in the contemporary economic landscape is the rapid advancement of technology. The digital revolution, characterized by innovations like artificial intelligence, blockchain, and the Internet of Things, has transformed business models, and hence, industries. While this offers immense potential for efficiency and growth, it also presents challenges related to workforce adaptation, cybersecurity, and data privacy. Managing these challenges requires businesses to stay agile, invest in employee training, and adopt robust cybersecurity measures.

Globalization has created opportunities for businesses to expand their markets and tap into a global customer base. However, it has also exposed them to increased commercial uncertainty and geopolitical risks. Trade tensions between major economies, shifting tariffs, and supply chain disruptions have become common concerns. To manage these challenges, companies must diversify their supply chains, explore new markets, and stay informed about international trade policies.

The global community is increasingly aware of the urgent need to address environmental challenges, such as climate change and resource depletion. Governments, consumers, and investors are demanding sustainable practices from businesses. To thrive in this economic landscape, organizations must embrace sustainability initiatives, reduce their carbon footprint, and integrate environmentally responsible practices into their operations.

Demographic changes, including an aging workforce and a younger generation entering the job market, are reshaping labor dynamics. Businesses need to adapt to these shifts by implementing inclusive policies, providing lifelong learning opportunities, and attracting diverse talent. Effective talent management is essential for remaining competitive and ensuring long-term success.

Economic volatility has become a constant challenge in the contemporary landscape. Events like the 2008 financial crisis and the COVID-19 pandemic have demonstrated the importance of financial resilience. Businesses must develop robust financial strategies, including risk management and contingency planning, to weather economic downturns and uncertainties.

Increasingly complex regulations and heightened ethical expectations are putting pressure on businesses to ensure compliance and maintain a strong ethical stance. Managing compliance requires a commitment to transparent operations, a strong ethical culture, and a proactive approach to regulatory changes.

In today's economic landscape, change is the only constant. Managing the challenges presented by technological disruption, globalization, sustainability concerns, demographic shifts, economic volatility, and regulatory compliance is essential for businesses and individuals alike. By embracing innovation, staying informed, fostering sustainability, nurturing talent, and maintaining financial resilience, we can not only survive but also thrive in this dynamic environment. Adaptability, foresight, and a commitment to responsible business practices will be the keys to success in managing the challenges of today's economic landscape.

In this respect, this volume combines eleven chapters written by fifteen academics from four countries namely Germany, Italy, Thailand, and Turkey. They all cover different aspects of international business activities in today's challenging world economy.

In the second chapter, Fischer, Berger and Seidenstricker (2023) provide insights into the digitization of the customer journey of SMEs and the relevance of digital technologies. To do this, they conducted a survey of business-to-business salespeople from Germany, India, China, and the USA in order to analyze the current and optimal digitization status of the customer journey. Moreover, they provide an overview of the role played by digital technologies in digitizing the B2B customer journeys of SMEs in these countries. In doing so, they show that there exist significant differences between countries regarding digitizing the customer journey and that all countries view the collection, processing, and analysis of data as highly relevant.

In the third chapter Schmiedle (2023) explains why and how sustainability is becoming increasingly important in the apparel industry due to rising challenges such as climate change and scarcity of resources. Within this framework, we understand that the pursuit of sustainability in various industries is accompanied by a changing competitive environment, forcing companies to rethink their business practices. This requires innovative approaches to promote solutions that enable sustainable economic activity. As this paper aims to examine the role of sustainability for innovation activities and the resulting structural effects, the author had 18 expert interviews with companies in the apparel industry to collect the data. The results show that sustainability has a major impact on the development of innovative approaches for efficient processes and sustainable products. Focusing on the sustainable further development of the core business while promoting innovations is essential for companies to stay competitive.

In the fourth chapter, Wittayakorn-Puripunpinyoo (2023) focuses on savings cooperatives in Thailand. These institutions are autonomous associations of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise structure. Similar to some other countries' cases these institutions in Thailand play an important role for financial intermediation as they can collect deposits from the public, and provide loans. They have a special financing role for SMEs. For over the last twenty years, savings cooperatives have been one of major sources of funds particularly for SMEs in the country. We understand that over 80 percent of SMEs and entrepreneurs acquire financial support from savings cooperatives especially in the rural areas like the Kalasin province located in the North East of Thailand. The author then analyses the

available data to test the performance of such cooperatives with the 3-State Data Envelopment Analysis (3-stage DEA) methodology. The results indicate that 6 out of 9 savings cooperatives in the Kalasin province have performed well with higher efficiency for the last 30 years. On the other hand, 3 out of 9 savings cooperatives performed with inefficiency, and hence they need improvement in their operations.

In the fifth chapter, Baltzer (2023) states that different decision-making styles are of high importance for management accountants, as they are charged with supporting managers throughout the decision-making process. While the preference for decision-making styles might be influenced by various factors, this chapter focuses on the question whether gender needs to be considered as one of those influencing factors. The chapter provides the results of a recently conducted study after summarizing the literature in context.

In the sixth chapter, Fabisch (2023) starts with stating that the law imposes certain obligations on the parties involved in a legal transaction. The obligations of one party are accompanied by the rights of the other party. In the context of warranty rights, obligations and rights based on certain defects can reach the point where a previously profitable legal transaction ultimately proves uneconomical for the party who, for example, has to provide cure of the defect. This is particularly the case if the seller delivers a defective item which is installed in another item. This occurred in the decisions to be discussed here, which have far-reaching consequences in particular for the seller's liability and thus ultimately also for their price calculation. For example, if defective tiles are sold and then installed, the question arises as to who is liable for the removal of the defective tiles and the installation of the replacement-tiles. Both positions become relevant as neither of them would have incurred without the poor performance, i.e. the defect. The authors argues that this question becomes particularly relevant if the removal and installation costs are considerably higher than the selling price of the tiles and the sale is made via suppliers, i.e. in a supply chain.

In the seventh chapter, Hube (2023) deals with innovation in practice which often occurs a dilemma of understanding. We understand that this dilemma arises when the actors do not clearly distinguish the status quo of an innovation from its future potential, resulting in misunderstandings and wrong decisions. Therefore, it is of high importance for both science and business practice to develop a



uniform understanding of innovation. This understanding is important in order to have a common idea of what is to be understood by innovation and what is not on the way to an innovation-oriented company. This then has far-reaching consequences for the design of organisation and processes in the company. Building on a clear and simple formula of innovation, this work develops an instrument that is to be used both in practice and in teaching.

In the eight chapter, Wehner and Akçaoğlu (2023) focus on environmental sustainability and taxes in Germany and the European Union. They explain that global warming, flooding and wildfires are just some results of the environmental damages caused by an unsustainable behavior in the last decades. The fact that neither companies nor the public will change their behavior voluntarily forces governments to act and tackle the problem. With this regard taxation could be a powerful tool for governments to make people think and act more sustainable. However, the implementation of environmental taxes to foster sustainability requires careful consideration, as past examples have shown that behavioural change did not necessarily contribute to sustainability.

In the ninth chapter, Pacelli (2023) presents a comparative analysis of three European cultures, their educational systems and impact on sustainable development. This article turns out to be among the first to analyze this phenomenon. The innovative aspect of this work lies in the comparison not only of different cultures but also of students' opinion of their educational system and the impact it has on the sphere of sustainability. Based on this, a questionnaire, containing the same questions, was administered according to country of residence to compare students' opinions on: Culture, Education, and Sustainability. The main aspects of the research are based on previous studies and new analyses that allow us to understand how the three spheres, mentioned above, are connected. The purpose of the article is to understand the similarities and differences among the three countries and how different cultures impact the sphere of education for sustainable consciousness.

In the tenth chapter, Salsano (2023) also focuses on sustainability issue in business. She points out that currently companies are forced to adapt themselves to the requirements of the sustainable business practices. The success of this transition depends on ongoing innovation and continuous development. Therefore, this chapter aims to explore how the open innovation strategy aligned to a better supply

chain management could be fostered as an ideal solution. Therefore, through a systematic literature review this chapter identifies research trends and gaps in the field, conceptualize current paradigmatic views and therein provide clear propositions to guide future research. Findings suggest that open innovation is widely accepted as a link to sustainable innovation but understanding the key drivers of enhancing supply chain innovation remains underdeveloped. The originality of the paper is rooted in the comprehensive search and systematic review of studies in the discourse, which have not been unified to date.

In the eleventh chapter, Rençber and Ünal (2023) also focus on sustainability and business. They state that in the 21st century, the world economy has sought to find solutions for the problems of global warming and climate change that have arisen as a result of environmental destruction. This has increased the importance of the concepts of sustainable development and green economy. Sustainable development provides a perspective that protects the living opportunities of future generations for the effective and efficient use of existing natural resources. Fiscal policies have a key role in the transition to a green economy for sustainable development. Green economy and sustainable innovation are significantly related to renewable energy investments, and also their financing. This study aims to examine green finance practices in a comparative manner with a few country examples.

In the final chapter, Mantel (2023) focuses on leadership styles. As startups grow, they need to find a successful leadership style. The strong connection between employee satisfaction and performance is quite clear. This chapter is based on a literature review to identify both different leadership styles and psychological biases to recommend best practices in the international entrepreneurship context. The chapter concludes that participative-characteristic leadership promises best results, while individual team preferences have to be respected and additional methods such as psychological empowerment offer further benefits.

As outlined in this introductory chapter, this volume brings a number of important topics with regard to finance, innovation, enterprise architecture and business education within the context of SMEs and international business. We hope that these contributions will stir further discussions in the relevant areas.



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# 2

## Digitizing the Sales Process of SMEs: Development Tendencies and Relevant Technologies

*Heiko Fischer, Thomas Berger and  
Sven Seidenstricker*

### 2.1 Introduction

SMEs play a major role in the global economy and account for approximately 99% of all firms. In the European Union, they are seen as crucial to economic growth, innovation, and job creation. Meanwhile, in the USA, small businesses employ almost 50% of the private workforce, and in Asian economies, they employ two out of three private workforces (Matt & Rauch, 2020, pp. 11–15).

Furthermore, the megatrend of digitalization has presented SMEs with new opportunities to expand into foreign markets (Hervé et al., 2020, p. 28). According to a worldwide survey, 90% of the c-suite and vice presidents believe that delivering value to customers is essential in order to realize growth (Fujitsu Ltd., 2020, p. 5). At the same time, studies indicate that the top outcomes of digital transformation are the improvement of the customer experience (Fujitsu Ltd., 2021, p. 10), better customer understanding, the effective design and delivery of customized offers (Mahlamäki et al., 2020, p. 169), and effective and efficient purchasing behavior among customers (Zoltners et al., 2021, p. 87)—all of which suggests that the megatrend of digitalization has profoundly impacted sales (Fischer, Seidenstricker, & Poepelbuss, 2022).

Previous research indicates that the digitalization of companies is the result of strategic decisions made by SMEs' management and that,

before adopting new digital technology, managers should be at pains to understand the required outcome of their digital initiative (Lee et al., 2021, p. 82). Accordingly, companies must define their digital interface in a way that is accessible to customers and design their interactions with buyers in such a way as to digitally leverage sales (Trenkle, 2019, p. 434).

However, studies on the digitalization of SMEs are scarce, and previous studies primarily focus on the adoption of a specific digital technology (e.g., social media, Internet of things, e-commerce) (Lee et al., 2021, p. 82). For this reason, we formulated the following research questions:

- What is the current digitization status of SMEs' sales process, and what do they consider to be the optimal level of digitization?
- Which technologies are SMEs intending to use to digitize the sales process?

In addressing these questions, this research contributes to the literature by elaborating on the digital transformation in sales. The article shows that sales has fundamentally changed due to digital advancements and thus requires companies to adopt new approaches if they are to continue to succeed in their markets. A holistic view of sales that considers various participants and the integration of digital technologies is required (Fischer, Seidenstricker, & Poepelbuss, 2022), leading to a technology-infused customer journey (Steward et al., 2019). This article explores to what extent a customer journey should be digitized and which technologies are most relevant to the customer journey in the sample countries India, China, the USA, and Germany. Based on these insights, the article emphasizes the relevance of digital technologies and makes recommendations on the topic.

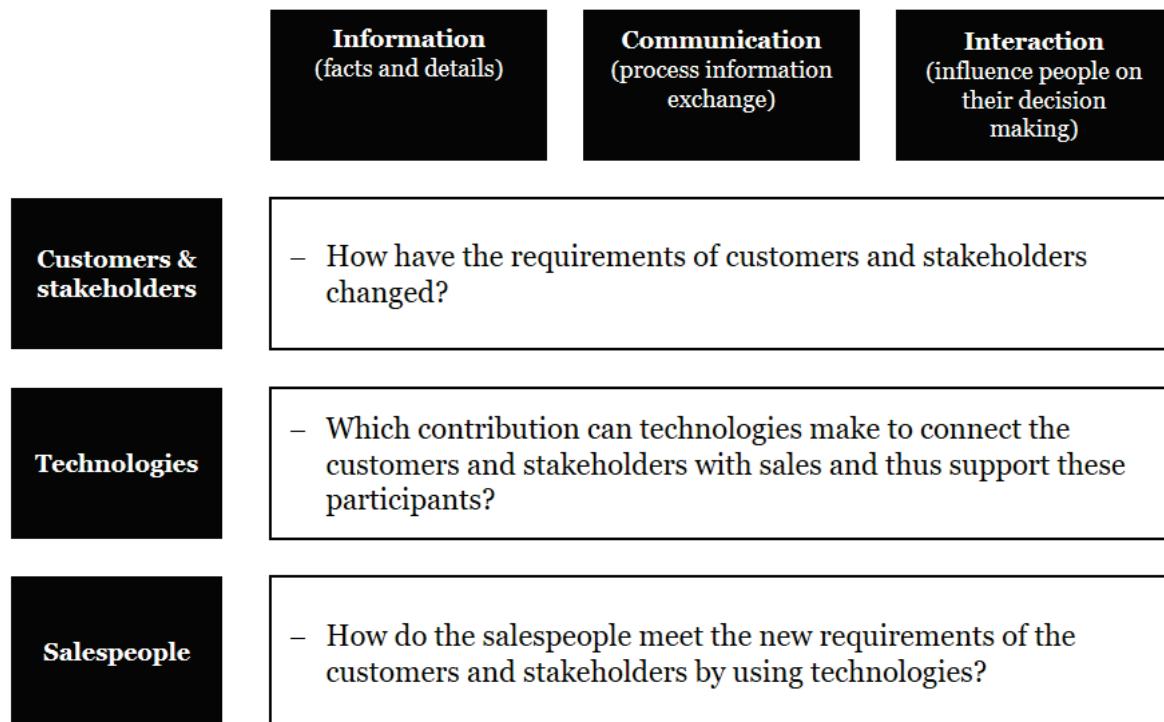
This chapter is structured as follows. First, we provide some background and context to the research by analyzing the current transformation in sales. Second, we describe the study design and data collection process. Third, the research findings are presented in detail. Fourth, the implications of the findings are discussed. Lastly, the chapter closes with a conclusion and highlights both the limitations and future directions of the research.

## **2.2 Research background: Digital transformation in sales**

The digital transformation has been the subject of increasing research

attention, leading to the exponential growth of published articles since 2015 (Hanelt et al., 2021, p. 1165; Rêgo et al., 2021; Reis et al., 2018, p. 414). The literature offers a vast range of definitions of digital transformation (Gong & Ribiere, 2021), looking at it in terms of its enablers, required resources and capabilities, transformation processes, and benefits (L. Li et al., 2018, p. 1131). In short, digital transformation refers to technology-induced change that affects an organization at multiple levels. It aims to improve existing processes and transform the business model of companies (Berghaus & Back, 2016, p. 2). The literature differentiates three phases that build on each other: digitization, digitalization, and digital transformation (Verhoef et al., 2021, p. 890). In specific regard to sales, Singh et al. (2019, p. 5) describe these phases in further detail. First, digitization automates processes by capturing, processing, and organizing marketing data. Second, digitalization, which is more sophisticated, uses digitization as well as artificial intelligence (AI) technologies “to create new strategies and generate novel opportunities to serve customers” (p. 5). Third, digital transformation, which is the most developed phase and is a result of digitalization, aids in the rethinking of a company’s value proposition.

**Figure 2.1** Digital sales environment



Digital transformation profoundly affects the sales environment and, in particular, the customer-sales relationship. On the one hand, digital technologies offer new digital selling capabilities to sales (Mullins & Agnihotri, 2022), and thus the role of digital technologies in sales is expanding (Ahearne et al., 2022). Digital technologies such as AI, big data, and virtual/augmented reality (VR/AR) offer new opportunities for sales. For instance, they enable sales departments to share information easily, to automate routine tasks, and to enhance data-based decisions (Fischer, Seidenstricker, & Poeppelbuss, 2022). In this regard, the exclusive view of B2B or B2C markets has become less relevant, and in their place B2B2C markets, which consider the approaches of both disciplines to create customer value, are emerging (Mingione & Leoni, 2020). Accordingly, digital transformation brings several benefits to sales, including increased sales, profits, market share, and customer loyalty (Zoltners et al., 2021, p. 88).

On the other hand, the market has become more demanding because of the emergence of so many digital possibilities: customers are now more knowledgeable and powerful, they want to receive information digitally, and they favor digital interaction tools over in-person meetings (Fischer, Seidenstricker, & Poeppelbuss, 2022, pp. 5–6). Accordingly, it is not only the sales process that has markedly changed in recent years but also the B2B purchasing process, as Steward et al. (2019) have shown. They identified seven evolutionary paradigms. In the 1960s, the relationship between the customer and sales was considered a single and dyadic transaction, but from the 1980s, this view rapidly changed, resulting in today's customer journey paradigm. According to this newest paradigm, digital technologies play an essential role in the customer's purchasing process by providing multiple touchpoints and assessing which technology should be used under which circumstances. Thus, today it is essential to design a customer journey that creates additional value for the customer and that guides the customer through said journey (Edelman & Singer, 2015).

In summary, it is apparent that digital technologies have transformed the sales environment and the relationship between customers and sales. The role of sales as an information distributor has largely become irrelevant due to the increased information symmetry between customers and sales. That is to say, customers can now acquire relevant information independently and thus they rely less on salespeople's guidance. At the same time, technological advancements offer greater opportunities to cultivate and maintain



customer relationships. Accordingly, technological advancements have fundamentally changed the way in which companies do business and must therefore be aligned with new customer demands as well as with the changing role of sales (Ahearne et al., 2022; Fischer, Seidenstricker, & Poeppelbuss, 2022).

To this end, Fischer, Seidenstricker, and Poeppelbuss (2022) propose a digital sales environment framework that supports the formation of digital customer-sales relationships. This new relationship is described as a two-dimensional matrix. On one axis are located the relationship components information (which facts and details are necessary), communication (how should the information exchange be processed), and interaction (how can people and their decision-making be influenced). On the other axis are located the three participants in the relationship: customers and stakeholders; sales; and technologies that play the role of a connector between the former two participants. In order to design digital customer-sales relationships, the participants must answer the questions below (Figure 1) in regard to each component of the digital relationship.

To fully benefit from these changes, the literature recommends the application of several transformation processes (Guenzi & Habel, 2020, p. 63; Parviainen et al., 2017, pp. 70–74; Zoltners et al., 2021). These processes emphasize the importance of strategic clarity in regard to the transformation goals before a digital initiative is selected and implemented. For this reason, a successful digital transformation requires not only technical resources but—even more so—a redesigned business process (L. Li et al., 2018, p. 1131). In this sense, companies must transform their sales processes if they are to maintain and strengthen their market position.

### **2.3 Study design and data collection**

Based on the findings of Steward et al. (2019), who emphasize the growing importance of digital technologies in aligning marketing strategies to customers' purchasing processes, we focus our attention on the customer journey (Edelman & Singer, 2015, p. 90; Fischer, Seidenstricker, Berger, & Holopainen, 2021, p. 370). The customer journey can be divided into the following four steps:

- 1) "Consideration": The customers perceive a set of brands.
- 2) "Evaluation": Brands are included or rejected based on evaluation criteria.
- 3) "Buy": A specific brand is selected and bought by the customer.

- 4) “Loyalty loop”: The customer experiences the product and builds expectations regarding their future relationship with the brand.

We collected data on salespeople’s most relevant tasks and assigned each task to the appropriate customer journey step. For instance, Lemon and Verhoef (2016), Marshall et al. (1999), and Marshall et al. (2003) provide a detailed overview of how salesforce activities are shaped. Taking into account the work of Parviainen et al. (2017, pp. 70–74), who suggest that a company should review its current and desired future position before moving toward the desired position, we formulated two main questions: “What is the current digitization status of these tasks at your company?” and “What do you see as the optimal level of digitization of these tasks at your company?”

**Table 2.1** Sample characteristics

<i>Description</i>	<i>Frequency</i>	<i>Percent</i>
Country of Origin		
– China	42	17.2
– Germany	49	20.1
– India	100	41.0
– USA	53	21.7
Age		
– ≤24	20	8.2
– 25 to 34	150	61.5
– 35 to 44	45	18.4
– ≥45	22	9.0
Most frequent industries		
– Manufacturing	40	16.4
– Information & communication	37	15.2
– Wholesale & retail trade; repair of motor vehicles & motorcycles	29	11.9
– Professional, scientific, technical activities	22	9.0
– Financial & insurance	19	7.8
Company size		
– 10 to 49	83	34.0
– 50 to 249	161	66.0

In addition to this, we analyzed the Gartner Hype Cycle (Gartner, Inc., 2017, 2018, 2019, 2020) and researched sales technologies (Fischer, Seidenstricker, Berger, & Holopainen, 2021; Fischer, Seidenstricker, & Poepplbuss, 2021; Hallikainen et al., 2020;



Paschen et al., 2020; Syam & Sharma, 2018; Zoltners et al., 2021) in order to select meaningful technologies. After we had collected information on the digital technologies from the literature, four sales experts and four people with practical experience in B2B sales assessed the technologies' relevance for the questionnaire.

As part of a research project, the survey was conducted in the world's three most populous countries (China, India, and the USA) as well as in Germany, which is the most populous country in the European Union. We provided the questionnaire in English, German, and simplified Chinese. Furthermore, in light of the biases that Podsakoff et al. (2003) identified with this research method, we were careful to ensure the respondents' anonymity, avoided leading questions, and used established Likert scales. We gathered data from salespeople who were employed in the B2B sector working for companies with 10 to 249 employees and used our university's database and contacted the company partners of our study programs. Moreover, we contacted several sales experts from our personal network and provided them with the questionnaire. In addition to this, we shared the questionnaire on LinkedIn and asked a survey agency to identify relevant participants for our survey. After deleting invalid or incomplete datasets, we were left with a final sample of 244 salespeople. The salespeople's characteristics are depicted in Table 1.

## **2.4 Findings**

This section is organized as follows. First, we present the data on the current and optimal digitization status of the customer journey. Each figure shows the current and optimal status of digitizing the customer journey by country and a conclusive view (total) that combines the evaluations of Germany, the USA, India, and China. Second, we show which technologies the respondents considered relevant.

More specifically, Figure 2 (left) presents the results for the "consider" stage. Currently, 64.6% of the "consider" stage is already digitized, but the optimal status is 6.1 percentage points higher than this. Thus, 70.7% of the "consider" stage should be digitized. China and the USA have the lowest current statuses, while India has the highest. Germany has the highest potential development, resulting in an almost 14-percentage-point difference between its current and optimal status. Moreover, among the surveyed countries, Germany seeks the greatest degree of digitization of the consider stage.

**Figure 2.2** Consider stage (left); evaluate stage (right)

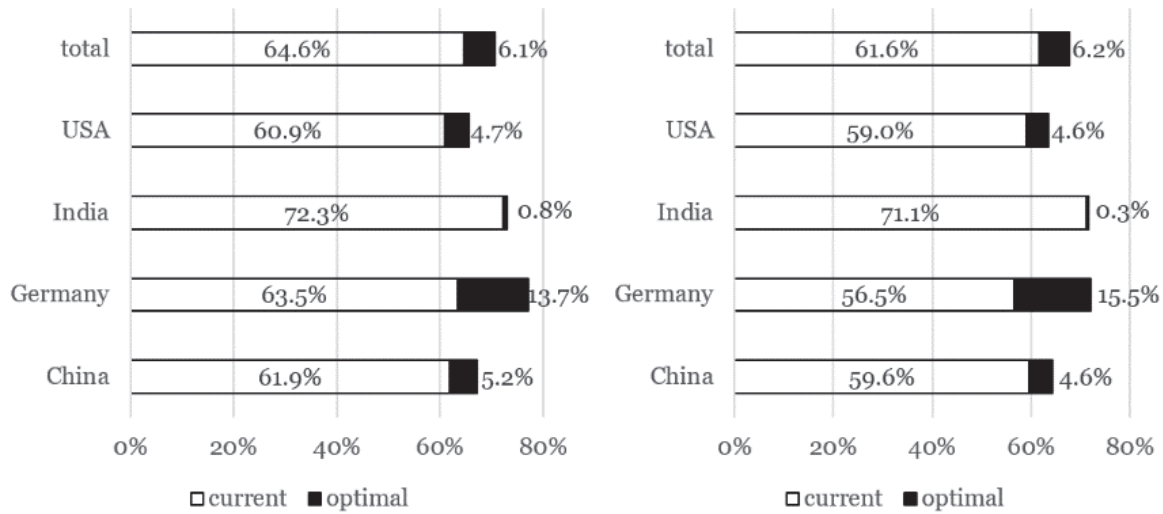


Figure 2 (right), meanwhile, depicts the current and optimal status of the “evaluate” stage. Currently, Germany lags behind the other countries in the study, but it has the highest optimal status with 72%. As in the “consider” stage, India has the highest current digitization status, and the USA the lowest, while China perceives its current and optimal status to be only slightly higher than the USA’s.

**Figure 2.3** Buy stage (left); loyalty loop stage (right)

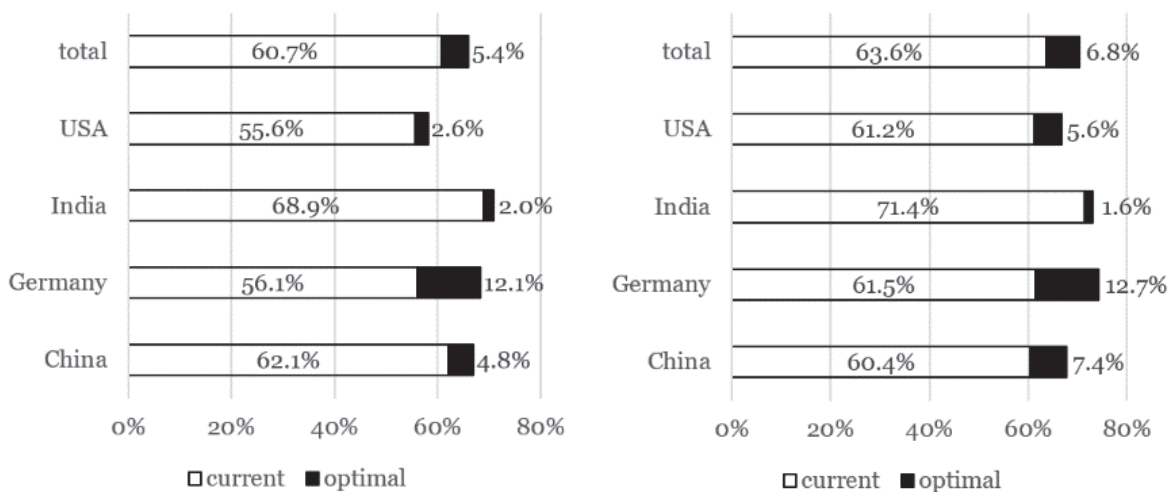


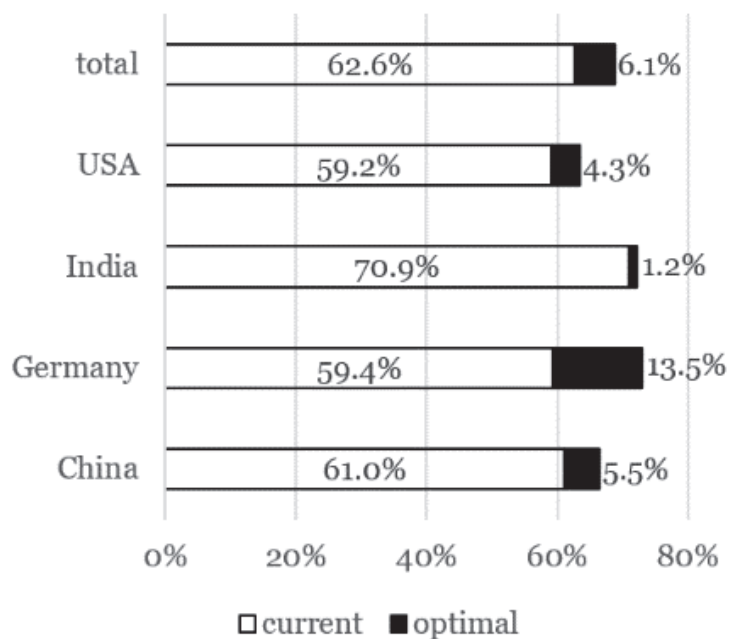
Figure 3 (left) provides an overview of the “buy” stage. Again, the USA has the lowest current and optimal digitizing status. China has the second-highest current digitization status and assesses its optimal status in a similar way to Germany. India has the lowest development

potential but the highest current digitization status within the “buy” stage.

The results of the loyalty loop are then presented in Figure 3 on the right. Here it can be seen that Germany has the lowest current digitization status but wants to digitize an additional 12.7% of its loyalty loop. Meanwhile, the USA lags behind China, Germany, and India in terms of its optimal digitizing status.

Comparing each of the step's total view, it can be seen that the “evaluate” (61.6%) and the “buy” (60.7%) stages are currently the least digitized stages within the customer journey. The “consider” stage, by contrast, is currently the most digitized stage (64.6%) and holds this position in the optimal status (70.7%).

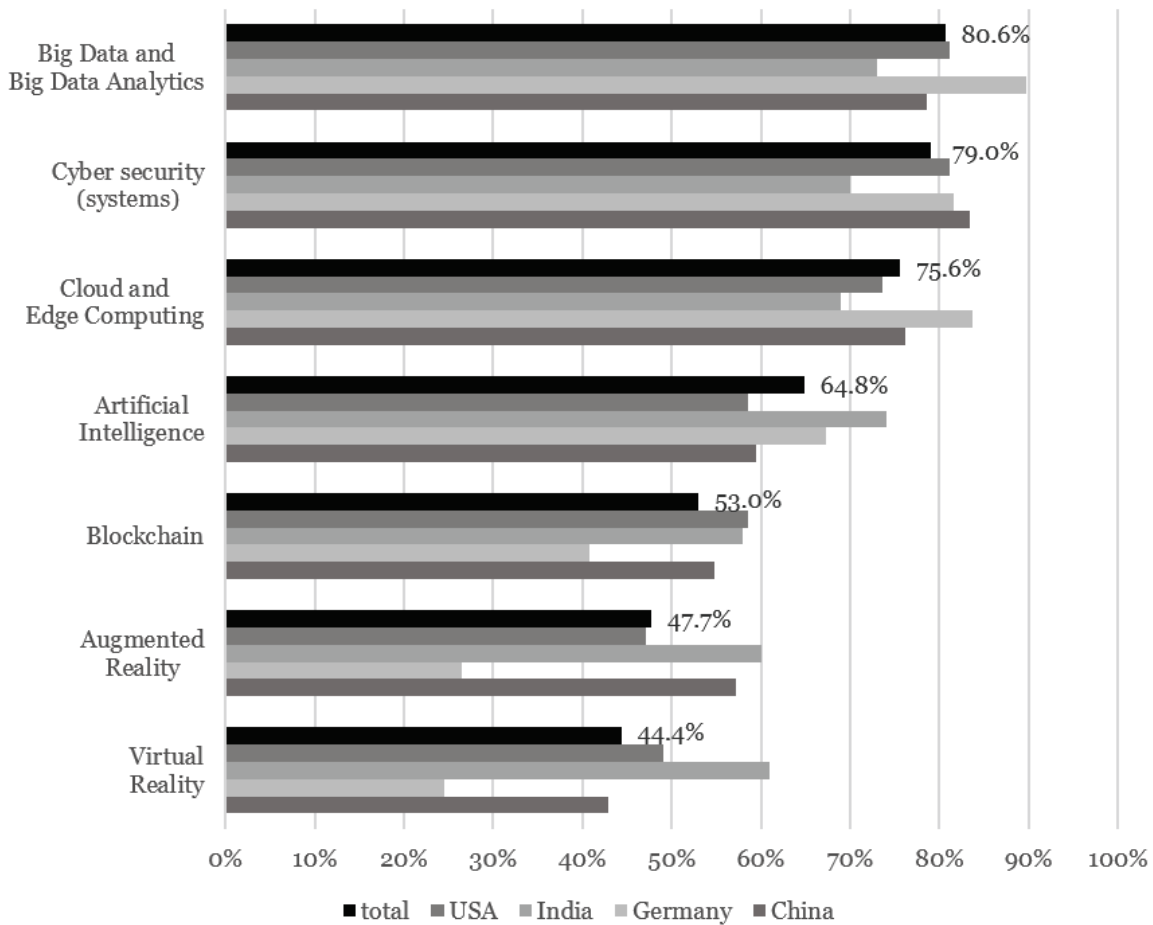
**Figure 2.4** Entire view



Lastly, the entire view shows the extent to which the overall customer journey should be digitized by calculating the average of all customer journey steps (Figure 4). More specifically, the total view demonstrates that salespeople believe that 62.6% of the overall customer journey is already digitized and that they judge the optimal digitization status to be 68.7%. While Germany stands second to last in relation to the current digitization of the customer journey, it should be noted that it perceives itself to have the highest development potential and that it estimates that 72.9% of the

customer journey should be digitized. This is 0.8 percentage points more than India, which has the highest current digitization status. In terms of current status, only India is above average, while in regard to optimal status, Germany is above average too. Finally, it seems that the USA attributes the least relevance to digitizing the customer journey.

**Figure 2.5** Relevance of technologies in B2B sales



The findings regarding the customer journey show that the respondents of all countries see the future of customer-sales relationships as being grounded in a more digitized customer journey. However, the question remains as to how the customer journey can be digitized. For this reason, as can be seen in Figure 5 below, the relevance of seven recent digital technologies in B2B sales were assessed in the questionnaire.

The total view shows that big data and big data analytics (80.6%), cyber security (systems) (79.0%), and cloud and edge computing (75.6%) are determined to be the three most relevant technologies in digitizing SMEs' B2B customer journey. However, VR/AR and

blockchain also seem to have a subordinate relevance, while AI is placed in the middle of the three most and three least relevant technologies. Interestingly, German respondents find VR/AR and blockchain to be much less relevant than do the respondents from the other countries in the sample. Indeed, for Germany, big data (analytics) is regarded as the most relevant technology, whereas India assesses VR/AR and China sees AR as much more relevant than other countries.

**Table 2.2** Most relevant technologies in B2B sales

<b>Rank</b>	<b>USA</b>	<b>India</b>	<b>Germany</b>	<b>China</b>	<b>Total</b>
#1	Big data (analytics)	AI	Big data (analytics)	Cyber security (systems)	Big data (analytics)
#2	Cyber security (systems)	Big data (analytics)	Cloud/edge computing	Big data (analytics)	Cyber security (systems)
#3	Cloud/edge computing	Cyber security (systems)	Cyber security (systems)	Cloud/edge computing	Cloud/edge computing

To complement Figure 5, Table 2 presents the most relevant technologies by country in detail. For all countries, big data (analytics) and cyber security (systems) are among the three most relevant technologies in SMEs' B2B customer journey. India is the only country that sees AI as being among the three most important technologies, with the other countries all including cloud/edge computing in their top three. According to the USA, big data (analytics) and cyber security systems are equally relevant, and although the other countries do not attribute quite the same relevance to these technologies, they agree that collecting and processing data is crucial for a successful B2B customer journey.

**Table 2.3** Total relevance of technologies in B2B sales

	<b>USA</b>	<b>India</b>	<b>Germany</b>	<b>China</b>	<b>Total</b>
<b>mean</b>	64.2%	66.4%	59.2%	64.6%	63.6%

Furthermore, the question remains as to which country has the greatest focus on digital technologies in regard to the customer journey. Therefore, Table 3 depicts the arithmetic average for all the technologies, revealing that the mean for the sample countries is 63.6% and that Indian SMEs assess the technologies as most relevant

to their B2B customer journey. China and the USA are slightly behind India, and Germany comes in last.

## **2.5 Discussion**

Our findings indicate that there are significant differences between the surveyed countries as well as between the digitization stages of the customer journey. The presented findings support previous research that assumes that stages featuring non-complex tasks are easier to automate. For instance, it is difficult for AI to manage complex buying centers (Fischer, Seidenstricker, Berger, & Holopainen, 2022, p. 139; Syam & Sharma, 2018, p. 140), which could explain the low current digitization status of the “buy” stage. The same applies to the “evaluate” stage, wherein salespeople must build strong relationships with customers. Moreover, the low optimal digitization status of these stages suggests the need for a human touch. In other words, salespeople must cultivate trustful and advantageous relationships with customers.

Meanwhile, the “consider” and “loyalty loop” stages have the highest current and optimal digitization status. They primarily consist of routine tasks such as lead management that are easier to automate. In both stages, the salespeople are expected to spend the majority of their time analyzing and automating collected data, as opposed to engaging in actual human contact with customers.

When considering this from the perspective of each individual country, we can see that Germany and the USA (developed markets) lag behind China and India (emerging markets) in terms of their current digitization status. One explanation for this finding could be cultural differences. Sharma (2016, p. 98) suggests that there are considerable differences between developed and emerging markets in terms of selling techniques and sales strategies. Accordingly, different markets require different sales approaches and thus different degrees of digitization to achieve success. Hence, a low digitization status may not necessarily be disadvantageous because it may be required by specific markets.

However, Germany's current digitization status confirms previous research that attests to Germany's poor performance by integrating digital technologies and a low level of IT investment (Zimmermann, 2021). At the same time, it is surprising that our findings reveal that Germany and the USA have practically the same current digitization



status in regard to sales. Data provided by the European Investment Bank (EIB) suggests that the adoption of digital technologies is much more frequent in the USA than in Germany (EIB, 2020, p. 53). Moreover, in contrast to the USA, Germany aspires to become a high-ranking performer, aiming to digitize approximately 73% of its customer journey, which could be a result of the COVID-19 pandemic.

Furthermore, the findings show that, regardless of the respondents' country in this sample, technology appears to be important to the success of SMEs' B2B customer journey. Moreover, technologies related to collecting, processing, and analyzing data seem to be most relevant in today's sales—a finding that confirms the conclusions drawn by three previous studies. First of all, when Peesker et al. (2022) performed a qualitative survey on which skills were deemed important by salespeople, the respondents assumed that technology skills and analytical skills had an increased relevance in today's sales. Secondly, Wengler et al. (2021) formulated a market-oriented transformation model to explore sales. They emphasized the relevance of data and the importance of its integration into sales. Thirdly, Steward et al. (2019) observed in their article that technologies and data are an important fundament for customer journeys. Accordingly, the application of data technologies and skills related to its processing and analysis is indispensable to designing competitive customer journeys and, therefore, to establishing beneficial customer-sales relationships.

## **2.6 Conclusion and limitations**

In conclusion, our findings indicate that the current and optimal digitization status of the customer journey differs between countries and journey stages. We assume that the complexity of tasks and the need for a human touch can influence the digitization of the customer journey. Moreover, we suppose that cultural differences can explain the divergent views on the digitized customer journey—thus, only a moderately digitized customer journey may be required in some markets. Based on this assumption, salespeople should take into account cultural differences when formulating sales strategies and implementing digitization within the customer journey.

In addition, previous research implies that a digitized customer journey is not an isolated initiative but a process that goes deeper and affects a company's overall value proposition. This change requires

organizational re-alignment (Fischer, Seidenstricker, Berger, & Holopainen, 2021, pp. 372–373), and the introduction of new disciplines such as that of the customer success manager (Seidenstricker et al., 2021, pp. 24–25). Moreover, the findings indicate that the application of recent digital technologies is necessary for the creation of successful customer journeys. Consequently, companies must develop competencies related to these technologies in order to successfully integrate digital elements into the customer journey.

In addition to the insights produced by this study, we must also acknowledge that it suffers from several limitations. These limitations can, however, be used as starting points for future research. First of all, we defined SMEs only on the basis of their number of employees, thus neglecting to take into account financial factors such as annual turnover. Second, the literature implies that to successfully make use of digital technologies, the customer's perspective needs to be considered (Fischer, Seidenstricker, Berger, & Holopainen, 2021, p. 373). Hence, future research could investigate to what extent the customer desires digitization in the customer journey and whether these results differ from salespeople's opinion on the matter. Third, this research focused solely on SMEs. Thus, future research could compare SMEs with large enterprises in regard to the digitization of the customer journey. Fourth, this research identified technologies used in SMEs' B2B sales practices and estimated the degree to which the customer journey was digitized. However, in doing so, we neglected to ensure the readiness of salespeople toward a digitally infused sales environment or to determine which specific skills are required by salespeople, so future research should address these research gaps.

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# 3

## The Impact of Sustainability on Innovation in the Apparel Industry

*Laura Schmiedle*

### 3.1 Introduction

In recent years, economic growth has often been achieved at the expense of the environment and with disregard for corporate sustainability. In this context, particularly the apparel industry stands out as it ranks second worldwide after the oil industry as the most polluting sector. The use of environmentally harmful chemicals, production sites in low-wage countries as well as mass production of cheap goods, promoting a 'throwaway mentality', is increasingly discussed in public (Thorisdottir & Johannsdottir, 2019; Yang et al., 2017). Public reporting on negative impacts on the ecosystem is a trigger for rethinking about corporate actions and consumer behaviour (Todeschini et al., 2017). In particular, consumers are becoming increasingly aware of sustainability issues, thus their consumption behaviour puts pressure on companies to operate more sustainably (Jia et al., 2020; Lundblad & Davies, 2016). In order to respond to this, sustainability can be used as a driver for the development of innovative approaches (Joyce & Paquin, 2016). The improvement of manufacturing processes saves time and resources and brings both, ecological and economic benefits. In addition, innovative business models offer the opportunity to quickly respond to trends such as the concept of circularity. Furthermore, the integration of sustainability into the core business enables a reduction of the ecological footprint and the expansion of competitive advantages through sustainable developments (Todeschini et al., 2017). However, for organizations to survive successfully on the market in the long term, a balance between the development of innovations as well as the improvement of the core business is of



great importance. This strategic focus on exploration through innovation and exploitation through the further development of existing capabilities is described by the term 'ambidexterity' (Duncan, 1976; Tushman & O'Reilly, 1996). Companies seek to balance exploration and exploitation in order to respond to changing conditions. The increasing importance of ambidexterity in companies is reflected in the growing number of studies, particularly in innovation research (Raisch et al, 2009). However, the current studies predominantly shed light on the importance of sustainability and innovations for entrepreneurial performance in combination with ambidexterity (Van Holt et al., 2020, p. 2; Chang & Gotcher, 2020, p. 2; Maletič et al., 2014). The importance of sustainability for innovation based on ambidexterity has not yet been sufficiently studied in the context of the apparel industry (Chang & Gotcher, 2020; Maletič et al., 2016). Therefore, the aim of this paper is to make a scientific contribution to the development of existing approaches by investigating the importance of sustainability for innovations, especially in the context of the apparel industry. Furthermore, it also examines the structural effects that result from the strategic alignment of exploration and exploitation within the organization. This paper addresses the following research question: *How does sustainability influence innovation activity and what are the structural implications for companies in the apparel industry?*

## **3.2 Theoretical Background**

Responsible management of natural resources is necessary to safeguard the natural basis of life for future generations. Organizations can make a decisive contribution to this by pursuing sustainable management in the ecological, economic and social dimensions.

### **3.2.1 Three dimensions of sustainability**

The sustainability debate emerged with the founding of the "Club of Rome" in 1968 and the "Limits to Growth" study in 1972, which questioned the consequences of continuous economic growth. Additionally, the Brundtland Report (1987) achieved an expansion of the concept of sustainability by the term 'sustainable development' and the triad of social justice, economic growth and the protection of the environment. The report addresses the issue of protecting and

obtaining resources for future generations on a global scale and highlighted the need for a long-term environmental strategy for sustainable development. This triad was later referred to as the 'triple bottom line' (Elkington, 1994, p. 90, Milne & Gray, 2013, p. 14) including three dimensions: the ecological, the economic and the social dimension.

The ecological dimension of sustainability involves improving human well-being by conserving soils, protecting biodiversity and water as natural capital and livelihoods. It is the responsibility of society and, above all, of companies as major economic players to take responsibility for the protection of the natural environment and the conscious use of limited resources (Jennings & Zandbergen, 1995; Gladwin et al., 1995).

The social dimension comprises minimum standards that contribute to an assured quality of life for society. This means to ensure that every individual has the opportunity to meet its own basic needs and has access to resources (Bansal, 2005). The social dimension also includes ensuring human rights (Barnett et al., 2020). From an economic context, companies are required to provide fair, humane working conditions and create development opportunities for employees (Labuschagne et al., 2005).

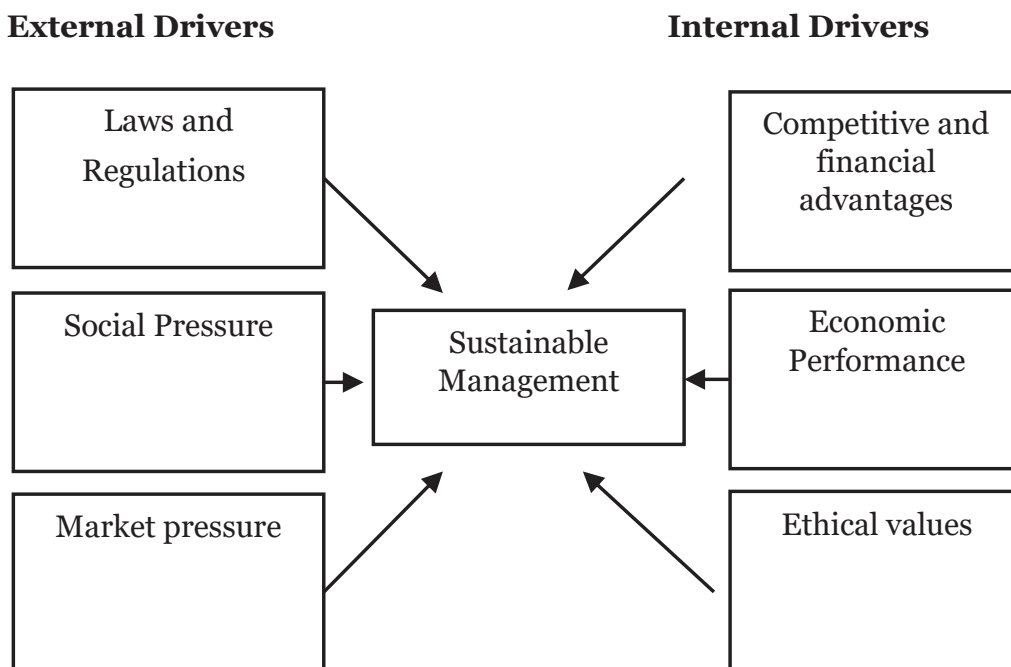
Livelihood security, an adequate standard of living and prosperity are part of the economic. Economic performance is achieved through the production of goods and services, which is the prerequisite for generating global prosperity (Bansal, 2005). It is therefore about relating the economic, ecological, and social dimension to one another and taking all three dimensions into equal consideration (Dyllick & Hockerts, 2002).

### **3.2.2 Drivers of sustainability**

A distinction of the drivers of sustainability can be made between external and internal drivers. Internal drivers describe the intrinsic motivation of companies to operate sustainably. External drivers are factors that affect the company from the outside and force it to operate sustainably (Johannsdottir, 2015). Following Johannsdottir (2015), Bansal & Roth, (2000), Lozano (2015) and Hart (1995) Figure 1 presents an overview of the most frequently cited external and internal drivers for sustainable management.

External drivers for sustainable management include legal requirements and regulations by politicians, social pressure through active demands by interest groups, and market pressure with regard to competitiveness. Sustainable business practices are demanded and promoted by the government through laws and regulations (Reinhardt, 1999). One example is the so-called 'Supply Chain Act', which is intended to encourage companies to align values and supply chains with environmental standards and compliance. This is intended to prevent companies from relocating their production to countries with low environmental standards or unfavorable production conditions.

**Figure 3.1** External and internal drivers



Social pressure from interest groups can also be seen as an external driver. Hörisch et al. (2014) argue that stakeholders nowadays not only pay attention to economic performance, but also to social and environmental responsibility. Schrettle et al. (2014) identify various interest groups, including non-governmental organizations (NGOs), the media and environmental movements (such as Fridays for Future), and describe them as important social drivers for sustainable business. The opportunities for these stakeholders to exert influence predominantly relate to mobilizing public opinion for or against the company's performance (Clarkson,



1995). Changing consumer buying behavior also increases pressure on companies (Banerjee, 2001; Shrivastava, 1995). To meet this changing demand, companies are forced to innovate their products and services in a sustainable way to remain competitive. According to Schrettle et al. (2014), market pressure exerts a strong influence on companies and can be identified as another external driver. The requirements of the various interest groups also influence the market context in which the company operates. Investors, consumers, suppliers and competitors represent such interest groups that have a significant influence (Delmas & Toffel, 2008). De Villiers et al. (2011) identify investors as a key factor related to market pressure. Companies may face problems in staying competitive if investors withdraw because of an expected risk due to poor environmental practices and the associated loss of the company's image. Just like consumers, suppliers can also influence the company with regard to sustainable business practices. (Henriques & Sadosky, 1999). Poor environmental standards of the company to be supplied can also cause suppliers to lose their reputation and subsequently stop supplying. In this context, Sarkis et al. (2010) note that companies that do not pay attention to pressure from interest groups and their demands risk losing customers. In contrast, companies that respond to consumer demands for sustainable products and services are better positioned in the market.

In addition to external drivers, internal drivers can also be identified as motives for sustainable business practices. Companies that follow these internal motives are able to reduce operating costs through ecological efficiency (Shrivastava, 1995; Hart & Milstein, 2003). King and Lenox (2001) and Johannsdottir (2015) add that profitability increases through savings in energy and materials as well as through emission and waste reduction. In this context, Shrivastava (1995) notes that consumers increasingly value environmentally friendly products, packaging materials, and a sustainable corporate image. De Villiers et al. (2011) examine increased economic performance of companies as a further motive. Companies with a corresponding commitment to sustainability are very likely to achieve better economic performance. In addition to improved economic performance, ethical values can also be seen as a motive for sustainable business practices (Johannsdottir, 2015; Aragón-Correa & Rubio-Lopez, 2007). In this context, Shrivastava (1995) notes that consumers increasingly value environmentally friendly products, packaging materials, and a sustainable corporate image. De Villiers et

al. (2011) examine increased economic performance of companies as a further motive. Companies with a corresponding commitment to sustainability are very likely to achieve better economic performance. In addition to improved economic performance, ethical values can also be seen as a motive for sustainable business practices (Johannsdottir, 2015; Aragón-Correa & Rubio-Lopez, 2007). In this context, corporate culture is shaped by the personal value system of managers as well as employees (Bansal & Roth, 2000; Lozano, 2012).

### **3.2.3 Apparel industry in transition**

Hardly any other industry has come under more critical scrutiny in recent years as the apparel industry. Media reports about severe environmental pollution as well as working conditions in developing countries that violate human rights have led numerous companies to create more environmentally friendly production methods. Various examples show the progress made in sustainable corporate development in the apparel industry. For example, Nike partnered with DyeCoo to develop innovative equipment that enables a water- and chemical-friendly dyeing process (Edgeman et al., 2015). Adidas works together with an NGO called Parley For The Oceans, which fishes plastic out of the oceans and turning this waste into a raw material. There are also various initiatives that promote the sustainable use of cotton, the most important raw material in the industry, such as the Better Cotton Initiative (BCI) or the Global Organic Textile Standard (GOTS).

Sustainability is playing an increasingly important role in the development of new, innovative products and is a decisive factor in the economic success of companies (Banerjee, 2001). Due to intense price wars as well as rapid consumption and an associated 'throwaway mentality', the apparel industry has developed into an industry that at first glance has little to do with sustainability. These problems are caused by complex manufacturing processes and long supply chains. Predominantly, it is polluting chemicals and non-renewable natural resources that contribute to a large extent to environmental pollution (De Brito et al., 2008). With an average consumption of 2,700 liters of water per t-shirt, the apparel industry is one of the largest water consumers worldwide and contributes a total of 20 percent to global water waste (United Nations Economic Commission for Europe, 2018). However, trends such as the circular economy or sharing economy have been observed for some time,

indicating a shift toward greater sustainability awareness through innovative business activities (Todeschini et al., 2017). Companies' engagement with social and environmental issues often leads to innovative solutions. Thus, the focus on sustainability is not only described as a significant driver of innovation activities (Dangelico et al., 2013; Nidumolu et al., 2009; Hopkins, 2010). Nidumolu et al. (2009) note that a focus on sustainable business strengthens innovation and thus increases competitiveness. Hart and Milstein (2003) add that sustainability-oriented innovations offer companies the opportunity to gain a strategic advantage in entering new markets by aligning their competencies with more sustainable technologies. Additionally, the development of innovative business models and strategies contribute to essential sustainability solutions in the apparel industry through new processes and products. Baumgartner (2014) emphasizes that both innovation and a management strategy are essential components for integrating sustainability. In this context, Dangelico et al. (2013) state that innovative development processes are accompanied by structural effects in the company as well as the need for new resources.

### **3.2.4 Structural effects of exploration and exploitation**

A major contribution in the context of strategic organization and management research is March's (1991) study of exploration and exploitation. According to March (1991, p. 71), exploration is characterized as search, variation, risk taking, experimentation, flexibility, as well as innovation. Exploitation, on the other hand, involves the exploitation of existing knowledge potential and is associated with concepts such as refinement, production, efficiency, implementation, and execution. March (1991) emphasizes the importance of both strategies to be considered. In fact, creating a balance between the two strategies is essential to enable adjustments to dynamic markets and thus ensure long-term success. Resource scarcity in companies often leads to conflicts between the two strategies (March, 1991). Gupta et al. (2006) state that as resources become scarcer, conflicts increase proportionally. While the exploitative approach focuses on increasing efficiency by leveraging existing knowledge, capabilities and further developing the core business, the explorative approach focuses on generating new knowledge to develop innovations and therefore requires a

particularly high amount of resources (March, 1991; Jansen et al., 2006; Molina-Castillo et al., 2011). In particular, innovations that develop new products, services, or markets can be described as explorative (Benner & Tushman, 2003; Levinthal & March, 1993).

The environment in which the organization operates also plays an important role. In the study by Uotila et al. (2009) they describe the importance of balancing the two approaches, which depends on the intensity of research and development-intensive industries. Accordingly, the pursuit of balance becomes increasingly important when organizations operate in environments with high technological dynamics (Uotila et al., 2009). In dynamic environments, an explorative approach is beneficial because of the risk of obsolescence due to technological changes or changing consumer demands (Jansen et al., 2006). Benner and Tushman (2003) and Tushman and O'Reilly (1996) also describe a relationship between organizational structures. In this context, they show that decentralized structures and a more open corporate culture premise explorative units. Exploitative units, on the other hand, require centralized and hierarchical structures and a more closed culture (Benner & Tushman, 2003; Tushman & O'Reilly, 1996).

Following these arguments, it is evident that a balance between exploration and exploitation is necessary for the long-term survival of organizations and must be adapted to the circumstances of the environment in which they operate and to the organizational structure and culture.

### **3.2.5 Forms of ambidexterity**

To establish and maintain this balance, ambidextrous capabilities of organizations are of particular importance. Duncan (1976) was one of the first to introduce the term 'ambidextrous organization', which has dual organizational structures as a characteristic. An ambidextrous organization or 'ambidexterity' describes the ability, on the one hand, to exploit the competencies available in the company and to develop them further, and, on the other hand, to develop new ideas and to give equal consideration to the exploration of new opportunities (Lubatkin et al., 2006; Tushman & O'Reilly, 1996). Ambidexterity can be achieved and implemented in the organization by the three forms: contextual, structural, and sequential ambidexterity (O'Reilly & Tushman, 2013; Andriopoulos & Lewis, 2009; Jansen et al., 2009).

Contextual ambidexterity corresponds to the simultaneous execution of exploration and exploitation within a business unit that enables the management of a variety of contingencies that arise (McDonough & Leifer, 1983; Gibson & Birkinshaw, 2004). According to O'Reilly and Tushman (2013), contextual ambidexterity is characteristic of large companies that operate in volatile environments and are exposed to technological change.

Structural ambidexterity is characterized by dual structures (Duncan, 1976). Both approaches are pursued simultaneously in an organization, with the difference that, unlike contextual ambidexterity, there is a spatial separation. The structures in a business unit are set up in a way that the units are focused on either exploration or exploitation, with the units being spatially separated. The previously mentioned tensions are minimized by structural ambidexterity as the problem of resource allocation is mitigated by simultaneous execution in separate units (O'Reilly & Tushman, 2004).

Simsek et al. (2009) describe sequential ambidexterity as an alternation of exploration and exploitation at different points in time, which is why this form is also referred to as temporal ambidexterity. It occurs in temporal cycles, alternating between long exploitation phases and short exploration periods. By focusing on the temporary aspect, this form is associated with a change in organizational structure and resource allocation. O'Reilly and Tushman (2013) argue that sequential ambidexterity is specifically suited for organizations that do not have the necessary resources to implement a contextual approach. Typically, these are small organizations that operate in a very stable environment but can adapt to changing circumstances through short periods of exploration.

### **3.3 Method**

This paper is based on a qualitative research design. A total of 18 expert interviews were conducted with 13 different companies in the apparel industry. The author classified experts as those employees of the selected companies whose job title provided information about employment in management positions in the areas of strategy, sustainability or innovation. Thus, managing directors, material and product development managers, innovation managers and sustainability managers were interviewed. The total duration of the



interviews corresponds to 661 minutes. The expert interviews were conducted as semi-structured interviews. The interviews were transcribed using the program MAXQDA2020 which provided the basis for the subsequent data analysis. The data were analyzed inductively according to the approach of Gioia et al. (2012). In the first step, the author created first-order codes that closely matched the terms used by the interviewees. In the second step, the second-order coding was performed, merging the first-order concepts into second-order concepts. In this process, the total number of categories was reduced, examined for similarities, and the subcategories were assigned to main categories. This allowed the amount of data to be bundled and reduced. The third and final step was to extract the second-order concepts into aggregate dimensions. These map the characteristics that emerged from the first- and second-order codes. A shortened version of the data structure is presented in figure 1 in the appendix.

### **3.4 Sustainability as a driver for innovations**

The aggregate dimensions resulting from the data structure according to Gioia include the motives for sustainable management, explorative and exploitative activities, and the structural embeddedness of sustainability and innovation in the organization which are explained in the following.

#### **3.4.1 Motives for sustainable management**

The analysis of the interviews shows that sustainability is of great importance for companies in the apparel industry. On the one hand, it is perceived as significant due to intrinsic motivation and on the other hand, it is driven by external forces serving as a prerequisite for the company's existence. According to the data, a division can be made into internal and external drivers for sustainable management, which is consistent with the explanations in the theoretical section.

The internal drivers for sustainable management include corporate responsibility, corporate performance and intrinsic motivation. Long-term thinking and action in connection with sustainability were mentioned most frequently. Furthermore, the data shows that companies see opportunities in increased performance as well as in increased competitiveness through increased sustainability



activities. Companies hope to gain greater market opportunities and competitive advantages through sustainable business orientation. The interviewees also stated that they try to implement sustainable solutions out of their own motivation and self-interest. One important aspect mentioned in this context is quality features associated with durability. Sustainable materials can be used to produce high-quality and long-lasting products for customers.

External drivers that emerged from the analysis include responding to customer needs, government requirements through legislation and social pressure. Accordingly, companies feel compelled to respond to and meet external pressure exerted by customers and their expectations. Companies are trying to reach new target groups with innovative sustainable products in order to remain future-proof and competitive. Likewise, the interviewees indicated that there is increased interest from stakeholders demanding more sustainability efforts. These demands are also enforced by government through laws and regulations. Finally, societal pressure was cited as another external driver. Companies are being forced to rethink their sustainability strategies, especially by environmental movements such as Fridays for Future.

### **3.4.2 Strategic alignment in organizations**

A central element of corporate strategies is sustainable management, which is firmly anchored in most corporate philosophies. Accordingly, the analysis of the interviews revealed that the companies surveyed refer to the three-pillar model of sustainability and take measures in the social, ecological and economic dimensions to pursue sustainable corporate development. Furthermore, the implemented sustainability measures in the companies have not only led to improvements in products and processes, but also to innovations or new business areas. As mentioned above, exploration and exploitation in the strategic context is an important aspect of strategic corporate alignment in this context. Thus, according to March (1991), the improvement of what already exists is referred to as exploitation and the development of something new is referred to as exploration. Hence, a link can be drawn between the sustainability measures carried out by companies and exploration and exploitation activities. This connection is also evident in the Gioia analysis. Exploration as a second-order concept represents innovations as well as the

developments of new business areas that have resulted from sustainability efforts. Exploitation as a second-order concept includes sustainable improvements to existing products or processes. Based on the three-pillar model of sustainability, Table 2 (see appendix 2) shows the sustainability measures mentioned by the interview partners in connection with exploration and exploitation.

**Social Dimension:** Explorative activities that companies carry out as part of the social dimension of sustainability relate to partnerships with aid agencies abroad to support social development processes. In this context, one company interviewed stated that they support people from developing countries by paying them fair wages for collecting PET bottles. The company then recycles these collected bottles and reuses them as polyester fibers in its products.

Exploitative activities include supplier and social audits, memberships in initiatives, compliance, and expanding feedback loops for employees. Conducting social audits in the supply chain was mentioned by all of the interviewees. Regular audits of production facilities and suppliers can ensure that all standards are met and that production takes place under humane conditions. Social audits allow the identification of existing deficiencies and thus enable an improvement approach in quality as well as in supplier relations. In this context, the interviewees also mentioned fair working conditions and occupational safety as part of the Code of Conduct. It includes measures that are implemented as part of the social dimension and contribute to securing and improving social standards. In addition, the interviews revealed that the companies are seeking membership or are already members of initiatives such as the Business Social Compliance Initiative (BSCI) to enable fair working conditions for employees. Another outcome of the data related to improving social sustainability is the development of a feedback loop for employees that enables extended accessibility to a contact person in case of violations or policy breaches.

**Ecological Dimension:** The data show that within the ecological dimension companies have established explorative activities which are implemented in sustainable innovations. In particular, the circular economy, the development of protein-based silk and cellulose fibers, but also eco-washes for efficient washing processes and avatars for digital product previews can be identified as such. The collected data show a trend that is in line with the argumentation of Todeschini et al. (2017) and is practically confirmed by the data analysis of the

present research. This trend is called 'circular economy', which belongs to sustainable innovations in the sense of exploration. Thus, the life cycle of products is extended by recycling or reusing materials. According to the interviewees, the concept of circular economy can also be expanded on the explorative level by focusing not only on recycling, but also on biodegradability of a product. Materials and products are designed and developed to be partially or even fully recyclable. Protein-based silk is one material innovation that one company interviewed used in producing a shoe which is fully compostable and leaves no biological footprint at the end of its life cycle. Moreover, 3D technology and the development of avatars for digital product previews are resource-saving opportunities for the apparel industry. Products can be replicated in the showroom and presented to sales virtually.

Exploitative activities aim to optimize the core business and include ensuring a climate-neutral company location, seals for more sustainable materials and products, reducing packaging waste, and increasing product safety and quality. Ten of the 13 companies surveyed stated that they were taking measures to achieve greater climate neutrality at their business location. These measures include reduction of plastic and disposable tableware as well as installing heat recovery systems and an electric vehicle fleet. All interview partners emphasized that they are taking steps to improve sustainable materials and products. An existing product, such as a t-shirt, can be sustainably improved by replacing conventional cotton with organic cotton. Although the basic material does not change, the replacement leads to a reduction in water consumption as well as a massive reduction in pesticide use. Sustainability labels such as the Global Organic Textile Standard (GOTS) or the Better Cotton Initiative (BCI) also promote corporate sustainability and were frequently mentioned as an ecological measure.

**Economic Dimension:** The third sustainability dimension examined describes the economically sustainable measures and contributes to securing the company's long-term existence and profit maximization. The companies surveyed have developed new business models based on the concept of circular economy. These include repair and reuse concepts for materials and products, that strengthen sustainability awareness and help to prevent the throwaway mentality (Todeschini et al., 2017). The recycling concept of one company surveyed is based on the cost-benefit aspect, so that customers can purchase the fabric scraps from cutting processes as cleaning rags or

sewing fabrics. In this way, remnants are recycled and returned to the life cycle, which offers the company an economic advantage in addition to the ecological aspect. Other economic measures that can be assigned to exploration also include the development of a new sales concept and a classification system for sustainable products and collections. For example, one company developed a new concept for innovative flagship stores that specifically focuses on sustainably produced collections. The development of a new B2B concept was also mentioned by an interviewee, who indicated that the company has launched its own academy for sustainable management, where other companies can learn more about sustainable business management.

Exploitative activities, which can be assigned to the economic dimension, include cost savings due to more efficient technologies and machinery. Furthermore, customer loyalty can be increased through improved product quality. One interviewee stated that cost-efficient production can be achieved through regular investments in new technologies and is related to the company's future viability and greater customer loyalty. Ensuring corporate sustainability by implementing economically sustainable measures was also emphasized by other interviewees. This increases the longevity of the high-quality products, which ultimately pays off in long-term customer loyalty.

### **3.4.3 Structural embeddedness of sustainability and innovation**

The aggregated dimension 'structural embedding' shows how sustainability and innovation units are located in the organization. The data revealed four different alternatives as to how the companies integrate these two units organizationally. Some companies have a separate innovation department and a separate sustainability department. Others have only one of the two departments and others have no separate organizational units for innovation and sustainability at all.

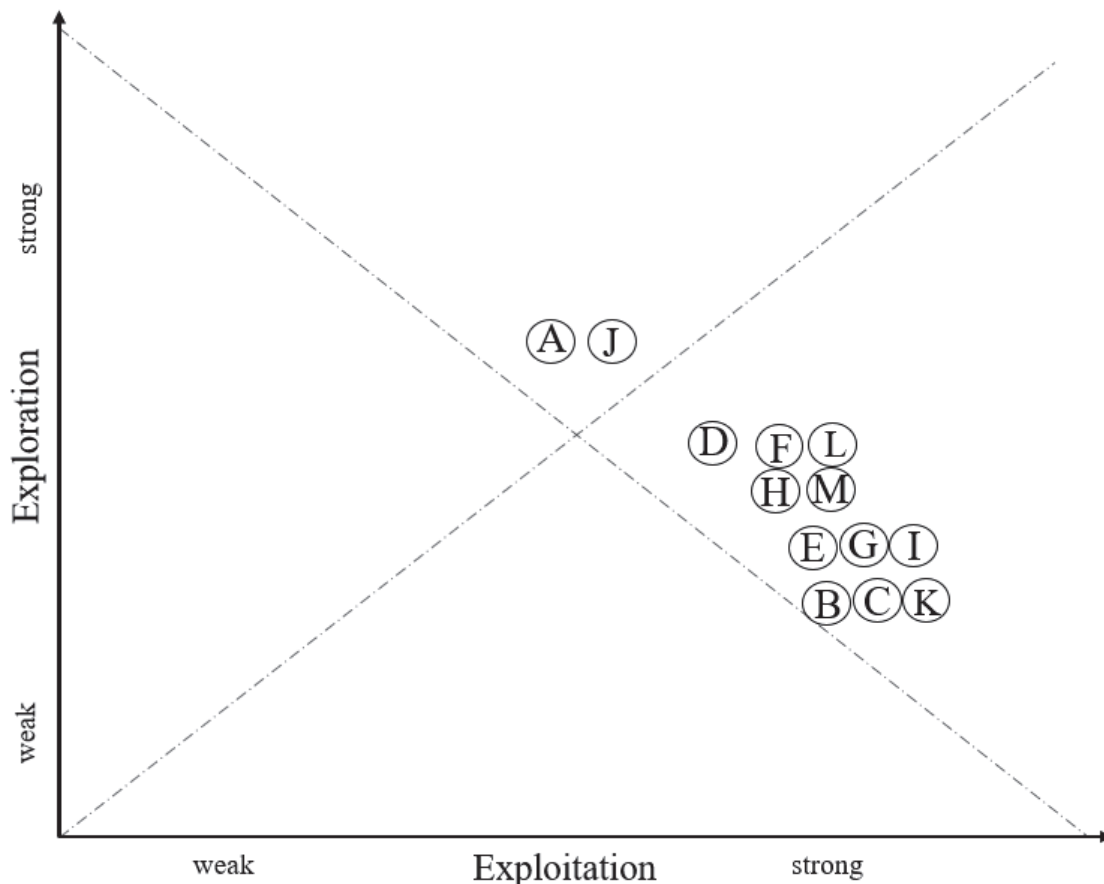
According to the first option, three of the interviewed companies each have a sustainability department as well as an innovation department. However, in-depth data analysis showed that this does not imply that both topics are only considered separately in both departments. Rather, those interview partners stated that the two departments are in exchange. Thus, innovation topics are not only

discussed in the innovation department but also find their way in the sustainability department and vice versa.

Only one interviewed company stated that it does not have a its own sustainability department but does have an innovation department. The reason for this is that the company sees sustainable management as part of its corporate philosophy. In order to ensure the exchange of information between all departments with regard to sustainability-related topics, meetings are held twice a month with employees from all units of the company, forming an interdisciplinary CSR team. In this way, cross-departmental information on sustainability is disseminated throughout the company.

Six of the companies surveyed have no innovation department, but a sustainability department. In these companies, innovations are primarily developed by the sustainability department. This department is usually located as part of strategy, supply chain, management or quality management unit.

**Figure 3.2** Strategic orientation towards exploration and exploitation





In connection with the fourth alternative, a total of three companies stated that they had neither their own sustainability department nor their own innovation department. In these companies, sustainability topics extend across all areas and are dealt with in all departments. Innovation-related topics are primarily located in the product or material development department, but also extend across all other areas. Consequently, there is a cross-departmental exchange of both topics in the company.

### **3.5 Critical discussion of the findings**

The findings show that, in addition to maximizing profits, companies in the apparel industry consider cost-effective, sustainable management to be an important factor in maintaining competitiveness. According to the data, all companies see opportunities in sustainability-oriented management. The companies' sustainability measures lead to improvements within the company on the one hand and to innovations and new business models on the other.

As part of the analysis, the author classified the surveyed companies according to their explorative and exploitative characteristics. The results show that the companies primarily focus on exploitation. However, two companies deviate from this classification, as they show a stronger explorative characteristic at the same time.

One reason for the predominantly exploitative focus of the companies can be derived from the company history. Considering the year of foundation of the companies surveyed, it is noticeable that they all have been successful on the market for decades. They are established companies that consistently focus on their core business and continuously develop it. Thus, their focus is on the long-term planning and the secure development of earnings. Hence, it can be stated that established companies see their market opportunities primarily in the stable and consistent further development of their core business.

Furthermore, eight of the 13 companies surveyed are family businesses, which, due to their family and traditional orientation, have highly structured and standardized processes. Standardized structures are an indication of an increased exploitative orientation as



a basis, since organizational changes in the sense of exploration are difficult to implement with highly structured and rigid processes.

An increased focus on further developing the core business towards sustainability within all three dimensions of sustainability can be observed in all companies and is driven by internal and external factors. However, the fact that a purely exploitative orientation of companies is not sufficient to remain competitive, especially in volatile markets, is shown not only by March's (1991) theoretical assumptions but also in practice. Numerous examples show that companies that focused only on their core business without adapting to volatile markets were no longer competitive. In this respect, both strategic orientations - exploration and exploitation - should be pursued in the long term. Especially for companies operating in markets with strong technological dynamics, striving for a balance between exploitation and exploration is of great importance (Uotila et al., 2009). The apparel industry is characterized by technological dynamics to a limited extent, but has to deal with frequently changing fashion trends (Cachon & Swinney, 2011).

Furthermore, the analysis shows that there are small deviations within the more exploitative grouping. A sustainable development as its core business is part of the companies D, F, H, L and M. At the same time, exploratory activities are slightly higher for these companies, as the development of innovations is based on the company's sustainability principles and thus integrated into the core business. The interviewee from Company D states that innovation is attempted to be integrated into the core business. However, this is a process which cannot be implemented immediately, but takes time. Accordingly, Company D is positioned closer to the center of the graph with medium to strong exploitation as its base. The tendency of companies D, F, H, L and M is thus towards a balance between further development of the core business as exploitative activities and innovations as explorative activities.

Companies B, C, E, G, I and K attribute the highest priority to their core business and its further development. Nevertheless, they try to strike a balance between exploration and exploitation by pursuing explorative activities as well. This grouping is therefore classified in the strong exploitation and weak to medium exploration range.

In addition, Figure 2 shows that the companies D, F, H, L, and M have a slightly higher strategic orientation towards exploration

compared to companies B, C, E, G, I, and K. This can be explained by the temporal aspect of their sustainability orientation. Thus, a critical examination of these companies clearly shows that they have anchored the sustainability principle in their corporate philosophy. Thus, the core business has been sustainably improved and further developed over time, resulting in a solid basis on which to build exploratively. In contrast, companies B, C, E, G, I and K have only been focusing on sustainability for a few years or is only currently playing an increasingly important role. These companies focus primarily on their core business and its sustainable further development. Nevertheless, they are trying to tackle innovations that make their products or processes more sustainable.

In addition to the predominantly exploitative nature of the companies surveyed, the data also show that two companies show more explorative activities, which enables them to take advantage of new market opportunities and to respond more quickly and precisely to fashion trends and technological changes. Companies A and J deviate from the highly exploitative and medium explorative classification due to an increased commitment to innovation. These two companies focus equally on the improvement of the core business and on new, innovative products and business ideas. Both companies see innovation as the core business and describe sustainability as the DNA of the company. No distinction is made between core business, sustainability and innovation. Rather, these aspects go hand in hand and are holistically addressed throughout the company. This strategic orientation is based on many years of experience and has diverse backgrounds. For example, the consumer group of both companies is heterogeneous, but tends have younger consumer groups. They are well informed about current trends and strongly committed to sustainability. They are developing a greater awareness of sustainability. This is reflected in their mobility, eating and consumer behavior and not least in the purchase of clothing (Gazzola et al., 2020). Discussion drivers and opinion leaders emerge from this consumer group, who have built up an emotional bond to the company and its brand. Their extensive networking challenges companies to quickly respond to new trends and changing consumer demands. In order to meet these challenges, a close connection between innovation and core business as well as the availability of necessary resources is important. This enables companies to position themselves as innovation and opinion leaders in the market and to respond to requirements accordingly.

The following section discusses how sustainability and innovation activities are structurally embedded in the companies and can be correspondingly associated with the forms of ambidexterity.

Three of the 13 companies surveyed have a separate sustainability department and a separate innovation department. This combination of the two organizational units can be examined in companies A, J and F. Both departments of company A and J are in close exchange with each other and include explorative activities as well as exploitative activities. Despite the existence of a separate innovation department, innovation-related tasks are also processed in the sustainability department. Consequently, there is no spatial separation of exploration and exploitation. This corresponds to the characteristics of contextual ambidexterity and describes the ability to react quickly to changing requirements (McDonough & Leifer, 1983; Gibson & Birkinshaw, 2004). Company F also has its own sustainability department and its own innovation department. There is also a close exchange between the two departments. In contrast to company A and J however, exploratory activities are primarily processed in the innovation department, which is in close contact with the sustainability department. The further development of products as well as the efficient process design with regard to sustainability is the task of the sustainability department. Consequently, there is a spatial separation between exploration and exploitation, which corresponds to the characteristics of structural ambidexterity (O'Reilly & Tushman, 2008).

Companies B, C, H, I, K and M, have a sustainability department but no innovation department. Innovation activities are primarily implemented from within the sustainability department and are also coordinated with the respective higher-level department. Thus, it can be stated that both exploitation and exploration are carried out simultaneously within one unit. This applies to the characteristics of contextual ambidexterity.

No clear assignment can be made for companies D, E, G and L, since the further development of products and processes with regard to sustainability is addressed both holistically in all departments and specifically, for example, in material and product development and in the area of design. Follow-up interviews need to be conducted to provide more detailed information on this.

Taking a closer look at the allocation of the companies to the forms of ambidexterity, it can be noticed that these only relate to two

of the three forms. The results indicate that eight of the 13 companies interviewed primarily focus on the contextual form of ambidexterity to achieve a balance between exploration and exploitation. The fact that contextual ambidexterity is most common among the companies surveyed is due to the fact that conducting exploration and exploitation simultaneously within a department allows for shorter communication channels and faster responses to changes or requirements. Only one company strives for balance in the sense of structural ambidexterity. Here, the further development of the core business and the development of innovations are carried out in separate departments. Sequential ambidexterity is not implemented by the companies surveyed. It is characteristic for small organizations that do not have the necessary resources (O'Reilly & Tushman, 2013). Since the surveyed companies are not small businesses, these practical results confirm the theoretical assumptions.

### **3.6 Conclusion**

In summary, it can be stated that sustainability is becoming increasingly important among companies in the apparel industry. A process of rethinking has been taking place within the companies, driven by internal and external drivers. The results show that traditionally managed family businesses in particular are operating in an environmentally friendly and socially responsible manner. Sustainable thinking and action are integral parts of their corporate philosophy. In contrast, it is the capital market-oriented companies that react more strongly to external influences such as changes in consumer behavior. These reactions to change give rise to sustainable innovative solutions that are noticeable in terms of new products, innovative processes or new areas of business. When implementing sustainable developments, companies focus primarily on further developing their core business in order to maintain their market opportunities. At the same time, they are increasingly developing solutions to make processes or products sustainable. It became apparent that the more exploitative oriented companies are established organizations that have been successful in the market for some time. They have standardized structures and, due to their exploitative orientation, see their market opportunities primarily in the sustainable further development of their core business. Nevertheless, it can be observed that despite their exploitative basic orientation, the companies are increasingly adopting an explorative

orientation in order to be able to react to market changes. The balance between exploration and exploitation is therefore an important aspect that companies are trying to achieve. The results also show that this is primarily achieved through contextual and structural ambidexterity.

By examining the role of sustainability for innovations in the apparel industry, this research work contributes to the existing literature and offers implications for practice. Accordingly, this work extends existing approaches by referring to the apparel industry as a field of action on the one hand and highlighting the structural implications of sustainability orientation on the other. Furthermore, the structural effects of sustainability orientation were examined through the relationship between exploration and exploitation as well as the forms of ambidexterity. Thus, in addition to contributing to research on sustainability and innovation, the study also makes a theoretical contribution in the research area of ambidexterity. In terms of the structural implications arising from corporate sustainability orientations, this paper also offers implications for practice. It can be deduced from the results of the surveys that companies with standardized organizational structures generally operate successfully on the market using an exploitative strategy. In more explorative oriented companies, it must be ensured that there are sufficient development opportunities for innovations, for instance through decentralized structures within the business unit. The results also show that a sustainable orientation of companies is seen as an opportunity to drive sustainable innovations for efficient developments of processes and products.

This paper is subject to limitations and raises avenues for future research. The apparel industry was chosen very specifically as the field of action studied, which is why the results cannot be generalized. Sustainability and the associated innovation activities also play a significant role in other industries. Therefore, other fields of action, such as the automotive industry, are relevant for future studies. Another limitation includes possible biases due to an uneven distribution of interviewees within the companies. In some companies two or three employees from different departments were interviewed, whereas in other companies only one interview partner was available due to capacity constraints. An even distribution of interview partners would have been necessary to eliminate bias due to unequal consideration (Molina-Castillo et al., 2011; Avolio et al., 1991). Limitations also arise in the classification of the companies with regard to the forms of ambidexterity. Due to a lack of information



from the interviews, it was not possible to clearly classify the form of ambidexterity for four companies. Follow-up interviews would have been necessary, which were not possible within the scope of this study due to time limitations.

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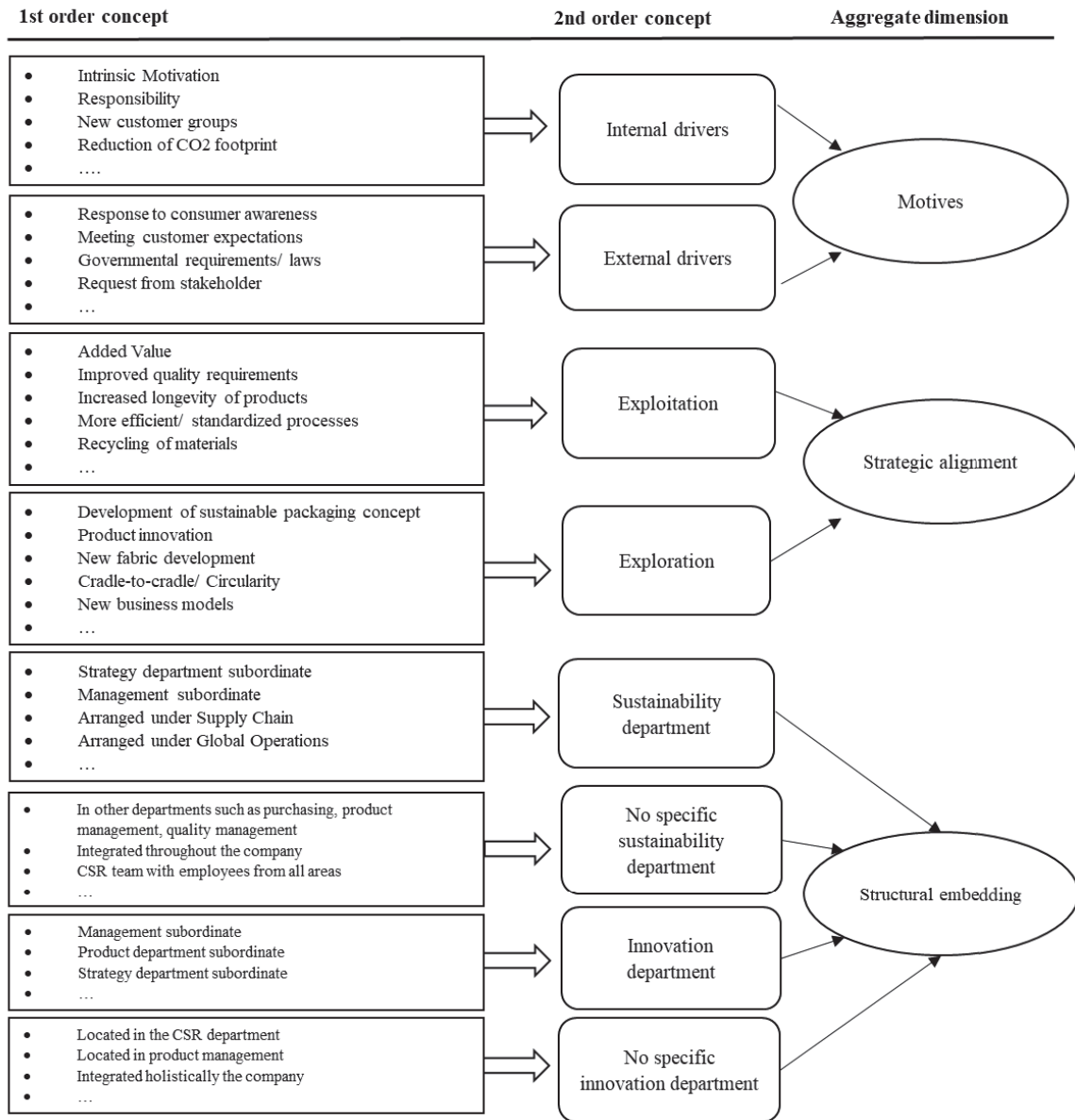
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**Appendix 3.1**

**Figure 3.1** Data structure.





**Appendix 3.2**

**Table 3.2** Exploration and exploitation based on the three dimensions of sustainability.

	<b>Exploration</b>	<b>Exploitation</b>
<b>Social Dimension</b>	<ul style="list-style-type: none"> <li>- Partnership with organizations abroad to support social development processes</li> </ul>	<ul style="list-style-type: none"> <li>- Supplier audits</li> <li>- Social audits</li> <li>- Memberships in initiatives</li> <li>- Code of Conduct</li> <li>- Feedback loops for employees</li> </ul>
<b>Ecological Dimension</b>	<ul style="list-style-type: none"> <li>- Circular economy and cradle-to-cradle</li> <li>- Protein-based silk</li> <li>- Cellulose fibers</li> <li>- Filling material from the cocoa plant</li> <li>- Ecowashes for efficient washing processes</li> <li>- 3D simulation</li> <li>- Avatars for digital product preview</li> </ul>	<ul style="list-style-type: none"> <li>- Climate-neutral site</li> <li>- Seals and certifications for more sustainable materials and products</li> <li>- Reduction of packaging waste</li> <li>- Product safety and quality</li> </ul>
<b>Economic Dimension</b>	<ul style="list-style-type: none"> <li>- Repair and recycling concept</li> <li>- New sales concept: Live Mockup Store</li> <li>- Classification systems</li> <li>- Sustainability Academy</li> </ul>	<ul style="list-style-type: none"> <li>- Customer loyalty through improved quality</li> <li>- Investment in new technologies for cost-efficient production</li> </ul>



# 4

## **The Role of Savings Cooperatives as Financial Institutions to Provide Funds to SMEs in Thailand**

*Anucha Wittayakorn-Puripunpinyoo*

### **4.1 Introduction**

Financial institutions are important because they serve as a marketplace for money and assets, allowing capital to be efficiently allocated to where it is most useful. A bank, for example, accepts deposits from customers and lends the money to borrowers. It is unlikely that any one person will be able to find a qualified borrower or understand how to service the loan without the bank acting as an intermediary. As a result, the depositor has the opportunity to earn interest through the bank. Similarly, investment banks locate potential buyers for a company's stock or bonds. Most people are served by financial institutions in some way, as financial operations are a critical part of any economy, with individuals and businesses relying on financial institutions for transactions and investing. Because banks and financial institutions play such an important role in the economy, governments consider it essential to oversee and regulate them.

Every economy relies heavily on financial institutions. Banking and non-banking financial institutions are regulated by the central government organization. Furthermore, these institutions assist in closing the gap between idle savings and investment and their borrowers from net savers to net borrowers.

Also, financial institutions play an important role in the economy. Banking and non-banking financial institutions are under the control

of the central government organization. Furthermore, these institutions bridge the gap between idle savings and investment and their borrowers, converting net savers to borrowers. Financial institutions play roles such as money supply regulation, banking services, insurance services, capital formation, investment advice, brokerage services, and pension fund services, trust fund services, financing small and medium-sized enterprises, and acting as a government agent for economic growth.

Financial institutions are the economy's backbone. Without the assistance of these institutions, the economy will collapse and be unable to recover. Because these institutions play such an important role in the development and growth of the economy, the government regulates them through the central bank, insurance regulators, pension fund regulators, and so on. Their role has evolved over time, from accepting and lending funds to providing broader services.

Like other countries in the world, in Thailand, The financial institution system plays an important role as an intermediary in raising funds and allocating economic resources to various economic sectors, as well as providing settlement services for goods and services. It developed financial institution system efficient and stable would support sustainable economic growth (Bank of Thailand, 2023). Important components of the Thai financial institution system include: (1) Depository institutions such as commercial banks Depository Specialized Financial Institutions finance company credit fancier company Savings Cooperatives and Credit Unions and money market funds, (2) Financial institutions that do not accept deposits, such as mutual funds, insurance companies. Provident fund Credit Company, asset Management Company and securities companies.

One of the important functions of financial institute is that it assist small and medium-sized businesses in their early stages of operation. They provide these businesses with both long-term and short-term funding. The long-term fund assists them in forming capital, while the short-term funds meet their day-to-day working capital requirements. For savings cooperatives, it is defined as one of the depository institutions by Thai law. It has been one of the source of funds for SMEs in Thailand.

Thailand has made remarkable progress in social and economic development over the last four decades, moving from a low-income to an upper middle-income country in less than a generation. As a result of its sustained strong growth and impressive poverty reduction,

Thailand has become a widely cited development success story. More interestingly, Thailand is a country whose economy is heavily reliant on commodities and services exports. Industrial products made for more than 70% of overall export sales over the last 20 years. Since then, the country has been revitalized by the industrial sector, which is supported by domestic supporting industries. Small and medium-sized firms (or SMEs) are important components of the supporting industries. Thai SMEs have evolved in response to national development objectives and the global economy.

Thailand has seen a rise in foreign investment since 1993. Following the development of the petrochemical sector along the Eastern seaboard, more industrial estates were built to utilize the output of these upstream industries. Various companies, particularly the automobile, electronics, and electrical appliance industries, began to invest in Thailand. These three primary industries spawned a slew of supporting industries, and SMEs were a crucial component of the country's transition from agriculture to manufacturing and services. SMEs are now widely acknowledged as playing a key part in the country's economy. They are seen to be the most effective engine for economic progress. Furthermore, when compared to other business units, SMEs generate the highest profit margins for the government.

For Small and medium-sized firms (or SMEs) operations in Thailand required the source of funds for their operations, Savings cooperatives is one of the funds for them especially in the areas of Thailand that far away from the capital city which is the financial center for their funds. The rural area in Thailand as one of the focused area to establish the SMEs as area base economic drivers for the long terms development. According to the statistics of department of Cooperatives Promotion, ministry of agriculture and cooperatives, 2022, over 80 percent of SMEs entrepreneur acquired financial support from savings cooperatives as the micro financial institutes especially in the rural area.

Based on the cooperatives philosophy, Cooperatives are founded on the principles of self-help, self-reliance, democracy, equality, equity, and solidarity. Cooperative members believe in the ethical values of honesty, openness, social responsibility, and caring for others, as did their founders. Since cooperatives practices is adopted worldwide, the types of cooperatives are classified in many types such as Producer or Marketing Cooperatives, Consumer Cooperatives, Worker Cooperatives, Housing Cooperatives, Financial Cooperatives,

Savings Cooperatives, New Generation Cooperatives, Multi-Stakeholder Cooperatives, Non-profit Community Service Cooperatives. Savings cooperative is one of the practical organizations worldwide. So, the background of savings cooperatives as the Source of Funds for SMEs started with the first credit and savings cooperatives were formed in the mid-nineteenth century, primarily in Germany. Herman Schultze-Delitsche, who established a credit cooperative for minor artisans and the urban middle classes, and Freidrich Reifeisen, the founder of the rural credit cooperative, are regarded as the founding fathers of the credit cooperative movement. Luigi Luzzatti established credit cooperatives in Italy, combining the principles established by his two German forefathers. The credit cooperative is the most common type of cooperative in the modern world, including the Third World, after the consumer cooperative. Labor unions and other organizations, including government bodies, have established this type of cooperative in both rural and urban districts.

Like other countries in the world, Thailand has adopted the cooperatives philosophy to practical ways. At present, the cooperatives in Thailand are officially categorized into 7 types, namely: Agricultural cooperative, Land Settlement cooperative, Fisheries cooperative, Consumer cooperative, Savings Cooperative, Service Cooperative, and Credit Union cooperative.

In Thailand, The savings cooperative is a type of financial institution whose members are people having the same occupation or living in the same community. Its purpose is to promote savings among members and provide loan funds for productive investment. Cooperative are registered under the Cooperative Act B.E. 2511 (1968). Present-day circumstances are such that people are constantly faced with an increasing cost of living. Low income people especially suffer because they never seem to earn enough to cover their daily needs. They tend to deal with this problem by turning to illegal moneylenders, who charge them very high rates of interest. By so doing their indebtedness is increased even more and the situation becomes more serious for themselves and their families.

The savings cooperative is set up to help deal with members' socio-economic problems. It is a type of financial institution promoting savings as well as providing loans, using principles of self-help and mutual help. Specifically, this cooperative's objectives are as follows 1) to encourage thrift among members. To encourage the habit

of savings, the cooperative currently offers two types of savings, 2) Shares the cooperative sets that members must pay monthly shares at rates set by themselves. These may be deducted directly from monthly salaries. Dividends are paid to members at rates specified according to cooperative law, without tax deductions. When resigning from a cooperative, the member can withdraw his/her shares, 3) Deposits. Both savings and fixed deposits are offered to cooperative members. Interest on these deposits may be equal to or higher than commercial bank rates depending on the financial status of each cooperative, 4) to provide loan services to members. Members' shares and deposits comprise the loan funds made available to members in need. Interest on these loans are usually at rates lower than that of the prevailing market. There are currently three types of loans available. Emergency loans. In crisis or emergency situations, a member may borrow up to one half of his/her monthly income, depending on the financial status of the cooperative. Repayment is normally made in two installments, without collateral. Ordinary loans. The cooperative can provide an ordinary loan up to a maximum of one-half of a member's monthly income, again depending on the financial status of the cooperative. These can be between 4 to 15 times, or within the range of Baht 40,000 to 300,000. Normal repayment is from 24 to 72 installments, with one other member acting as guarantor. The maximum amounts allowed for emergency and ordinary loans are based on the average amount of members' incomes. Special loans. When the housing and investment purposes. A member may borrow the actual amount required for investment or to purchase house and/or land, not exceeding the ceiling amount of between Baht 400,000 to 1,000,000. Repayment period is between 10 to 15 years, using real property as collateral.

After a savings cooperative is formed, members' representatives are elected to form Board of Directors to administer cooperative operations. Elections are held at annual general meetings. The highest responsibility of the individual member is attendance at the annual general meeting (AGM). The AGM gives him/her the opportunity to protect membership rights as well as the means to monitor cooperative operations and a fair sharing of benefits. It is also a forum to determine general policies, elect Committee members, and assign tasks to further benefit all the members. Within the framework of cooperative principles, laws and regulations and procedures, members must discuss problems together, share ideas, and exercise the right to vote on Committees and meeting resolutions.



The savings cooperatives performed as the source of funds for SME in Thailand especially in rural area of Thailand which people who really want to set up their own business acquired the financial supports as their loans. In this research, the research attempted to measure the savings cooperatives performance efficiency in Kalasin province located in the North East of Thailand classified as the rural area. The research work attempted to measure all of 10 savings cooperatives who continue performed their loan business for SMEs in Kalasin province over 10 years.

**Figure 4.1** Map of Kalasin Province, Thailand



Source: [www.pinterest.com/pin](http://www.pinterest.com/pin)

## **4.2 Research Objectives, Data and Method**

To measure the savings cooperatives performance efficiency as the source of funds for SME in Kalasin province, Thailand.

The population numbers of savings cooperatives in Kalasin province, Thailand were considered as 12 individuals who still have their business operation from 1991 to 2021. The purposive technique was applied as the sampling with 2 conditions of purposive technique 1) all outcome of savings business cooperatives are positive, and 2) all savings cooperatives still continuously operate their own business from 1991 to 2021. To meet these 2 purposive conditions, it turned



out of 9 savings cooperatives as sample size. (Guzman, I. and Arcas, N., 2008). (Maltz, Alan C., 2000). (Onnwan, D., et al., 2021).

The secondary data were collected from the database of the Cooperative Auditing Department from 1991 to 2021 accounted for 30 years of 9 samples. The cooperative's financial status was collected which was composed of assets, debts, and capital. Also, the cooperatives' business operation outcome was collected included income, expenditures, profits, and operation capitals. (Guzman, I. and Arcas, N., 2008). (Maltz, Alan C., 2000). (Onnwan, D., et al., 2021). Following the studies of Maltz, Alan C., (2000), and Onnwan, D., et al., (2021), they applied both financial status and business operational performance in terms of money unit to identify the cooperatives inputs and outputs. Panel data statistical model was utilized as the data analysis. To meet its acquirement, both time series and cross-sectional data were collected. For the times series data, the financial status and the cooperative business operation data were collected from 1991 to 2021 accounted for 30 years while the cross-sectional data were collected from 9 savings cooperatives. The total number of observations was 270 observations collected The technical efficiency analysis of savings cooperatives in Kalasin province was applying the 3-state Data Envelopment Analysis (3-stage DEA). The efficiency of the production unit can be assessed as follows. (Guzman, I. and Arcas, N., 2008). (Maltz, Alan C., 2000). (Onnwan, D., et al., 2021).

$$\text{Efficiency} = \frac{\text{output}}{\text{input}} \text{-----}(1)$$

According to equation (1), the outputs were defined as the total amount of income and profit of savings cooperatives while the inputs were defined as the total amount of assets debts, capital, expenditures, and operation capitals respectively. Theoretically, the popular method of benchmarking technique to measure the performance of savings cooperatives' business operations. This is a comparison of the efficiency value calculated in each production unit. The benchmark is the best practice compared to the total number of units as a study unit. The technical efficiency can be assessed as follows: (Paradi, J.C., & Scahffnit, C., 2004). (Guzman, I. and Arcas, N., 2008). (Uraporn, Ng., 2020).

$$\text{Technical efficiency} = \frac{\sum_j^n \mu_r y_{rj}}{\sum_i^m \omega_i x_{ij}} ; i=1, \dots, m, r=1, \dots, s, j=1, \dots, n \quad (2)$$

Where:  $x_{ij}$  is the number of inputs  $i$ th of production  $j$   
 $y_{rj}$  is the number of output at  $r$  of production  $j$ .  
 $\mu_r$  is the weight of the product  $r$ .  
 $\omega_i$  is the weight of the input  $i$   
 $n$  is the number of production units  
 $s$  is the number of output  
 $m$  is the number of inputs

### 4.3 Results and Discussion

The Measurement Savings Cooperatives Performance Efficiency of the 9 savings cooperatives in Kalasin province, Thailand could be expressed in Table 1 below.

From Table 1, the results of the Technical Efficiency of the 9 savings cooperatives in Kalasin province, it was found that 6 out of 9 savings cooperatives in Kalasin province had the technical efficiency with the value of 1.00 which were 1) Kalasin Public Health Savings Cooperative Limited, 2) Sema Kalasin Savings Cooperative Limited, 3) Kalasin Local Government Savings Cooperative Limited, 4) Kalasin Hospital Savings Cooperative Limited 5) Kalasin Establishment Savings Cooperative Limited, and 6) Non Sung Community Savings Cooperative Limited. There were 3 out of 9 savings cooperatives had the technical efficiency score smaller than 1.00 expressed that all of them performed their own business with inefficiency which were: 1) Kalasin Teacher Savings Cooperative Limited, 2) Kalasin Provincial Police Savings Cooperative Limited, and 3) Kalasin Private School Teacher Savings Cooperative Limited with their technical efficiency score of 0.913, 0.976, and 0.972 respectively meaning that these savings cooperative had to improve themselves to meet the requirement of technical efficiency. By doing that, the result from Data Envelopment (DEA) expressed in table 1 showed some suggestions which was IRS (Increasing return to Scale).

**Table 4.1** The measurement savings cooperatives performance efficiency of the 9 savings cooperatives in Kalasin Province, Thailand

Savings Cooperatives of Kalasin Province, Thailand	Crste <sup>1</sup>	Vrste <sup>2</sup>	Scale <sup>3</sup>	Explanation
1 Kalasin Teacher Savings Cooperative Limited	0.913	1	0.913	drs <sup>4</sup>
2 Kalasin Provincial Police Savings Cooperative Limited	0.879	0.901	0.976	drs <sup>4</sup>
3 Kalasin Public Health Savings Cooperative Limited	0.974	0.974	1	-
4 Sema Kalasin Savings Cooperative Limited	1	1	1	-
5 Kalasin Local Government Savings Cooperative Limited	1	1	1	-
6 Kalasin Hospital Savings Cooperative Limited	1	1	1	-
7 Kalasin Establishment Savings Cooperative Limited	1	1	1	-
8 Kalasin Private School Teacher Savings Cooperative Limited	0.963	0.99	0.972	irs <sup>5</sup>
9 Non Sung Community Savings Cooperative Limited	1	1	1	-
Operating efficiency average	0.97	0.985	0.985	

Source: Calculated from the database of the Cooperative Auditing Department, 2021..

crste = technical efficiency from CRS DEA

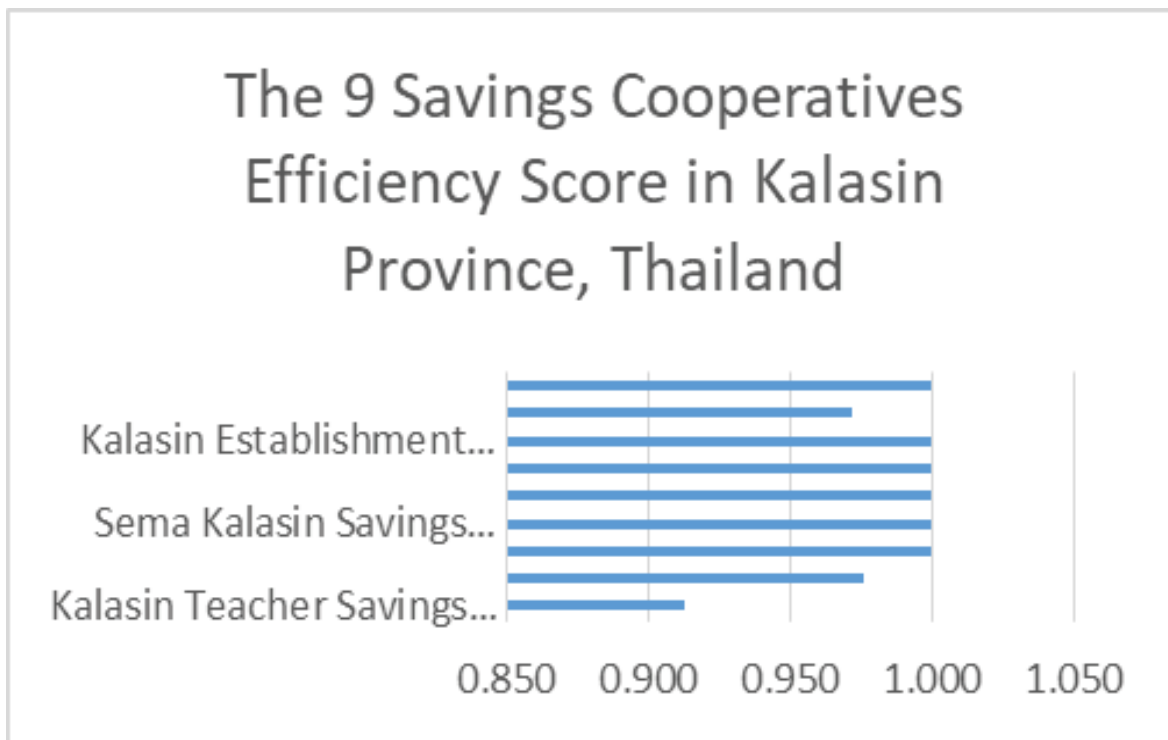
vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

This meant that when Kalasin Teacher Savings Cooperative Limited and Kalasin Provincial Police Savings Cooperative Limited decreased their input usage by 1 percent for their business operation then their outputs would be increased greater than 1 percent. It is the way to increase its technical efficiency. By doing that, Kalasin Teacher Savings Cooperative Limited and Kalasin Provincial Police Savings Cooperative Limited would decrease their input usage such as assets, debts, capital, expenditures, and operation capitals respectively.

Kalasin Private School Teacher Savings Cooperative Limited increased their input usage by 1 percent for their business operation then their outputs would be increased greater than 1 percent. It is the way to increase its technical efficiency. By doing that, Kalasin Private School Teacher Savings Cooperative Limited would increase their input usage such as assets, debts, capital, expenditures, and operation capitals respectively. The 9 savings cooperatives efficiency score in Kalasin province of Thailand showed in figure 2 below.

**Figure 4.2** The 9 savings cooperatives' efficiency scores in Kalasin province, Thailand



#### 4.5 Conclusion

In Thailand, Small and medium-sized firms (or SMEs) are important components of the supporting industries. Thai SMEs have evolved in

response to national development objectives and the global economy. Financial support as funds for SMEs startup is very crucial for SMEs entrepreneurs. SMEs) operations in Thailand required the source of funds for their operations. There were many types of financial instructions to help SMEs as loan providers. One of them is savings cooperatives especially in the rural area like Kalasin located in the Northeast of Thailand. With the main objective of savings cooperatives, it is set up to help deal with members' socio-economic problems. It is a type of financial institution promoting savings as well as providing loans, using principles of self-help and mutual help. The Measurement Savings Cooperatives Performance Efficiency as the Source of Funds for SMEs in Kalasin, Thailand emerged as the main source of Funds for SMEs. With the DEA measurement efficiency score, it found that there were 6 out of 9 savings cooperatives in Kalasin province performed their own business as loan providers for SMEs with their efficiency. There were 3 out of 9 savings cooperatives performed their own business with inefficiency. They had to improve themselves to meet their efficiency. The savings cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise and its operations as the source of funds for SMEs in Thailand.

### **Acknowledgement**

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# 5

## **Do Management Accountants Need to Consider Gender in Supporting Decision-Making?**

*Björn Baltzer*

### **5.1 The Importance of Decision Support for the Work of Management Accountants**

The work of management accountants typically covers – irrespective of the country they work in – a broad range of tasks (Stoffel 1995, p. 159). Supporting managers throughout the decision-making process is always a crucial part of their work, as can be seen from the following exemplary role descriptions. The Chartered Institute of Management Accountants, which mainly represents English-speaking countries, states that “Managerial Accountants are trusted to guide critical business decisions” (CIMA, 2011, p. 2). The International Group of Controlling, which mainly represents German-speaking countries, states that management accountants “design and accompany the management process [...] so that every decision maker can act in accordance with agreed objectives” and that management accountants need to “provide decision-relevant information” (IGC, 2013).

As a consequence, management accountants are involved – among other things – in the following important tasks:

- Defining the goals of the organization and making sure that the managers’ goals are aligned with them.
- Identifying and evaluating the decision alternatives.
- Preventing cognitive biases of the decision-makers.

- Controlling the implementation of the decisions.

The objective of this decision support function is to improve the quality of management decisions so that the goals of the organization can be achieved to a greater extent (Vanini, 2009, p. 20). Management accountants provide decision support to managers concerning both strategic and operational decisions (Rieg, 2020, pp. 16-17).

In order to fulfill the decision support function, management accountants need to understand how managers make decisions. This is not trivial because as we will see in the next chapter, more than one decision-making style exists, i. e. different managers might approach the same decision situation differently. Keeping in mind that the goal of the decision support function is to improve decision quality, the importance of management accountants knowing about managers' decision-making styles becomes obvious with the claim that some decision-making styles are considered to be beneficial for decision quality, while others are considered to be neutral or even disadvantageous (Fischer, Soyez & Gurtner, 2015, p. 525).

## **5.2 Modelling Decision-Making Styles**

The idea of the existence of different decision-making styles originates from the analysis of career decisions in the late 1970s (Harren, 1979). Since then, the concept of decision-making-styles has been generalized and applied to various disciplines, among them business administration.

A decision-making style can be defined “as the learned, habitual response pattern exhibited by an individual when confronted with a decision situation” (Scott & Bruce, 1995, p. 820). Decomposing this definition leads to the following important remarks:

- The response pattern to the decision situation encompasses the perception of the decision situation, the processing of information as well as the final making of the decision.
- A decision-making style is a learned habit and not a congenital trait of personality. It might change over time with increasing age and experience and might be influenced by the social and cultural surroundings that the individual is exposed to.
- Decision-making styles are discussed on the level of individuals. At the same time, group decisions will be influenced by the decision-making styles of the group members.

- The concrete decision situation can influence the individual's response. For example, an individual might use a different decision-making style for operational decisions as opposed to strategic decisions. This also means that individuals do not exclusively use just one decision-making style. While every individual will prefer one primary decision-making style, he or she can switch to backup styles if the situation requires. The inclination to use different styles varies between individuals (Kerner, 2018, p. 156)

While there seems to be a common understanding concerning the concept of decision-making styles itself, various models have been developed over time that differ concerning the number and names of actual decision-making styles. Among the different models, the one developed by Scott & Bruce (1995) is considered to be the best known model (Wolf, 2019, p. 99) and the most widely used model in research (Fischer, Soyez & Gurtner, 2015, p. 525). For this reason, it was used in the survey whose results will be presented in the next chapter. Due to its broad applicability, it is typically referred to as the General Decision-Making Styles (GDMS) model. The reliability and validity of the GDMS model has been scrutinized and confirmed by other researchers (Spicer & Sadler-Smith, 2005).

The GDMS model distinguishes five decision-making styles, that can be briefly explained as follows (Fischer, Soyez & Gurtner, 2015, p. 526):

- Rational decision-making style: Thorough search for information and logical evaluation of optional alternatives. Analytic, sequential information processing and systematic appraisal.
- Dependant decision-making style: Extensive advice seeking, consulting, and directions from relevant others.
- Intuitive decision-making style: Simultaneous information processing and strong reliance on emotions, presentiments, hunches, and gut feelings.
- Avoidant decision-making style: Attempt to escape the decision situation by avoiding or delaying the decision.
- Spontaneous decision-making style: Sense of immediacy and desire to finish the decision process as quickly as possible.

As explained above, important factors that are expected to influence the decision-making style that individuals employ and that are therefore tested in empirical research are:

- age/work experience
- country of origin/culture
- type of decision situation

Another possible influencing factor is gender. This is a special case, because on the one hand, gender is a congenital trait that is (normally) constant over lifetime. On the other hand, an individual's gender might determine the cultural and social influences that the individual is exposed to. The survey results presented in the following chapter will therefore focus on the influence of gender. For an analysis of the influence of the other factors mentioned above, please see Baltzer (2022).

### **5.3 Testing Decision-Making Styles for Gender Differences**

The survey was conducted in summer 2022 with undergraduate students of business administration at a German University of Applied Sciences. This follows the logic that many of today's business students will become business managers in the near future (Ding et al., 2020, p. 352).

The survey was integrated into a third-year lecture on management. The survey was performed as an online questionnaire during class and participation was voluntary. To reduce the influence of social desirability on answers, only a very brief introduction to the survey topic was given beforehand. The topic of decision-making styles was explained in detail only in the following lecture, together with presenting the survey results.

The survey results are based on a corrected data base of 67 respondents. In order to ensure a homogeneous data base, all respondents needed to confirm that they are students of business administration, that they had spent most or all of their youth in Germany and that they possess the German nationality.

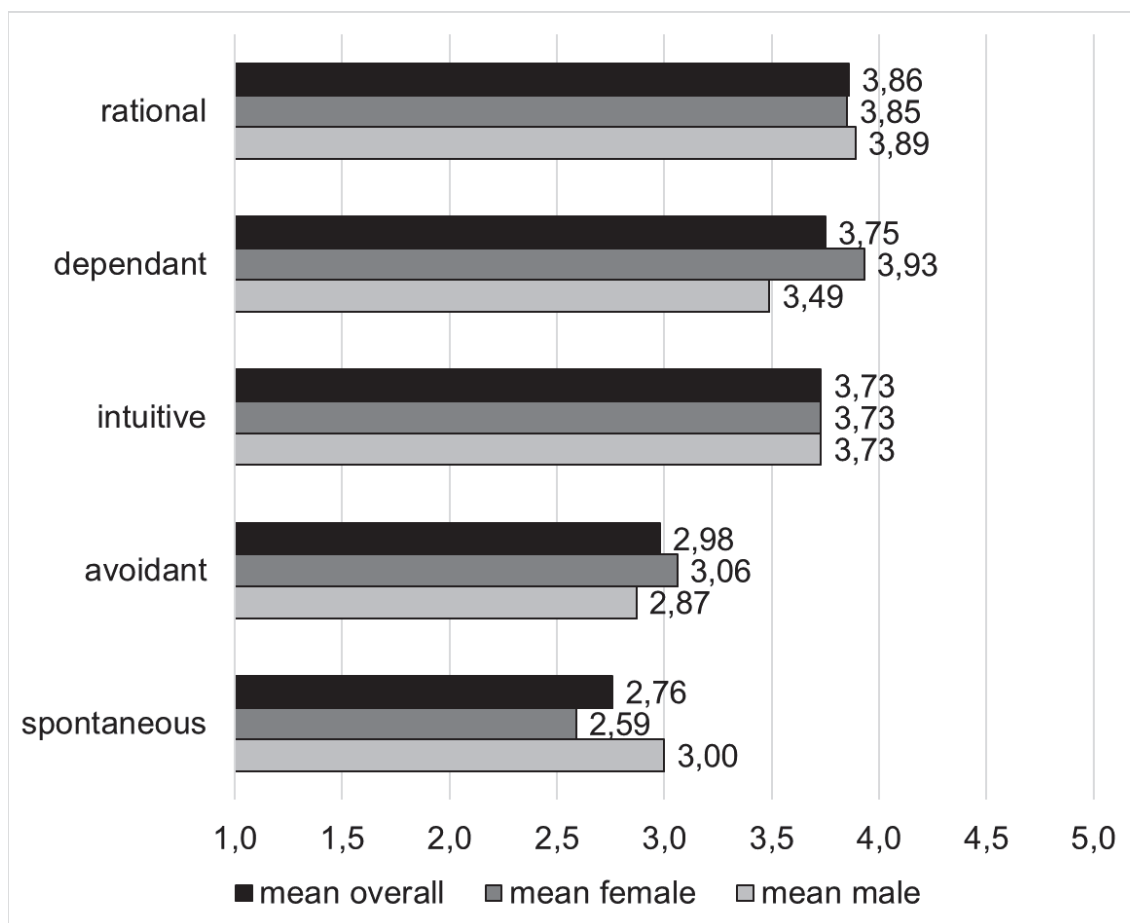
As the lecture was given in German language, the statements of the GDMS model needed to be translated into German. The translation was based on the original statements used by Scott & Bruce (1995, pp. 825-826), with five statements for each of the five decision-making styles. The translation was done by the author of this article and was then checked by a university lecturer for English language (for similar procedures, cf. Fischer, Soyez & Gurtner, 2015, p. 526 and Ding et al., 2020, p. 354). Afterwards, the questionnaire was pre-tested with several fourth-year business students to ensure understandability.

The five-point rating scale ranging from full disagreement (1) to full agreement (5) proposed by Scott & Bruce (1995) was used and the statements were aggregated to the decision-making styles using the Likert-method. The results can be seen from table 1, sorted by means in descending order.

**Table 5.1** Importance of decisions-making styles

Decision-Making Style	mean	standard deviation
rational	3,86	0,54
dependant	3,75	0,70
intuitive	3,73	0,57
avoidant	2,98	1,10
spontaneous	2,76	0,71

**Figure 5.1** Importance of decision-making styles by gender



The rational is the dominant decision-making style, showing both the highest mean and the lowest standard deviation. The dependant

and the intuitive styles are the two most important backup styles, with similar means and only a slightly higher standard deviation for the dependant style. The relevance of the avoidant and the spontaneous styles clearly falls behind, with the spontaneous style showing the smallest mean, but the avoidant style showing the highest standard deviation.

Among the 67 respondents, 40 respondents (60 %) indicated female gender and 27 respondents (40 %) indicated male gender. Figure 1 compares the overall means to the female means and to the male means, sorted again by overall means in descending order.

For the rational and the intuitive styles, there is almost no variation in means, and the same is true for the standard deviations (rational: female 0,53 vs. male 0,57; intuitive: female 0,59 vs. male 0,56). The avoidant style is slightly more important for females than for males, and also the standard deviation is slightly lower for females (1,05) than for males (1,18). For the dependant and the spontaneous styles, gender differences are larger, however: While the dependant style is also more popular with females than with males, the opposite is true for the spontaneous style. In both cases, however, standard deviations are very similar again (dependant: female 0,69 vs. male 0,64; spontaneous: female 0,67 vs. male 0,71).

As a consequence, the preference ranking of the decision-making styles is different for females and males, as can be seen from Table 2.

**Table 5.2** Preference raking of decision-making styles by gender

Decision-Making Style	rank overall	rank female	rank male
rational	1	2	1
dependant	2	1	3
intuitive	3	3	2
avoidant	4	4	5
spontaneous	5	5	4

While for females, only the rational and the dependant styles change ranks, only the rational style stays in first place for males and all the other styles change ranks. Altogether, the results of this survey suggest that gender does have an influence on the preference for



decision-making styles. Those findings can be compared with the results from previous, similar studies.

Spicer & Sadler-Smith (2005, p. 141) performed two surveys with undergraduate students of business administration at two universities in the UK, but did not find gender to be a significant influencing factor on decision-making styles.

Ding et al. (2020, p. 355) performed a survey with Chinese undergraduate students of business administration. They found that males employ the intuitive style significantly stronger than females do, while females employ the dependant style significantly stronger than males do. For the rational, the avoidant and the spontaneous styles, no significant gender differences were identified. Their results are thus in line with the findings of the current study concerning the rational, the dependant and avoidant styles, but not for the intuitive and the spontaneous styles.

Kerner (2018, p. 342) performed her survey not with undergraduate students of business administration, but with MBA students at several universities in Germany, Taiwan, France and the US. As opposed to undergraduate business students, students that seek the Master of Business Administration degree need to have work experience and are therefore on average older. She found that males employ the rational style significantly stronger than females, while females employ the spontaneous style significantly stronger than males. For the intuitive, the dependant and the avoidant styles, no significant gender differences were identified. Her results are thus in line with the findings of the current study concerning the intuitive and the avoidant styles, but not for the rational, the dependant and the spontaneous styles.

#### **4.4 Conclusion**

While the results of the different surveys do not show a clear picture in which direction gender influences the preference for the different decision-making styles, the overall picture still suggests that gender needs to be considered as an influencing factor. It cannot be assumed that females and males share the same preferences for decision-making styles. As a consequence, they might approach the same decision situation in different ways.

This is a meaningful insight for management accountants. When

performing the various activities that are needed to fulfill the decision support function, they need to be aware that female decision-makers might need support in different ways than male decision-makers. Hence, management accountants should adapt their support activities accordingly, for example by employing different debiasing techniques.

Selected results of a survey were presented and discussed in the previous chapter. There are several limitations to this survey, however, that need to be kept in mind when interpreting these results. First, the number of participants in the study was rather small, and they were all students of just one German university. Therefore, it cannot be assumed that the findings can be generalized. Second, although the German translation of the statements of the GDMS model was done to the best of our knowledge, every translation entails the risk that subtleties are lost. This needs to be kept in mind when interpreting the results of this study with the results of studies from other countries. Related to this is the problem that comparisons with studies from other countries are subject to cultural influences, i. e. gender effects and cultural effects might overlap.

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# 6

## **Economic Aspects as the Fundament of Commercial Law: An Outline Based on Warranty Claims within a Supply Chain**

*Artur R. Fabisch*

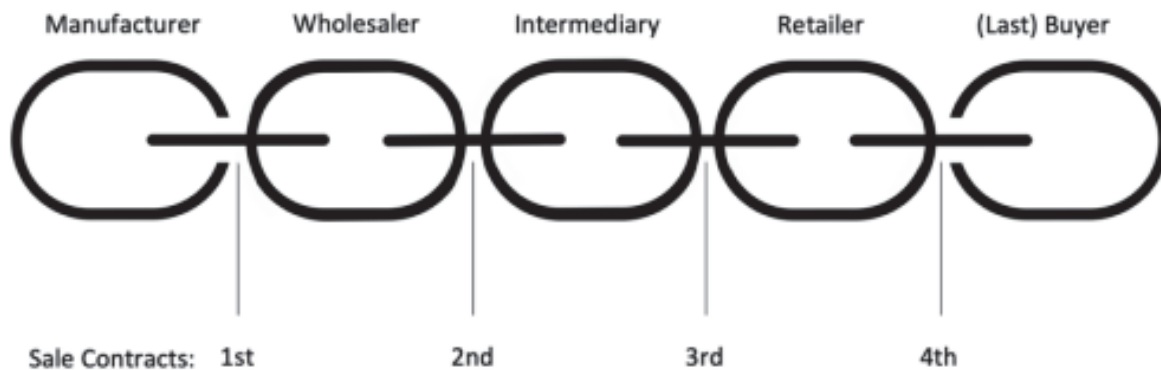
### **6.1 Introduction**

The law imposes certain obligations on the parties involved in a legal transaction. The obligations of one party are accompanied by the rights of the other party. In the context of warranty rights, obligations and rights based on certain defects can reach the point where a previously profitable legal transaction ultimately proves uneconomical for a stakeholder. This is particularly the case if the seller delivers a defective item which is installed in another item. This occurred in the decisions to be discussed here, which have far-reaching consequences for the seller's liability and thus ultimately also for their price calculation. For example, if defective tiles are sold and then installed, the question arises as to who is liable for the removal of the defective tiles and the installation of the new tiles. Both positions are relevant as neither of them would have incurred without the poor performance, i.e. the defect. This question becomes exceptionally relevant if the removal and installation costs are considerably higher than the sale price of the tiles and the sale is not made by the manufacturer but via suppliers, i.e. in a supply chain.

From a legal point of view, it must be clarified to what extent the manufacturer, who is responsible for the defect and thus also for the defect-related removal and installation costs, must bear these costs. In turn, this question can be clarified from an economic point of view.

A pass-through claim of the buyer who installs the product (last buyer) against the manufacturer then becomes relevant.

**Figure 6.1** Structure of a sales contract



The actual issue of a pass-through liability in favour of the last buyer results, at least under the German law, from the fact that the manufacturers only have to compensate for a damage if they have violated an absolute (legal) interests, such as property. For any pecuniary loss, the removal and installation costs are considered as such, liability is generally only achievable on the basis of a contract (cp. Bien, 645 et seq.). Within the supply chain however, a contract exists only between the last buyer and his contractual partner, the last seller. A contractual relationship between the manufacturer and the last buyer is almost never present.

The purpose of this analysis is to demonstrate the approach taken by European law for cases as just outlined, which applies in all EU member states. The member states must implement this supranational law and thus incorporate it into their own legal systems. They may not fall below the minimum standards of the European law, but at the same time are free to grant the buyer more rights. This is justified in particular by consumer protection, which the European law aims to strengthen. At the same time, the regulations made in Germany in addition to B2C also cover B2B contracts, for which the legislator is aiming for a uniform application of the law.

Knowledge of what is discussed in this article and the associated liability regime is essential for manufacturing companies. This knowledge ultimately determines whether the risks associated with the sale will lead to liability that the selling company has not priced in and consequently to an economic (pecuniary) loss this company may

have to suffer.

## **6.2 Judgment of the European Court of Justice in Weber/Putz**

The question of the last buyer's claim against the last seller for reimbursement of removal and installation costs was essentially answered by the European Court of Justice (ECJ) in the Weber/Putz judgment (Judgment of the Court (First Chamber) of 16 June 2011. Gebr. Weber GmbH v Jürgen Wittmer (C-65/09) and Ingrid Putz v Medianess Electronics GmbH (C-87/09); European Court Reports 2011 I-05257; regarding the term "installation" cp. Höpfner and Fallmann, 3745 et. seq. and Hübner, 233). Based on this decision, which is outlined below, the German legislator has massively strengthened the rights of the buyer by amending the law.

In this decision, the question was whether the last seller who delivers a defective item that is typically installed in another item is then liable for the necessary removal of the defective item and the installation of the defect-free item. Neither of these damage-positions would have been incurred if the supplier had delivered a defect-free item, as he is obligated to do by law. Until this judgment, the existence of a claim for removal and installation costs was not explicitly provided for in European law or the German Civil Code (BGB). The paramount argument of the seller was that they cannot be obligated to do something that they do not owe and that it is the manufacturer to be held responsible (*ibid* marg. no. 41. Confirming: German, Belgian and Austrian Government.). Simultaneously, the seller is indisputably obliged to the delivery of a defect-free item or the removal of the defect. These claims, arising from the seller's obligation to provide cure in the case of a defect of the delivered item (§ 437 no. 1 and § 439 para. 1 BGB), were not in dispute in either Weber or Putz case.

### **6.2.1 The Weber Judgement**

Mr. Wittmer and Weber concluded a contract of sale in respect of polished tiles at a price of EUR 1,382.27. After having had about two thirds of the tiles laid in his house, Mr. Wittmer noticed that there was shading on the tiles which was visible to the naked eye (*ibid*. Regarding the preceding judgements of the German Federal Supreme Court, cp. Wagner, 94 et seq.).



Consequently, Mr. Wittmer submitted a complaint, which Weber rejected after consulting the manufacturer of the tiles. In an independent procedure for taking evidence instituted by the claimant, the appointed expert concluded that the shadings were fine micro-brush-marks which could not be removed, so that the only remedy possible was the complete replacement of the tiles. The expert estimated the cost of this at EUR 5,830.57.

In the absence of a response to his notice addressed to Weber, Mr. Wittmer brought an action before the German Regional Court against Weber for delivery of tiles free of defect and payment of EUR 5,830.57. That court ordered Weber to pay Mr. Wittmer EUR 273.10, as a reduction of the sales price, and dismissed the action as to the remainder. On appeal against the decision the German Higher Regional Court ordered Weber to deliver a new set of tiles free from defects and to pay Mr. Wittmer EUR 2,122.37 for removing and disposing of the defective tiles and dismissed the action as to the remainder.

Weber appealed on a point of law against the judgment of the Federal Court of Justice, which states that its judgment will depend on whether the appellate court was right to find that Mr. Wittmer could seek reimbursement of the cost of removing the defective tiles. Since Mr. Wittmer could not claim such reimbursement under German law, the answer to that question depends on the interpretation of Article 3(2) and the third subparagraph of Article 3(3) of the EU Directive, in accordance with which § 439 of the BGB should, if appropriate, be interpreted.

The *Bundesgerichtshof* (Federal Supreme Court is the highest court that has jurisdiction in civil matters) observes in that regard that the use of the term 'replacement' in Article 3(2) of the Directive may imply the existence of an obligation not just to deliver goods in conformity with the contract of sale, but also to replace the defective goods and therefore to remove them. Furthermore, the obligation to take account of the nature and the purpose of the goods, laid down in Article 3(3), combined with the obligation to bring the goods into conformity, could suggest that the obligation on the seller to replace the goods includes not only the delivery of goods in conformity, but also the removal of the defective goods to allow the use of the replacement goods in a manner consistent with their nature and purpose.

The *Bundesgerichtshof* notes that it would however not be

necessary to answer that question if Weber were entitled to refuse to reimburse the cost of removing the tiles which were not in conformity because the cost is disproportionate. That court states that, under § 439 para. 3 of the BGB, the seller may refuse the type of subsequent performance chosen by the buyer not only where that type of performance would result in disproportionate cost in comparison to the alternative type of performance ('relative lack of proportionality'), but also where the cost of the method chosen by the buyer, even if it is the only method possible, is inherently disproportionate ('absolute lack of proportionality'). In the present case, the request for subsequent performance by delivery of tiles free from defects is such a case of 'absolute lack of proportionality', since it would oblige Weber to pay, in addition to the cost of the delivery, assessed at EUR 1,200, the cost of removing the defective tiles of EUR 2,100, a total of EUR 3,300, exceeding the threshold of 150% of the value of the goods free from defects, on the basis of which the proportionality of such a request is a priori evaluated.

### **6.2.2 The Putz Judgement**

In the Putz case Ms. Putz and Medianess Electronics concluded a sales contract for a new dishwasher for the price of EUR 367 plus payment-on-delivery costs of EUR 9.52. The parties agreed on delivery to the door of Ms. Putz's house. The delivery of the dishwasher and the payment of the price took place as agreed (Judgment of the European Court of Justice, marg. no. 41). After Ms. Putz had the dishwasher installed in her house, a defect, which was not attributable to the installation of the machine and could not be repaired, became apparent.

The parties then agreed on the replacement of the dishwasher. In this context, Ms. Putz demanded that Medianess Electronics not only deliver a new dishwasher, but also that it remove the defective machine and install the replacement machine or that it pay the costs of removal and new installation, which Medianess Electronics refused. Since Medianess Electronics failed to respond to the notice which she had addressed to it, Ms. Putz rescinded the contract of sale.

### **6.2.3 Argumentation of the ECJ**

On those grounds, the European Court decided as follows (ibid): Article 3(2) and (3) of Directive 1999/44/EC of the European Parliament and of the Council of 25 May 1999 on certain aspects of

the sale of consumer goods and associated guarantees (the directive 1999/44/EC regulates in particular the concept of defect under the sales law, the rights of the buyer in the case of delivery of defective goods, with the exception of the claim for damages and recourse within the sales chain back to the manufacturer. These rights may not be waived to the detriment of the consumer-purchaser. At the same time, the directive only binds the member states in the sense of a minimum standard, which the member states may not fall below. Cp. Wagner, 88) must be interpreted as meaning that, where consumer goods not in conformity with the contract which were installed in good faith by the consumer in a manner consistent with their nature and purpose, before the defect became apparent, are restored to conformity by way of replacement, the seller is obliged either to remove the goods from where they were installed and to install the replacement goods there or else to bear the cost of that removal and installation of the replacement goods. That obligation on the seller exists regardless of whether he was obliged under the contract of sale to install the consumer goods originally purchased.

Article 3(3) of Directive 1999/44/EC must be interpreted as precluding national legislation from granting the seller the right to refuse to replace goods not in conformity, as the only remedy possible, on the ground that, because of the obligation to remove the goods from where they were installed and to install the replacement goods there, replacement imposes costs on him which are disproportionate with regard to the value that the goods would have if there were no lack of conformity and the significance of the lack of conformity. That provision does not, however, preclude the consumer's right to reimbursement of the cost of removing the defective goods and of installing the replacement goods from being limited, in such a case, to the payment by the seller of a proportionate amount.

#### **6.2.4 Common Grounds of Both Decisions**

In both cases, the buyers had bought goods (floor tiles and a dishwasher respectively) which were delivered and installed in their homes before they turned out to be defective. In both cases, the seller merely owed the delivery of the goods, and the removal of the defective goods and the re-installation of new goods were considerably more expensive than the value of the tiles and the

dishwasher themselves. As repair in both cases was not possible, neither of the sellers objected to their duty to deliver again and free of charge. However, in the cases at hand, the buyers claimed additional reimbursement of the costs of removal and installation (Weber) and the complete restitution of the contractual price after rescission (Putz) from the sellers.

In summary, the ECJ ruled that the seller is liable for the costs of the installation as well as the removal, but also that these costs can be limited to a reasonable amount (Judgment of the European Court of Justice, marg. no. 64, 74 and 78).

This was justified on the basis of the objective of the European law: the underlying directive aims to protect the consumer from adverse financial consequences of a defective performance, which is why the consumer must be placed in the position he would have been in if the contract had been properly performed (Judgment of the European Court of Justice, marg. no. 42, 44 et seq.). The ECJ rejected the seller's argument that he had not promised installation and removal by considering that the seller could be obliged to do more by way of cure than he had originally promised (Judgment of the European Court of Justice, marg. no. 42. Confirming: Spain and Poland as well as the European Commission). This is based on the consideration that the seller has contractually assumed the obligation to deliver goods in conformity with the contract within the framework of the purchase agreement and must therefore bear the consequences of poor performance (Judgment of the European Court of Justice, marg. no.42 and 56).

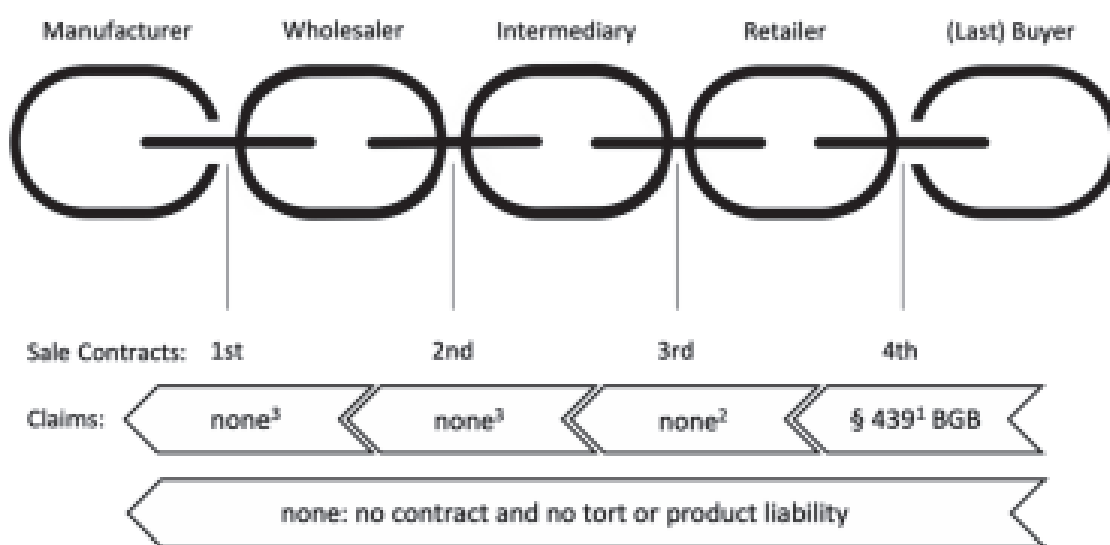
These principles should only apply if the consumer acquired the goods in good faith, i.e. before the defect occurred, and installed them in accordance with their intended use (Judgment of the European Court of Justice, marg. no. 56, 62, 76. See also Maultzsch, ZfPW 2018, 6 et seq.; Höpfner and Fallmann, 3747 and Hübner, 243).

### **6.3 Externalization of Costs as a Consequence of the Weber/Putz Judgment**

It would now be factually correct to assume that the last seller of the defective items could demand compensation from his supplier (claim along the supply chain). The latter has placed defective goods on the market, which have been resold and installed, thus incurring the removal and installation costs. If one goes further in the supply chain,

it can be expected that the supplier can then claim against his supplier, whereby finally the manufacturer of the defective goods has to compensate the damage suffered by the own contractual partner. This adequate outcome is based on the fact that the manufacturer, who is obliged to deliver defect-free goods, has produced defective goods and thus they put defective goods on the market in breach of a contractual duty. However, this was not the case under the German law in force at the time of the Weber/Putz decision.

**Figure 6.2** Structure of a sales contract and its operation



1. Claim granted for the first time based on the Weber/Putz judgment.
2. Retailer suffered a damage: Costs of the reimbursement (for removal and installation) claimed by the last buyer. He however can only claim for damage against the intermediary if the intermediary acted responsibly (negligently or intentionally) or if responsibility can be attributed. Neither of these was present.
3. No damage-claim of the intermediary and wholesaler against the own seller, as neither of them has suffered a damage.

Contractual claims were excluded: The last seller suffered a pecuniary loss, i.e. damage. This corresponds to the removal and installation costs which he must reimburse to the last buyer (the case law described here refers to industrially manufactured mass-produced articles, which were also relevant in the Weber/Putz judgment). He however could only assert a corresponding claim for damages against his supplier if the latter had acted with fault, i.e. negligently or intentionally. However, the supplier, who is usually an intermediary, has neither an obligation to inspect (permanent



jurisprudence, cp. BGH 25.9. 1968 – VIII ZR 108/66, NJW 1968, 2238, 2239; BGH 16.3. 1977 – VIII ZR 283/75, NJW 1977, 1055, 1056; cp. also Wagner, 103) nor can the manufacturer's fault be attributed to him (permanent jurisprudence, cp. BGH 2.4.2014 – VIII ZR 46/13, BGHZ 200, 337 Rn. 31; BGH – VIII ZR 211/07, BGHZ 177, 224 marg. no. 29. See also BGH 25.9.1968 – VIII ZR 108/66, NJW 1968, 2238, 2239; BGH 14.1.2009 – VIII ZR 70/08, NJW 2009, 1660 marg. no. 11. See also Bien, 652 and Wagner, 103 et seq. Other opinion Schroeter, 497). Consequently, there was no fault on his part and therefore no liability.

The manufacturer, in turn, is also not held liable for the damage. His recipient did not install the goods, but merely resold them and thus did not suffer any damage (cp. also Wagner, 104). The manufacturer is also not liable to the last seller, as there is no contractual relationship between these parties (*ibid*). Likewise, tortious claims, i.e. claims that do not require a contractual legal relationship between the claimant and the defendant, were not relevant: Tortious or product liability will not apply because it only covers the infringement of absolute legal interests, such as property (*ibid*). It therefore does not cover the pure pecuniary loss that is present here (*ibid*).

The (old) law therefore had the effect of externalizing costs at the expense of the last seller and thus remained in favour of the manufacturer (*ibid*). As a result, the (last) seller who was aware of the Weber/Putz judgment priced in the potential costs of removal and installation incurred in the event of a defect and consequently passed the additional costs onto his buyer. As expected, the product intended for installation became more expensive within the last link of the chain. At the same time, the manufacturer saw little economic incentive to deliver defect-free products through a more careful production or to intensive quality controls (cp. Shavell, 48 et seq. and Wagner, 105).

#### **6.4 Internalization of Costs as a Consequence of the Economic Approach**

The above discussed externalization of costs-approach was criticised, especially as the wrong incentives were set. This eventually led to an amendment of the law.

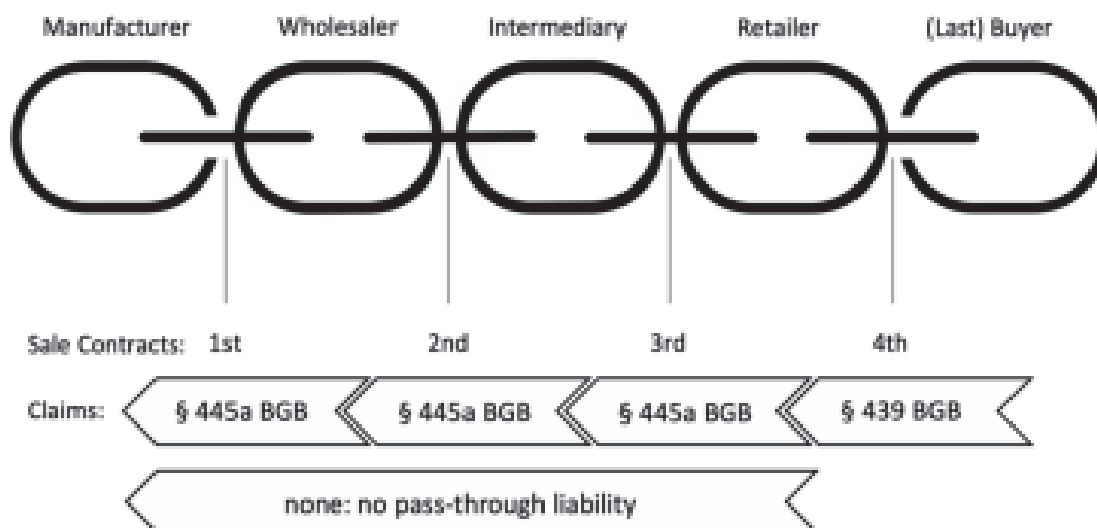


### 6.4.1 Implementation of EU Requirements in the German Civil Code

The German legislator has recognized the problems just presented and the consumer-friendly approach and has adapted the law accordingly. On the basis of the directive 1999/44/EC and the Weber/Putz judgment, the legislator has implemented the European guidelines in the currently applicable § 439 para. 3 of the German Civil Code as follows:

If the buyer has installed the defective item in another item or attached it to another item in accordance with its type and intended use before the defect became apparent, the seller shall be obligated within the scope of subsequent performance (cure) to reimburse the buyer for the necessary expenses for removing the defective item and installing or attaching the repaired or delivered defect-free item (on the necessity of the expenses, cf. Maultzsch, ZfPW 2018, 12 et seq. and Hübner, 242).

**Figure 6.3** Structure of a sales contract and its operation – An example



4. Claim granted for the first time based on the Weber/Putz judgment.
5. Retailer suffered a damage: Costs of the reimbursement (for removal and installation) claimed by the last buyer. He however can only claim for damage against the intermediary if the intermediary acted responsibly (negligently or intentionally) or if responsibility can be attributed. Neither of these was present.
6. No damage-claim of the intermediary and wholesaler against the own seller, as neither of them has suffered a damage.

The German legislator could counteract the externalization of costs by creating a new provision which has been incorporated into the German Civil Code. This provision allows the costs of installation and removal to be passed on to the next link in the supply chain. § 445a BGB regulates the following (this section is based on Article 4 of the directive 1999/44/EC which regulates the right of redress by stating: Where the final seller is liable to the consumer because of a lack of conformity resulting from an act or omission by the producer, a previous seller in the same chain of contracts or any other intermediary, the final seller shall be entitled to pursue remedies against the person or persons liable in the contractual chain. the person or persons liable against whom the final seller may pursue remedies, together with the relevant actions and conditions of exercise, shall be determined by national law. In Germany the regulation came into force on 1.1.2018 and was amended as of 1.1.2022):

(1) In the event of the sale of a newly manufactured item, the seller may claim from the seller who sold him the item (supplier) reimbursement of the expenses which he had to bear in relation to the buyer in accordance with § 439 para. 3 (...) if the defect asserted by the buyer was already present at the time of the transfer of risk to the seller (...). ...

(3) Paragraph 1 (...) shall apply *mutatis mutandis* to the claims of the supplier and the other buyers in the supply chain against the respective sellers if the debtors are entrepreneurs.

### **6.4.2 Economic Analysis of the New Law**

Based on the fact that the rights that a party has to grant to the other must be paid for, neither the courts nor the legislator can allocate resources in a binding way between them as long as they are free to agree on performance and consideration (cp. Wagner, 102).

With the introduction of § 445a BGB the manufacturer will instantly need to take into account in pricing the risk associated with the defect of an item and consequently will have to bear the costs of the removal and installation. The price thus will increase by the margin reflecting the expected costs of the removal and the installation (*ibid*).

It can consequently be assumed that the protection of the last

buyer discussed here will already be taken into account and passed on in terms of costs within the first link of the sales chain and will accordingly lead to rising prices. The rights to be granted will thus be priced in on the part of the profit-oriented manufacturer, who will take the costs of the warranty into account. As the damage avoidance costs are lowest for the manufacturer, this approach, which is now also legally anchored, proves itself in the overall view and leads to appropriate results.

According to the "cheapest cost avoider" approach, it can be assumed that the manufacturer is in a much better position to oversee and assess the risk of delivery of a defective product than his contractual partner, since he regulates the production process and is thus the only one in control of the supply chain (regarding cheapest cost avoider cp. Schäfer and Ott, 479 et seq. and Bien, 656). In particular, the manufacturer can inspect the produced and unpackaged goods at low cost and thus immediately sort out defective products by means of quality controls based on his know-how and with the help of the available technology required for this purpose (economy of scale, cp. Bien, 656 et seq.). No other link in the chain can do this more cost-effectively than he can.

From a legal point of view, the costs of removal and installation are passed on to the manufacturer, so that he bears the final costs if his product proves to be defective (Maultzsch, ZfPW 2018, 22 et seq.): Because of the damage that the last seller has to bear towards his buyer by reimbursing the removal and installation costs, the last seller will turn to his supplier, who in turn will do this to the next link in the supply chain, finally the manufacturer. Since the manufacturer now has to bear - internalize - the removal and installation costs caused by placing the defective goods on the market, he has an incentive to avoid them by taking due diligence measures (Lorenz, 2243 and Maultzsch, GPR 2011, 253, 256); provided that the costs of the due diligence measures are lower than the disadvantages caused by the defective performance for the final buyer, which are passed on to him within the supply chain (cp. Wagner, 102).

If only the expected value of the installation and removal costs is priced in, this should cause the price to increase the least due to the scaling effect (Bien, 644). In particular, the cost increase should be lower than in the case of externalization.

At first glance, this pricing may be only partially advantageous for the last buyer. However, it undoubtedly is, provided that the benefit

he derives from the scheme is greater than the cost the manufacturer has to incur to satisfy the claims before passing them on.

As a result, this should lead to an increase in the quality of products, and in addition, there should be fewer warranty cases and thus lower litigation costs for the manufacturer (ibid, 658). This development in turn has a price-reducing effect and should at least partially absorb the pricing of removal and installation costs.

The individual sellers within the chain do not experience any loss of wealth as long as the passing on of the damage in the chain is successful. In the case of insolvency of the manufacturer or of a chain link located before him, on the other hand, there will be an interruption in the settlement of claims. In this case, the passing-through of the costs will fail, and the contractual partner of the insolvent chain link will then have to finally bear the costs (the default of the contractual partner is also generally priced in). This corresponds to the general (legal) principle according to which the insolvency risk of one's own contractual partner must always be borne (for further cases of limitation of the recourse within § 445a BGB, see Maultzsch, ZfPW 2018, 24 et seq.). A pass-through liability, which would counteract this problem, is still unfamiliar to the German law (a different approach was taken by the French and Belgian law. Both legal systems allow a direct settlement between the buyer and the manufacturer, which is known as *action directe dans les chaînes de contracts*, cp. Bien, 646).

## **6.5 Summary**

According to current law, the seller is obliged to reimburse the buyer for the removal and installation costs as necessary expenses. The underlying case law and the new regulations anchored in the German Civil Code are based on the consumer-protection objective of the European directive.

It makes common sense for the manufacturer to add the removal and installation expenses to the usual warranty costs. It can therefore be assumed that the protection of every buyer within the supply chain discussed here, will be passed on in the chain in terms of costs and will consequently lead to rising prices. The serious financial losses of passing the damage on to the manufacturer, probably more than the concern for his reputation in the event of poor performance, should be an incentive for the manufacturer to produce and inspect the

produced items diligently.

From an economic point of view, the cheapest cost avoider approach has been followed. Consequently, every seller of the supply chain only has to bear the costs preliminary before passing them within the chain. He himself is hence protected from economic losses.

Further protection is provided by the fact that the last seller can invoke the statutory limitation period if the buyer fails to assert his claims in due time. In addition, he can also raise the defence of disproportionality (Judgment of the European Court of Justice, marg. no. 58; Maultzsch, *ZfPW* 2018, 14 et seq.; Höpfner and Fallmann, 3749 et seq.; Hübner, 242).

Without doubt, it is essential for all parties involved in a sales chain to know these obligations as well as rights, which are now explicitly regulated.

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# 7

## **Environmental Taxes and Sustainability in the European Union: Cases of Germany and Ireland**

*Rainer Wehner and Emin Akçaoğlu*

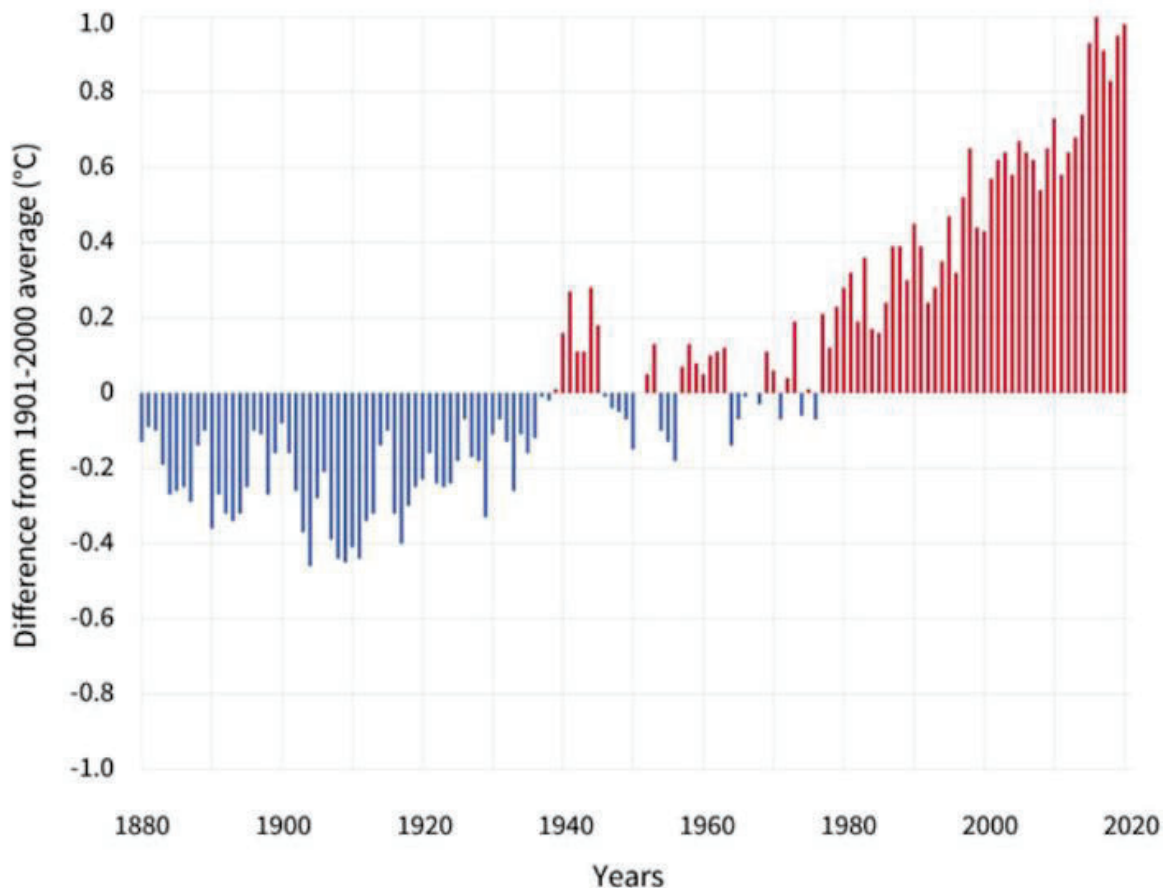
### **7.1 Introduction**

The earth has faced particularly severe environmental sustainability issues over the time. Climate change is considered one of the most important challenges nowadays (Lindsey, Dahlmann 2022).

Scientists have confirmed that global warming is mainly caused by human activity. Especially the burning of fossil fuels like coal, oil and gas causes the rise of the average global temperature. The consequences are various and from year to year more devastating. Floodings, wildfires and the aridisation of huge landscapes are just some examples that show us, how far we already went and that we cannot continue our behaviour. Besides the problem with the fossil fuels the progressive deforestation causes another big problem. As we release carbon dioxide into the atmosphere, we concurrently harm the forests, which are the best-existing natural carbon banks. On top of that the aging global population and the rapidly depleting natural sources are making sustainability more urgent than ever before. (Union of Concerned Scientists, 2021). But what can be done to convince companies as well as the public to behave in a more sustainable way. As voluntary approaches doesn't seem to work, it is the role of the governments to impose sanctions and make the people rethink about their behaviour. One of the most powerful measures of governments to steer into a particular direction are the introduction

of taxes. In this context this research paper deals with the question: Are environmental taxes suitable to foster a sustainable behaviour in the European Union and in Germany? To answer this question a literature review was conducted to get a general overview over the actual situation.

**Figure 7.1** Global average surface temperature



## 7.2 Sustainability and Environmental Taxes

Sustainability is the buzzword of the last decade. Nearly every company is advertising its products or services as sustainable, even if they are ways behind a sustainable behaviour. Therefore, the basic meaning of sustainability is explained and why governments, companies and the public have to pay more attention to this matter? In 1987 the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations 1987). Today, there are nearly 140 developing

countries worldwide who are trying to find ways to meet their development needs. Due to the increasing threat of climate change, concrete measures must be taken to make sure that the future is not negatively impacted by the present society's behaviour. Therefore, sustainability is not just related to the environment, it is a holistic approach that considers ecological, social and economic matters in the same way. (United Nations, 2005).

### **7.2.1 The Three Pillars of Sustainability**

To guarantee the balance of sustainability, it is essential to consider the three major pillars of sustainability, each depending on the other to ensure the welfare of humanity, earth, and economy on a long-term basis.

***Environmental Sustainability:*** To maintain natural resources, keep a healthy balance for the ecosystem and consequently, ensure longevity for the future, interacting with responsibility towards the planet.

***Economic Sustainability:*** To achieve long-term economic stability by taking the right business decisions while ensuring to not harm social, environmental, and cultural elements.

***Social Sustainability:*** Universal human rights and basic necessities are attainable by all people, who have access to enough resources in order to keep their families and communities healthy and secure. (McGill University, 2013, p. 2).

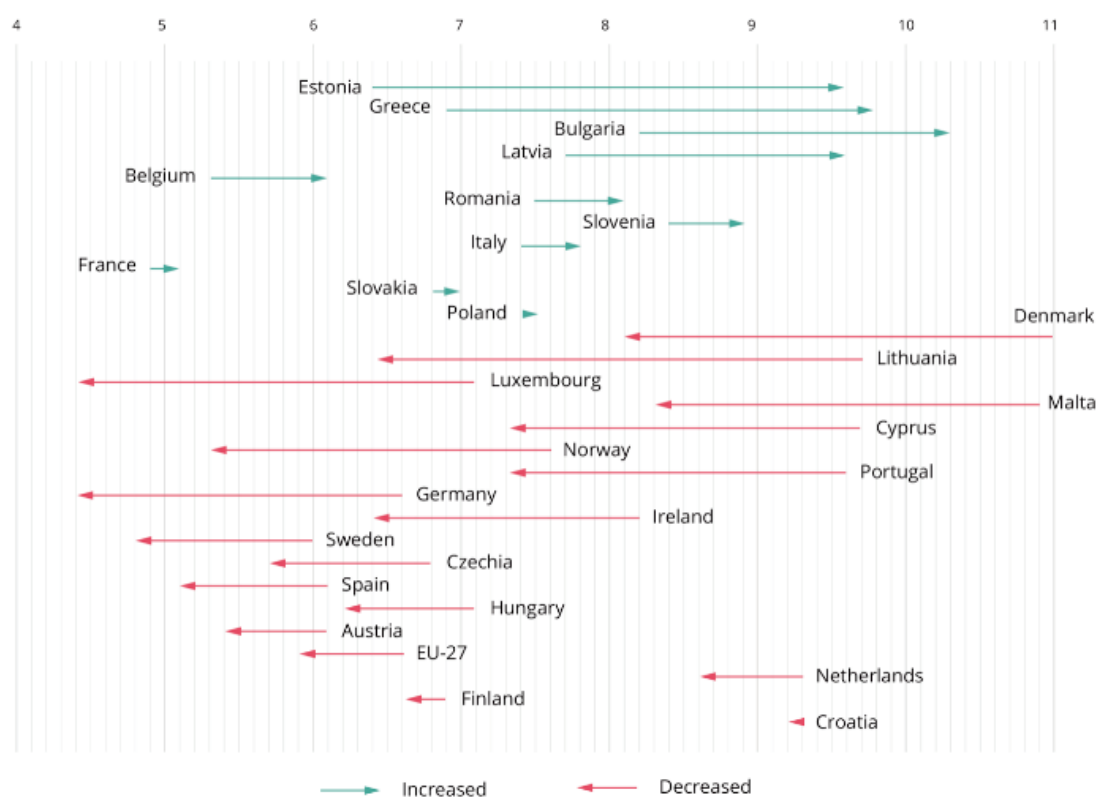
### **7.2.2 Reasons to Implement Environmental Taxes**

To achieve a more sustainable behaviour among people, companies and also governments, a change of their attitudes is necessary. If governments are convinced that things have to change they have the resources and the power to influence the behavioural change by implementing appropriate tax measures. Such a tax can work in two ways, first as a stimulus for environmentally friendly activities and second as a penalty for unsustainable actions. As a matter of fact, such implementations are inevitably affecting both citizens and businesses. Subsequently, it is necessary communicate its impact on personal income levels in a clear manner, but also allow businesses to

keep growing, generating revenue, and making investments, while to operate in an environmentally friendly manner (Bish, 2020).

In a jointly developed declaration by Eurostat, the European Commission, the Organization for Economic Cooperation and Development (OECD) and the International Energy Agency (IEA) in 1997, the group defined environmental taxes as "those whose tax base consists of a physical unit (or similar) of some material that has a negative, verified and specific impact on the environment (Iberdrola, 2022). In other words: Those who pollute have to pay, others who act responsible not. Nevertheless, the implantation of environmental taxes can also have a lot of positive effects. Besides energy saving and the use of renewable sources, they can motivate companies to innovate towards sustainability, and lastly, generating revenue for governments to carry out environmental projects. The transaction to a climate-neutral economy by 2050 and European Green Deal's goal to reach a net reduction of greenhouse gas emission by 55 percent by 2030 can be supported by generating revenues from environmental taxes (Iberdrola, 2022).

**Figure 7. 2** Trend of environmental tax revenues in EU-27, EU Member States and Norway (2002-2019). Share of environmental tax revenue including social contribution (in percent)



A study of the trends in generating environmental taxes among the 27 EU Member States (EU-27) shows, that the revenues during the last two decades increased by 18%. However, this growth was less than the increase in GDP (26%) and total tax revenues (31%). (European Environment Agency, 2022)

Between 2002 and 2019, some of the European countries have shown an increase in their share of environmental tax revenues, while others have seen a decrease. Despite demands for more environmental taxes at national, European, and global levels, execution has been very unhurried. In the EU, environmental taxes account for 5.9 percent of total taxes, less than the 6.6 percent almost 20 years ago, taking into consideration variations from country to country (European Environment Agency, 2022). Consequently, many experts in this field and international organizations such as the OECD or the European Commission criticize the lack of commitment to environmental taxation in many countries and urge them to impose environmental taxes (Iberdrola, 2022).

Related to that, the United Nations Development Programme (UNDP) has introduced the Sustainable Development Goals (SDGs), adopted by the United Nations in 2015 and integrated 17 SDGs with the intention to create a sustainable balance between social, economic, and environmental areas. Within those SDGs, the UNDP is pursuing different targets, i.e. to end poverty, protect the planet and fight discrimination.

After a closer look at the SDGs environmental taxes positively affect at least 5 of them. For example: SDG 11 - Sustainable cities and communities, SDG 12 - Responsible Consumption and production, SDG 13 - Climate action, SDG 14 - Life Below Water and SDG 15 - Life on Land (United Nations Development Programme, 2022).

### **7.3 Introducing Environmental Taxes**

In order to achieve the most efficient results from environmental taxes for sustainability, several factors need to be considered in the implementation process. Experiences in the past have shown, that poorly designed taxes can result in a reduced sustainability effect and in increased economic costs, consequently, leading to opposite effects.

First, the addressor of the tax needs to be identified. The environmental tax should be levied as directly as possible on the

person or organization that causes the damage. If the tax can be attributed directly to the polluting activity it can serve as a measurable incentive to reduce the cost and thus the tax burden. For instance, this incentive can encourage businesses to implement cleaner production processes, or to develop fewer pollution-triggering products, which can be measured according to the amount of emissions released to the environment. On top of that, specifying the tax rate on goods that fall under the same category is crucial as the intended goal is to improve sustainability (Braathen, Greene 2011, p. 4). Therefore it is very important to identify the individual goods that are subject to tax to avoid an inefficient taxation.

Designers of environmental taxes should also draw into account that the scope of the tax should cover the scope of the environmental damage. This could sometimes be difficult because of the range of the pollution. While it is unproblematic to tax the pollution of soil or a lake on a local level, the emission of greenhouse gas is a global concern that does not substantially differ from municipality to municipality, as the emissions result in atmospheric changes that influences our planet holistically. In this case, imposing a global tax would be more effective since it covers a broad range of businesses and households worldwide (Braathen, Greene, 2011, pp. 5-6).

Environmental taxes should furthermore apply uniformly. If the countries stay united and the tax is linked to the scope of pollution, there is the same incentive in every country for ablation. Furthermore, there is no sense in relocating the company to another country to avoid such taxes.

Another serious aspect of implementing environmental taxes are the structural reactions of the public, whether they are short-term or long-term. If an environmental tax should have an influence on the sustainable behaviour long-term reactions, like a change of the company's investment culture or a change in the consumers purchasing habits, have to be achieved. Changes are depending on the producers' or consumers' long-term views and expectations about prices. Thus, implementing an environmental tax to convince the public to change their behaviour in the long run, the policy must be credible. People need to trust their governments that they do the right thing by implementing such a tax. For this reason, an open communication as well as transparent, reliable information is necessary (Braathen, Greene, 2011, pp. 6-7).



After setting the tax rate, other factors need to be taken into consideration such as inflation, economic growth, society's changing preferences for sustainable protection, and the impact of future innovation on the cost of pollution reduction. Crucial is, to have a transparent process of updating tax rates, so that the public can be aware of potential determinants and the time of future modifications (Braathen, Greene, 2011, p. 7). As an example, Denmark established a system where excise taxes on environmentally related issues are transparently discussed and thus ad-hoc adjustments could be done (Jacobsen, Wier, 2001, p. 1).

**Figure 7.3** Revenues from environmentally related taxes in per cent of GDP, by tax base in 2000

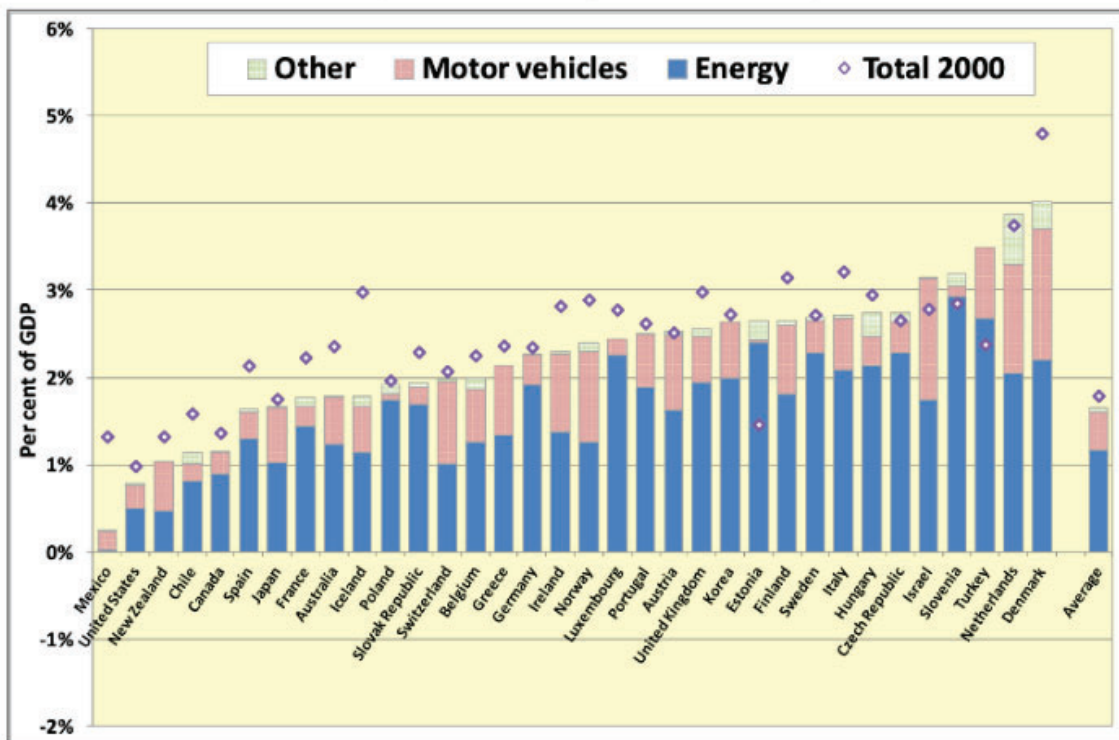


Figure 7.3 shows the percentage of environmental taxes on the GDP. All in all, in the year 2019 approximately five percent of total tax revenues in OECD countries came from environmentally related taxes. Based on that figures the costs of the environmental damage caused by the polluters cannot be covered. (Braathen, Greene, 2011, pp. 7-8). On top of that, governments are not able to spend money for alternative energy programmes and give incentives to those companies and private persons who are willing to change their

behaviour and act in a more sustainable way. As a consequence, the environmental tax rates in the countries need to be increased to generate more revenue. This money should be used directly in the affected sector, to compensate the costs of the environmental damage, to motivate the industry and the public to reduce their carbon footprint as well as investing into innovative technologies.

### **7.3.1 Utilizing the Generated Tax Revenue**

Generally, environmentally related taxes that were imposed in the past did not raise a lot of revenue for governments.

### **7.3.2 Challenges of Implementing Environmental Taxes**

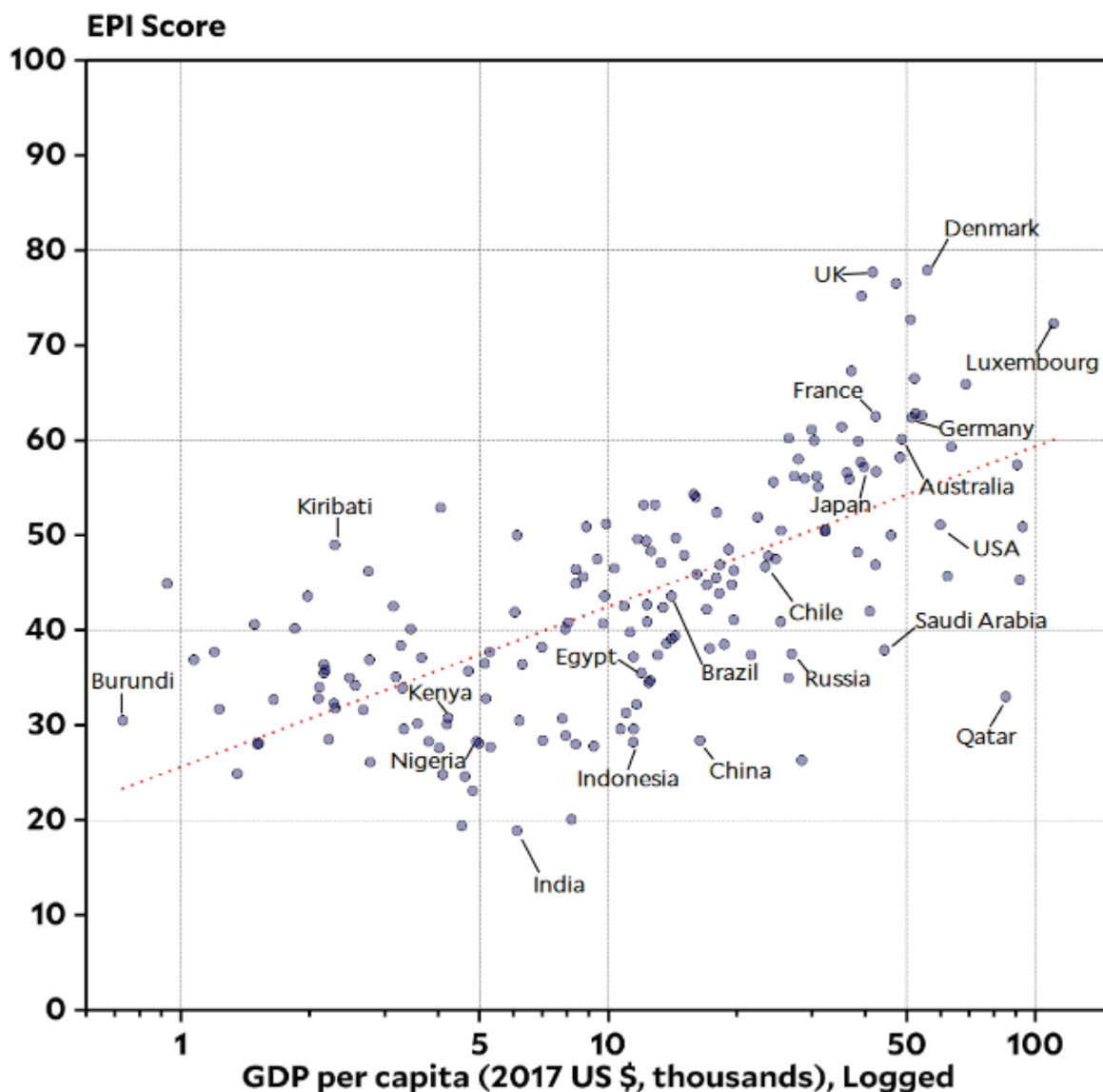
Imposing environmental related taxes can raise concerns to particular groups in the economy and the society. Thus, distributional concerns need to be addressed directly. As an example, low-income households may suffer the most from a tax increase on water or energy usage. Because of that, one of the first approaches is generally to reduce the tax burden on certain segments of society. There are different ways this can occur. One way is to exempt such households from the tax (Braathen, 2013, p. 1). Another alternative is to reduce the rate to economically depressed regions, such as the reduction of duties on natural gas for Southern Italy. Furthermore, the government might impose a progressive rate which is based on the amount consumed (Braathen, Greene, 2011, p. 9).

One of the biggest challenges is the competitiveness among businesses. The basic intention of imposing an environmental tax to companies is to make them reconsider their current production decisions and to move towards to more sustainable practices. Higher production costs however might encourage companies to relocate their production to a lower-taxed region in order stay competitive. This is the problem of the uncoordinated implementation of taxes. Some countries might use this situation as an advantage to attract such relocations. In return they accept a higher level of pollution (Braathen, Greene, 2011, p. 10).

At the end of the day the societal acceptance of environmental taxes is rising or falling with the trust against the government. Moreover, big multinationals will argue with stakeholder value and

may lobby tremendously against environmental taxes. The problem of the past, either in the companies or in the public was a lack of transparent communication and senseful actions from the governments. People had the feeling, that the money generated by environmental taxes is percolating somewhere in the household. Nevertheless, governments have a profound influence on the behavioural change by introducing fair and equitable sustainable tax measures which incentivise environmental friendly and punish environmental unfriendly behaviour (Hogan 2021).

**Figure 7.4** Environmental Performance Index score 2022 (Yale, 2022)



Taking all aspects into consideration the introduction of environmental taxes is mainly depending on a clear structure and a transparent communication. Companies and the public need to know

exactly i.e. how the revenues are generated and what the money is used for. If the people have the feeling that the process is fair and equitable they will accept the taxes and change their behaviour to avoid them.

### **7.3.3 Successful Implementation of Environmental Taxes**

To get an overview over the global situation regarding sustainability, the Environmental Performance Index (EPI) is an appropriate instrument to indicate the state of sustainability in each country. The 2022 Environmental Performance Index (EPI) provides a data-driven summary of the state of sustainability around the world. Using 40 performance indicators across 11 issue categories, the EPI ranks 180 countries on their progress toward improving environmental health, protecting ecosystem vitality, and mitigating climate change. The EPI offers a scorecard that highlights leaders and latecomers in environmental performance and provides practical guidance for countries that aspire to move toward a sustainable future. Having a closer look at the EPI 2022, it shows, that the top 24 countries are European countries (Yale, 2022, p. XII). Remarkable is furthermore that richer countries seem to be more sustainable than developing countries. This could be the outcome of a higher status of the environment paired with concrete investments into environmental friendly processes like the circular economy. In Denmark i.e. 30 percent of the energy supply comes from renewable energies. By 2050 it is planned to be already 100 percent (Lena, 2021).

The sustainability of the countries is furthermore supported by agreements between the countries, like the Kyoto Protocol or the Paris Agreement, which has been in force since 2016. Until today 191 countries have signed the declaration to limit global warming to 1.5 degrees. Furthermore, greenhouse gas neutrality is to be achieved in the second half of the 21st century, the countries' abilities to deal with the effects of climate change should be strengthened and the financial flows are to be directed towards a sustainable economy (United Nations, n.d.).

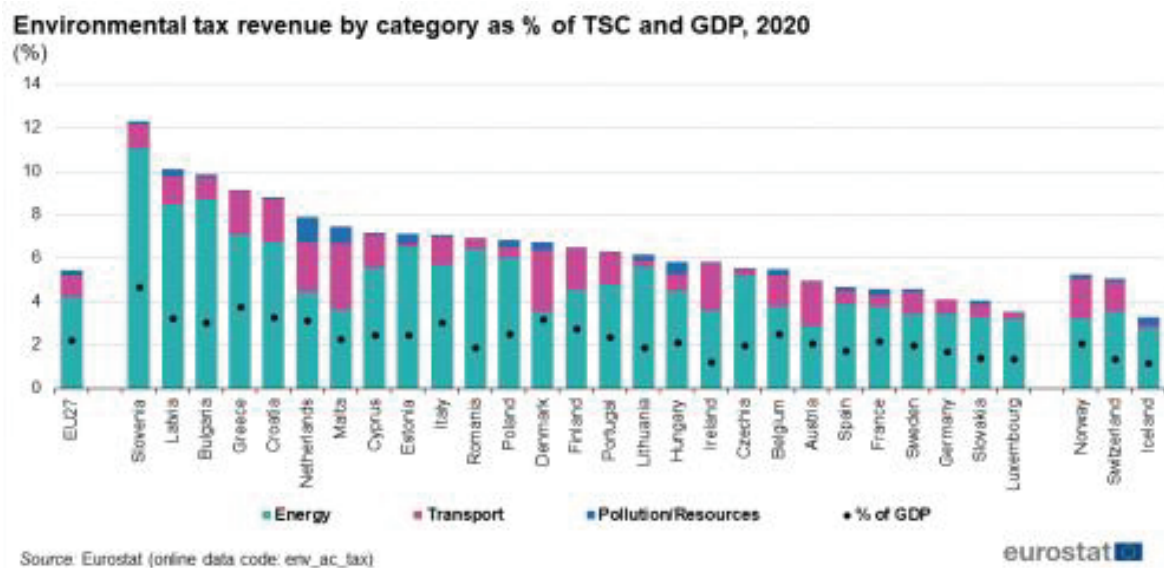
### **7.3.4 The EU Green Deal**

The European Union (EU) has set itself the goal of achieving climate neutrality by 2050, thereby fulfilling its obligations under the Paris

Agreement. To this end, the EU wants to implement an economic change that should be cost-efficient and socially balanced. The project was launched by the EU Commission in December 2019 as the “European Green Deal” and will address the following key areas: climate, environment, energy, transport, industry, agriculture, sustainable finance, sustainable development (European Commission, 2022).

The regulation on the European climate law to achieve climate neutrality by 2050 has become a legal obligation for all member states. European industry should take the lead in the transition to climate neutrality. This should be seen as an accelerator and pioneer for change, innovation, growth and at the same time, increase Europe's competitiveness. It is important to the EU Commission that the transition by 2050 is fair. For example, some member states are more dependent on fossil fuels or have carbon-intensive industries employing significant numbers of people. (European Council, 2022).

**Figure 7.5** Environmental tax revenue by category as % of TSC and GDP, 2020 (Eurostat, 2022)



The EU Green Deal includes also regulations for the revision of the Energy Tax Directive (ETD) and a Carbon Border Adjustment Mechanism. Both regulations are significantly important for a consistent and fair environmental taxation in the EU member countries. Especially the ETD that lays down EU rules for the taxation of the all kind of energy needed a revision. After multiple changes in the EU climate policy over the years it turned out, that the ETD



regulation from 2003 was no longer in line with the EU internal market and climate objectives. With the new tax directive the EU reacted on plenty of misleading regulations and brought the environmental tax system in line with the EU climate and energy policy. Thus the EU created a solid base for all European nations to adjust their national environmental tax laws.

#### **7.4 Environmental Taxes in Germany**

Environmental taxes in Germany are not really efficient, therefore the share of environmental taxes of the total tax revenue in Germany is extremely low. According to some statistics from Eurostat that has recently be published the percentage of the environmental taxes dropped from 2019 with 4.2 percent to 4.1 percent in 2020. Contrary to the myth that environmental and climate protection makes 'everything more expensive', the share of environmental taxes in public revenues has been declining for almost two decades. In 2021, it was reported a historic low of 3.7 percent. Except of Slovakia and Luxemburg, all other European countries had higher environmental taxes in 2020 (FÖS, 2022)

Germany is a really bad example for environmental taxation because the revenues from the taxes cover only a fraction of the costs that are needed to fix the environmental and the health damage. Furthermore, the tax and levy system is so imprecise that most of the people are unaware what is being taxed and how the system is working. For this reason, the German environmental tax system provides too little incentive to reduce environmental pollution and resource consumption. The system rather causes inequality because the costs are not covered by those who cause them. Polluters currently pay less than 20 percent of the real costs of damage to the environment and health through environmental taxes. 80 percent are solidarized to the tax payers or to future generations (FÖS, 2022). This situation shows that the German environmental tax system urgently needs to be reformed to comply with the European tax regulations. Environmental taxes should be perceived as fair, they should charge the polluter and in primarily they should motivate the people to deal responsible with resources and use less.

In this context the Circular Economy in Germany needs to be closer examined. Germany is regarded as a role model in terms of CE which mainly traces back to early actions in the 1990s. The approach



was holistic because besides ecological there are significant economic and social effects announced. The German CE measures drive down negative externalities of resource extraction but could lead to an additional annual reduction in greenhouse gas emission of about 440 million tonnes until 2030. Furthermore, the social benefits include macro-economic effects, such as additional employment in the field of recycling (Kruse, Wedemaier 2022, p.6.). The recycling branch however is not really developed in Germany and concentrates in its CE efforts more on waste management. Moreover, the amount of waste that is undergoing a recycling procedure implicates not on a high level of circularity, as the majority of waste is thermally treated (Wilts, 2021) For this reason the exclusive focus on waste policy in Germany has not led to the establishment of a sufficient CE or a sustainable solution of the waste problematic. Thus it can be determined that the CE transition in Germany lost momentum since the 1990s and is evaluated to be still in an early phase (Gandenberger, 2021). In this context progressive environmental tax incentives for the industry could play a major role to focus more on recycling of the waste instead of burning.

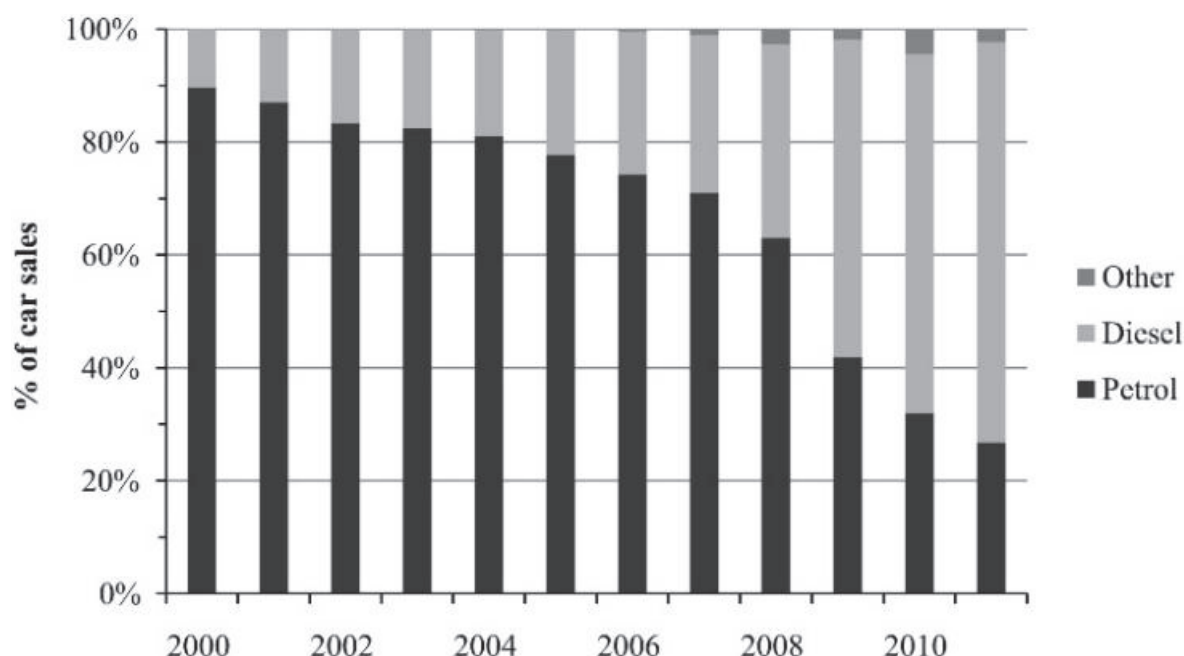
## **7.5 Environmental Taxes in Ireland**

On the example of Ireland, the real issue aimed to target with the introduced eco-taxes has been missed. As part of the EU's 2007 climate and energy package to minimize greenhouse gases, Ireland needed to drastically reduce its carbon footprint. Ireland's greenhouse gas emissions peaked in 2001 at 27 percent above 1990 levels. The sector with the largest increase in energy-related CO<sub>2</sub> emissions was transport, which had more than doubled between 1990 and its peak in 2007. In the period 2000 - 2008 there was an increase in car activity, on the one hand, as well as an increase in car fleet size of 46 percent, on the other, which together resulted in a 34 percent increase in CO<sub>2</sub> emissions (Leinert, e.a. 2013, p. 1152).

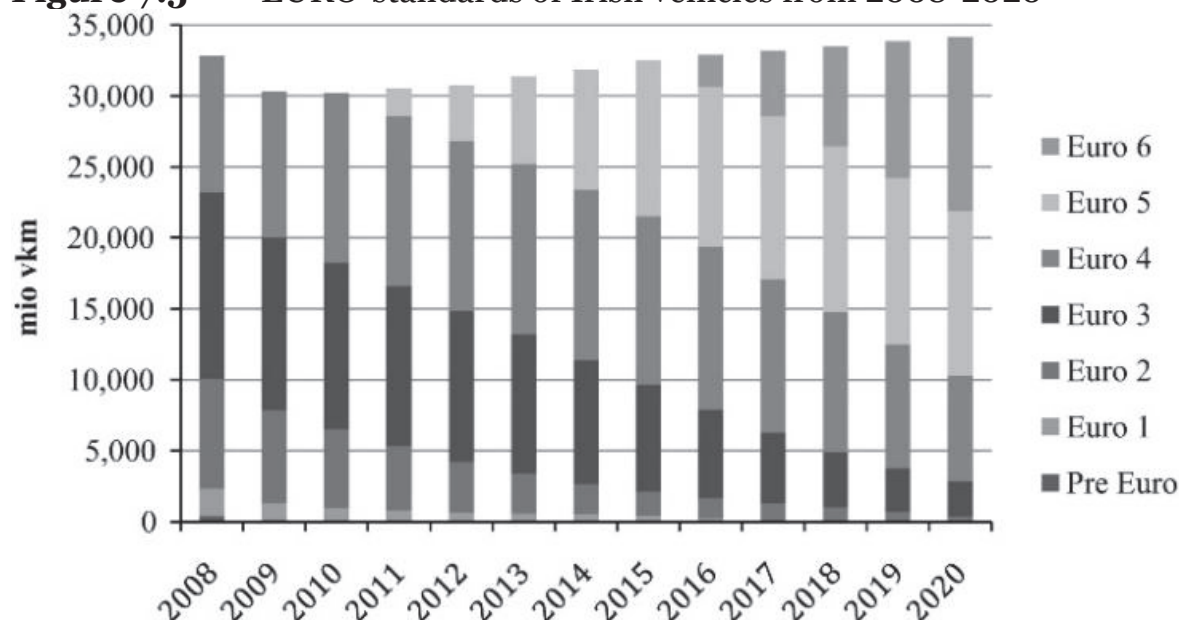
To improve the originally lacking energy efficiency of the vehicles, both the vehicle registration tax (VRT) and the annual vehicle tax (AMT) were developed for redesignation. This new tax policy was intended to help encourage car buying behaviour towards more economical cars with lower CO<sub>2</sub> emissions and came into effect on July 1, 2008. The changed regulations indeed led to a reduction in the average transport-specific CO<sub>2</sub> emissions, however, mainly caused by

an increased switch to diesel cars. The chart below shows the changes in purchasing behaviour in the years following the introduction of the policy (Leinert, e.a. 2013, p. 1155).

**Figure 7.6** Share of private car sales according to fuel type, 2000–2011



**Figure 7.5** EURO-standards of Irish vehicles from 2008-2020



While the ultimate goal should have been to achieve less air pollution from noxious substances, the introduction of the tax in Ireland has only led to a redistribution of the toxic substances. Due to the fact that diesel emission also contains harmful pollutants for our

environment, the introduced eco tax did not improve the actual goal of supporting a more sustainable future (Leinert, e.a. 2013, p. 1158).

After all it was initially thought that the measures would at least have had a positive effect on the purchase of many new and therefore better Euro 4-6 cars. But the latest studies have shown that Euro 4-6 norms fall short of expected emission reduction standards and the impact on the road is up to 130 percent higher. All in all, this means that the subsidies for diesel cars that have been achieved have caused far more damage than expected (Leinert e.a. 2013, p. 1156).

At the end of the day, ineffective targeting at the root of the problem has only encouraged another harmful alternative. As an improvement, the focus should have been on electrification of vehicles and biofuel blends, to truly improve air quality in a sustainable way (Leinert, 2013, p. 1158).

## **7.6 Contrary Effects of Environmental Taxes**

Environmental taxes as well as taxes in general result in an increased cost burden for companies and individuals. While businesses, especially big multinational companies often find loopholes in tax laws, individuals have almost no chance to escape and suffer higher prices. This will primarily affect the poorer income groups and thus lead to an even greater division in society (Pettinger 2020).

The relocation of companies to tax friendly jurisdictions to avoid taxes on profits and also indirect taxes i.e. on CO<sub>2</sub> emissions is a big problem, because the affected countries lose money to remove the devastation of the environment. Even those companies argue with competitiveness or stakeholder value their attitude regarding a sustainable behaviour can be questioned. Nevertheless, extra taxes rise the costs of production and in consequence the price for the consumer. Especially nowadays when the European Union is facing one of their biggest energy crises because of the Russian war with the Ukraine, additional taxes are more than counterproductive. According to a survey of the German Industry and Trade Chamber (DIHK) around 20 percent of the German companies have to reduce production in Germany and are already thinking about relocating parts of their company. (DIHK 2022). These measures were taken within a period of just a few months after the high price burden. Due to the comparability of the outcome, it can be assumed that the consequences after the introduction of an (additional) CO<sub>2</sub> or energy

tax could be very similar. Furthermore, according to a research study of the DIHK (2021), 75 percent of companies see their competitiveness severely endangered because of the increased costs and are putting off investments of any kind. This could naturally have a negative influence on the market and limit companies from advancements due to lack of financial means for research and development.

Furthermore, companies plan to postpone climate protection measures because of the enormous increase of energy costs. These effects clearly show the lack of understanding of the long-term effects on our environment without sustainable change measurements. Consequently, the example of Germany makes it clear that the integration of environmental taxes requires much more rethinking initiatives than just drafting a new law.

On top of that companies heavily depending on fossil fuels will face a tough time with the introduction of carbon taxes, as their production costs could skyrocket. That would deprive them from equal chances on the market compared to companies, which boundaries to switch to alternative energies are lower. Hence, through the introduction of carbon taxes, selected companies could go out of business and jobs could be lost (Environmental Conscience, 2021).

This aspect goes hand in hand with disrupted international competition. To balance the tax burden on companies and ensure normally continuing operation, the introduction of a uniform and global sustainability tax would be necessary. This, however, is highly unrealistic and would on the other hand, also lead to further problems in developing countries (Environmental Conscience, 2021).

The whole process of changing the system into a more sustainable future is subject to many decisions and therefore may take many years or even decades before it is implemented. Many aspects have to be analysed and decided to avoid negative or even contrary effects of the implementation of such a tax.

## **7.7 Conclusion**

Climate change and environmental degradation are nowadays among the greatest challenges of the society. The effects of climate change are global and on an unprecedented scale. An advancing aridisation

that is threatening the food production or rising sea levels increasing the risk of floodings are just some scenarios of the global warming. Thus climate change is the defining issue of the current time that governments, companies, and the public have to address and to tackle.

To reduce environmental damage while minimizing harm to economic growth, governments have a range of instruments at their disposal, including regulations, environmental subsidies, innovation policies, information programs and environmental taxes. Particularly taxes are an important tool of governments to influence the public towards a responsible and sustainable behaviour. Even if ideal designed environmental taxes promise positive ecological, economic and social effects, their role as a driver for sustainability is often limited. Besides increasing costs and higher prices, a lack of transparency paired with the feeling of an unequal taxation lead to acceptance problems among the societies.

To have a positive influence on the environment and make people think about their behaviour, environmental taxation must be implemented in a way that provides certainty about its impact on personal income levels and incentives for businesses that allow them to continue to grow while doing the right thing for the environment.

Without governmental intervention, there is no market incentive for firms and households to minimize environmental damage, since its impact is spread across many people, and it has little or no direct cost to the polluter. Therefore, protection of the environment generally requires collective action, usually led by the government, to develop an economic system that rewards activities that are socially and environmentally responsible.

To sum it up, an effective implementation of environmental taxes requires careful consideration of a number of factors. As seen on the example of Denmark, properly designed environmental taxes can definitely be a driver for sustainability. They are a great success and thus bring the desired effect and relief for the environment. At the end of the day it is essential to foster environmental change initiatives, not only by supporting an effective and fair environmental tax system, but also by raising public awareness to act in a more responsible and sustainable way against the environment.



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# 8

## **Innovation Formula and Innovation Test Bed: Development of an Instrument to Determine the Innovation Status in the Present**

*Gerhard Hube*

### **8.1 Basic Concept, Dilemma and Formula Proposal for Innovation**

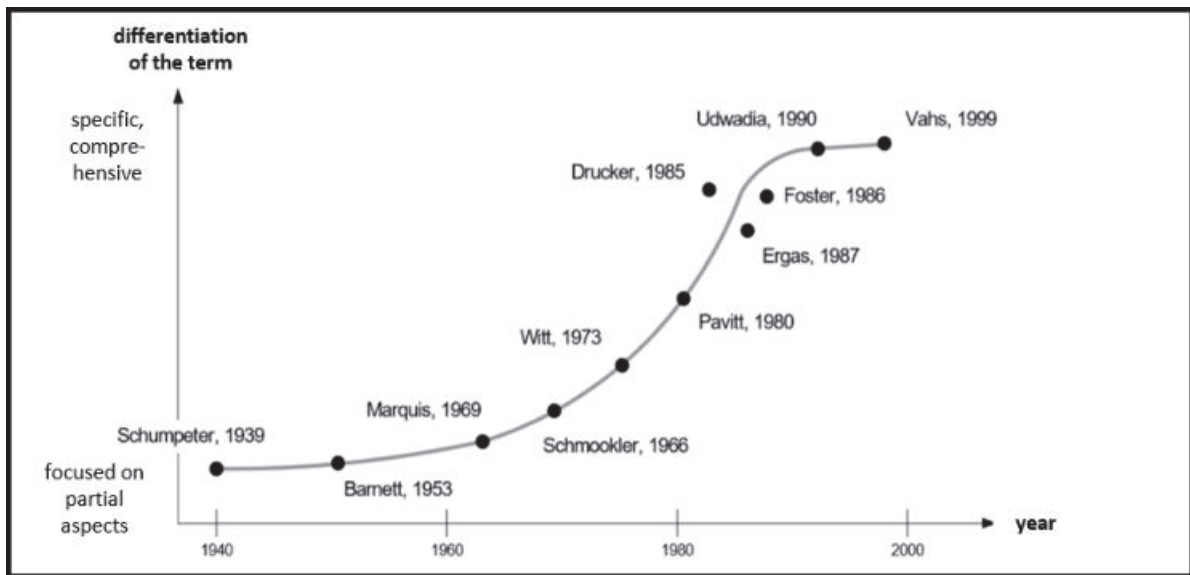
*The concept of innovation from Schumpeter to today:*

"Innovation is a dazzling, a fashionable term" (Hauschildt, 2007, p. 3).

Since Schumpeter first dealt fundamentally with "innovations in the economy" for national economies and companies (cf. Schumpeter, 1939, p.87) and the innovation debate in economics and literature developed from this, the discussion about a delimitation, demarcation and definition has not ceased. While Schumpeter speaks of new combinations in the form of new products, new processes, new sources of supply, sales markets as well as forms of organisation and their implementation on the market (cf. Schumpeter, 1934, p.100 f.), a wide variety of explanatory models and definitions for innovation have been developed in the following decades up to the present day. Different approaches have been chosen, such as novelty as the decisive aspect (cf. Barnett, 1953, p. 7), the novel combination of ends and means (cf. Moore, 1982, p. 132) or innovation as a process (cf. Dosi, 1988, p. 222). A clustering of these different approaches can be found in Hauschildt et.al. where a total of seven focal aspects for innovation definitions are distinguished in the literature between 1953 and 1992 (cf. Hauschildt, et.al. 2016, p. 5). Mitterdorfer-Schaad presents a comparative overview of some of the authors, beginning

with Schumpeter and including Vahs 1999. In this presentation, the development towards an increasingly comprehensive understanding of innovation is shown, starting from an understanding of innovation that was originally more focused on partial aspects (Mitterdorfer-Schaad, 2001, p. 14).

**Figure 8.6** Evolution of the concept of innovation (Mitterdorfer-Schaad, 2001, p. 14)

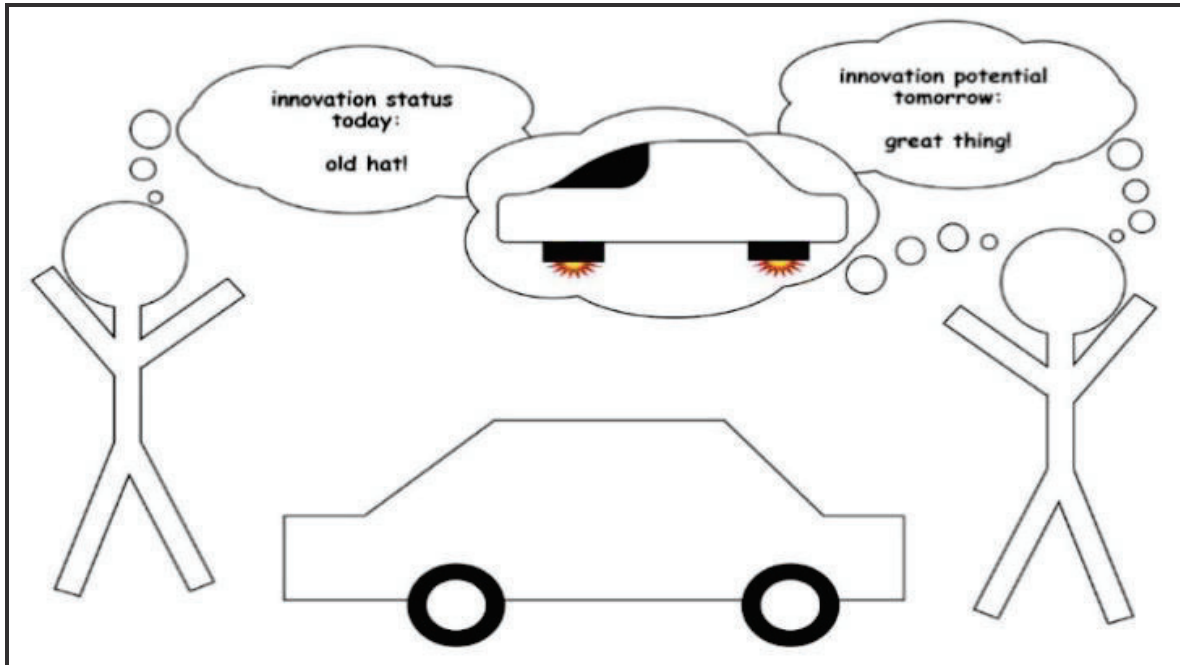


Bullinger recognises a development in the understanding of innovation between the "old way" and the "new way". Whereas the earlier understanding of innovation tended to mean large dramatic steps, demolition and reconstruction by a few specialists in secret, it later developed into a more long-term, public and collaborative understanding (Bullinger, 1994, p. 37).

It becomes clear how diverse and numerous the authors are on this topic, without a generally valid definition having finally prevailed (cf. Vahs, Burmester, 2005, p. 43). In practice, too, there is usually no agreement on an understanding of innovation, which Goffin/Mitchel point out with a quote from an R&D manager: "If I ask five different people at our company what innovation is, I will get at least five different answers" (Goffin/Mitchel, 2017, p. 3). At this point, we will not go into the other numerous and different approaches to understanding innovation; comprehensive and structured works on this can be found in the literature (cf. Marcharzina, 2010, p. 744 ff.; Blättel-Mink, 2006, p. 29 ff.; Friedrich-Nishio, 2005, p. 40 ff.). However, there is agreement that this great semantic diversity means

that the risk of misunderstandings is enormous and it should therefore not be left to chance (cf. Hauschildt, et.al. 2016, p. 4).

**Figure 8.7** Dilemma of understanding innovation (Own representation)



### **8.1.1 The Dilemma with the Concept of Innovation**

One of the reasons for the different understanding of innovation seems to be the synonymous use of the terms "invention" and innovation, especially in everyday language (cf. Albach, 1991, p. 46; Schaudel, 1993, p. 46; Strebel, 2007, p. 20 f.). However, the invention is only the necessary preliminary stage of an innovation and describes the result of a planned or unplanned generation of ideas, i.e. it is time-related, whereas the innovation always represents the result of an innovation process or the innovation process itself (cf. Vahs/Brem, 2013, p. 21). However, the concept of innovation is not clearly anchored in time, but is subdivided between different temporal perspectives. In the literature, a distinction is made between a results-oriented or object-oriented view and a process-oriented view (cf. Gerpott, 2005, p. 37; Corsten et. L., 2016, p. 6). If these two perspectives are not clearly defined and separated in corporate practice, far-reaching misunderstandings can arise. In practical application, the definitional approaches from the literature therefore only appear to make sense if a clear distinction is made in the discussion between the different perspectives, i.e. whether it is a question of describing the state of innovation or whether the future potential is to be analysed and evaluated. The concept of innovation

thus seems to include both the present and the future at the same time. Figure 2 illustrates this fundamental dilemma of understanding innovation. While one person focuses on the actual status and cannot see any novelty, the other person is already in a mental development and sees the great potentials and opportunities that could arise.

In the following chapters, a proposal will be developed to make the understanding of innovation understandable and applicable to the status quo in the present. It is based on a result-oriented view of innovation, since from a business perspective innovation is intended as the result of multiple efforts (cf. Gerpott, 2005, p. 37). An attempt is made to clarify and illustrate this understanding in the form of a formula.

### **8.1.2 The Innovation (Status) Formula $I=N \times U$**

If we go back to Schumpeter's original approach, the two essential elements of the concept of innovation become clear. First, there is the element of the "new" combinations, i.e. the invention, the idea, the novelty as such. The second element is the utilisation, the market success of the innovation and thus, in the best case, a commercial success on the market (cf. Schumpeter, 1934, p. 100p.). In the sense of such a reconsideration, innovation only exists if there is a novel purpose-means relationship (cf. Baker et. al., p. 160), an understanding that is also confirmed in the basic meaning and origin of the word: "introduction of something new; innovation; reform" (Duden online, 2022, n.d.). At this point, we will not go into the discussion of whether a "broad" understanding of innovation also includes diffusion on the market, i.e. broad market penetration, or whether a narrow definition is more appropriate (cf. Vahs, 2013, p. 21). Although this aspect is important for differentiating between innovation and non-innovation, it will only be taken up again in Chapter 3. Here we will first deal with the two basic elements. If we reduce it to these two aspects, we are only dealing with the "new" and the implementation, i.e. the creation of a "benefit". However, it is important to note that innovation must always consist of both aspects, i.e. a new idea without a beneficial implementation is not an innovation and vice versa. If this insight is summarised in a short formula, it can be deduced that innovation is therefore a product of a new idea with a beneficial implementation.

**Figure 8.8** Innovation (status) formula (Own representation)

$$\begin{aligned}
 & \mathbf{I} = \mathbf{N} \times \mathbf{U} \\
 & \text{Innovation (I) =} \\
 & \text{New idea (N) } \times \text{ Useful implementation (U)}
 \end{aligned}$$

If it is determined that the idea is not actually new, this value would be zero and thus the result would be zero, even if the implementation is extremely beneficial, and it would not be possible to speak of an innovation. Likewise, the result is zero if the idea is defined as new, but no beneficial implementation can yet be determined. Thus this approach with the two elements is close to Roberts' formula, but on the one hand, following the two formulas of Müller-Roterberg and Kranert, the multiplication is chosen and the implementation is not only reduced to a commercially successful marketing, but extended to a generally ascertainable benefit creation. It should be emphasised once again that the aim is to carry out the assessment at the present time in order to evaluate the actual state, similar to an MOT, and not the possible potential in the future.

At the level of this formula, no further differentiation is made, e.g. what does "new" mean or how is a benefit expressed more precisely? The focus is on clarifying the mandatory two-sidedness of an innovation in order to create a common understanding. Even at this very aggregated level, it should be possible to make an assessment of innovation and non-innovation as quickly and easily as possible.

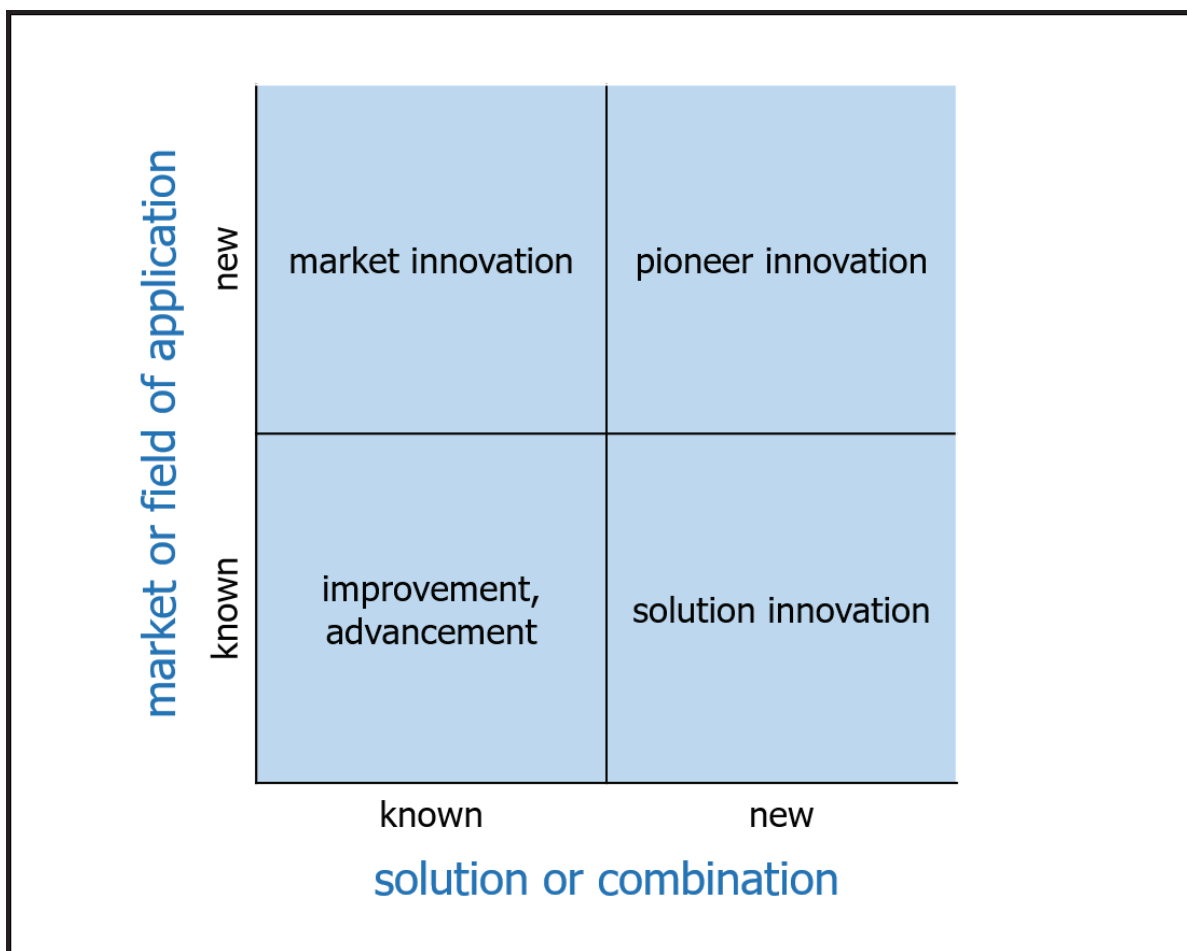
Even if the application of the innovation (status) formula appears simple and purposeful, it must be taken a step further for a meaningful application in practice. At this level, it is possible to distinguish between innovation and non-innovation in an initial assessment, albeit subjectively, but no further qualitative statement can be made. However, this is usually the case in situations where several projects or ideas have to be analysed and evaluated for a decision. Therefore, building on this formula with the two components "new idea" and "beneficial implementation", a further analysis and evaluation procedure is to be developed.



## 8.2 Innovation Test Bench to Determine the Innovation Status in the Present Day

With the help of the short innovation formula, a distinction can be made between innovation and non-innovation in a first step. This is intended to create an understanding of innovation that is as simple and memorable as possible. However, this is not sufficient for a more in-depth and possibly also comparative analysis, which is why the two variables of the innovation formula are considered in a more differentiated way in a second step. For this purpose, we will define the frame and evaluation criteria of the novelty “N” and the utilization “U”.

**Figure 9 The four degrees of novelty of innovation**



## 8.3 The N of the Formula for Evaluating the New Idea

As explained at the beginning, innovation is something that must be new compared to a previous product, process or condition. However, this is precisely where a major challenge lies, because the possibility

of objectively assessing the degree of such an innovation according to the facts is only possible to a limited extent (cf. Hauschildt, et.al., 2016, p. 13). This difficulty has led to the development of a variety of approaches to classify the degree of novelty of innovations. In many cases, a distinction is made between incremental, radical and disruptive innovations (cf. Zillner/Krusche, 2012, p. 32 ff.; Goffin/Mitchel, 2018, p. 13; Knappe, 2015, p. 27) Incremental innovations tend to be evolutionary, occur gradually (cf. Dahl, 2011, p. 298, Zollenkop, 2006, p.109) and are responsible for efficiency improvements and product differentiation (cf. Kline/Rosenberg, 1986, p. 304). Radical innovations describe rather erratic completely new developments (cf. Reid/De Bretani, 2005, p. 106, Leifer, 2000, p. 5) and disruptive innovations are able to create completely new markets (cf. Zillner/Krusche, 2012, p. 37).

For the test bench to be developed in this work, a qualitative approach should be used that allows for the simplest and quickest possible assessment. In order to capture the basic definition of innovation as a novel purpose-means combination (cf. McNally et al., 2010), it therefore appears sufficient for an initial assessment to ask the questions about the novelty of the technology or solution and the novelty for the market, as can also be determined as the intersection of most proposals for capturing the degree of novelty (cf. Corsten et al., 2016, p. 12). For the categorisation of the degree of novelty, four degrees of innovation are to be defined in this sense and following Reichwald/Piller (Reichwald/Piller, 2009, p. 122):

The use of the terms incremental, disruptive or radical innovation will be deliberately avoided here. On the one hand, an improvement or further development should explicitly not be called an "incremental innovation" in order to emphasise the concept of the innovation status formula. For another, the scope and meaning of the terms radical and disruptive innovation is much broader in innovation research and is also associated with a destructive impact on the market environment (cf. Schimpf 2019, pp. 5-8; cf. Christensen 1997,). However, the focus of this approach is initially on dealing with the new from the company's point of view and the situation in the present, irrespective of the degree to which the innovation increases performance or has an impact on the market environment. The "U" in the formula for beneficial implementation

The second important building block for assessing the innovation is the benefit- generating implementation, which must be fulfilled in

order to be considered an innovation. For this purpose, the innovation dimensions of maturity and actual benefits are used in accordance with the previous explanations.

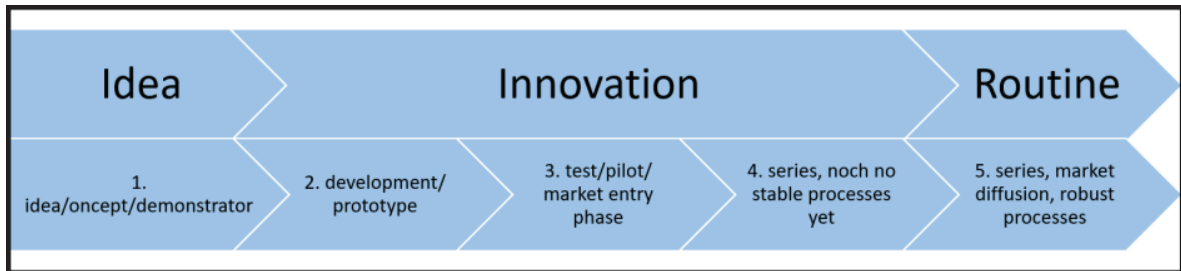
**Maturity level in the innovation process** Many good ideas do not get beyond the prototype or demonstrator status. Therefore, the assessment of the maturity level is essential to judge the status of a (supposed) innovation. A large number of process and phase models are available for describing the degree of maturity. The number and divergence appears to be almost greater than for the concept of innovation, since the innovation process in part already addresses specific requirements and conditions of various fields of application. McGrath already sees a first generation of product development processes in Thomas Edison's development centre (cf. McGrath, 2004, p 5 ff.) and Bayazit recognises methodological foundations for product and design development in Walter Gropius and the Bauhaus (cf. Bayazit, 2004, o.p.). The first generation of a process model for product development is the "Phased Project Planning" concept developed by NASA in the 1960s for large and multi-year projects, which was taken up by Cooper for his first Stage Gate model. This stage gate model was divided into seven sub-steps (stages) and the resulting decision points (gates) in order to control the course of a project and ensure the achievement of milestones (cf. Cooper, 1983, p. 7).

In the following decades, the models and approaches became more and more flexible and comprehensive in order to do better justice to the dynamic environment of innovations. Cooper's stage gate approach, for example, was further developed to allow for loopbacks and overlaps between the steps (cf. Cooper, 1994, p.9). Other approaches emerged, such as the Value Proposition Cycle, which regularly runs through loops in four defined process steps and questions customer relevance, business relevance, competitiveness and implementation competence (cf. Hughes/Chafin, 1996, p. 91f.).

For the present work, the decisive point for implementing the innovation formula is when the innovation process leaves the idea status and changes to a benefit-generating type of implementation. On the other hand, it is important to distinguish the innovation process in market implementation from routine processes, which should be robust and reliable after a certain degree (cf. Hauschildt, et. al., 2016, p. 22). Based on these considerations, the maturity level of an innovation is to be divided into 5 phases for the test bench to be

developed. Following the innovation processes according to Pleschak/Sabisch and Witt, the market phase is to be further subdivided in order to make it clear that a pilot and successful achievement of stable processes and routines are still necessary before successful diffusion and market penetration (cf. Pleschak/Sabisch, 1996, p. 24; cf. Witt, 1996, p. 10).

**Figure 8.10** The 5 phases from idea to routine of an innovation



In the sense of the innovation status formula, one should only speak of an innovation when an initial benefit is recognisable, i.e. from phase 2 onwards, and not as soon as robust and stable processes in market penetration have been achieved, i.e. phase 5.

Actual benefit of the innovation Innovation activities are not an end in themselves, but are specifically activated to achieve certain objectives (cf. Vahs, 2013, p. 40). Technical and economic content are listed as the most important objectives (cf. Hauschildt et.al., 2016, p. 322), whereby numerous authors place the economic objective of innovations in the foreground (cf. Vahs, 2013, p. 21; Roberts, 1987, p. 3; Gerpott, 2005, p. 37; Fagerberg, 2003, p. 131; Corsten, 2016, p.6). The technical target variables are also referred to as performance or material targets and refer to the characteristics and use aspects of the innovation (cf. Hauschildt, et.al.2016 p. 322). In addition to these two objectives, innovations can also generate benefits in social or ecological terms, aspects that are becoming increasingly important (cf. Vahs, 2013, p.38). For this approach, we should therefore speak of a benefit-generating implementation of an innovation, taking into account not only the economic and technical perspectives but also other benefit aspects. The benefit formulation should be used deliberately, as complex and conflicting target systems often arise for innovations and these can be more easily resolved with the benefit formulation as an overarching target property (cf. Hauschildt, et.al., 2016, p. 332). Thus, in addition to a direct technical benefit such as running time or heat resistance, indirect benefits such as learning effects, experience and knowledge or higher employee satisfaction can

also result from innovation, which can often be more significant than the direct effects (cf. Keil, et.al., 2009, p. 620). Even if an innovation is not successful on the market, internal effects such as gains in experience and competence within the framework of an innovation project can contribute to the success of future innovations (cf. Billing, 2003, p. 177). The numerous and differentiated considerations on the measurement of innovation success (cf. Kaschny, et.al. 2015, pp. 7-9; Corsten et.al., 2016, pp. 17-20; Hauschildt et.al., 2016, p. 397 ff.), will not be discussed further here, nor will the numerous indicator models for measuring the success of innovation activities (cf. e.g. Pillai, et. al., 2002, pp. 166-176; Bürgel, et.al., 1996, pp. 290-332; Werner, 2002, pp. 56-235). This paper is about a status quo analysis of innovation activities in order to subsequently intervene and prepare decisions. Therefore, it does not seem sensible to choose detailed, isolated criteria, but rather to find qualitative measures that are as easy to assess as possible (cf. Gerpott, 2005, p. 70). Against the background of these findings, the following 5 benefit criteria are to be used for this approach.

With the two criteria now defined for the degree of maturity and for the benefits in this chapter, an assessment can be made for the innovation project that goes beyond the idea. In the following chapter, the considerations of the innovation (status) formula can be translated into an instrument.

**Figure 8.11** The 5 benefit criteria (Own representation)

1. economic benefit
2. benefit through know-how growth, experience or knowledge
3. benefits for employees in the company
4. benefit for society
5. environmental benefits

## 8.4 Excel Tool for Determining the Innovation Status

This section presents the implementation of the previous considerations in a tool that is as easy to use as possible. For a first draft, a tool based on Excel was developed, which will be briefly



presented in the next chapter. For this purpose, the requirements for the tool are explained before the implementation is presented.

**Figure 8.12** Assessment Mode Welcome Dialogue

**Welcome to the Innovation Test Bench!**

Analyze your internal or market innovation.

The Innovation Test Bench helps you to differentiate innovations from non-innovations and to analyze the strength of an innovation. This makes especially sense if you want to get an overview of different innovations and make a first quick qualitative assessment.

Basis of the Test Bench is the simple innovation formula:  $I=N \times U$ .

"Innovation" is in this case the product of "novelty" and "benefit" and thereby ensures, that a homogenous understanding of innovation is created. Only if  $I>0$  we speak about an innovation, if not it is either not new or has not created a benefit yet.

Via the Tab "Test Bench" you can enter the evaluation for the two innovation elements "novelty" and "benefit". In this Test Bench you have the possibility to compare and evaluate up to 100 projects/ideas or you evaluate a project from different persons e.g. R&D, marketing, production and management,...

Via the tabs "Idea-Portfolio" and "Innovation-Portfolio" you will receive an portfolio for evaluation, that visualizes your different projects or different evaluators and suggests first recommended actions.

Requirements and prerequisites The tool for assessing the status quo of a (supposed) innovation on the basis of the innovation formula is intended to help companies better assess the current status of their innovation activities. In particular, it should become clear after the assessment whether it is actually an innovation and how it should be evaluated. In addition to the content, the tool should also fulfil a number of other requirements, which are listed below:

- Simple software environment without access barriers if possible
- Complete content mapping of the basic considerations and criteria
- Brief explanatory notes on use
- Intuitive operation as simple as possible
- Possibility of comparative evaluation of several innovation activities
- Possibility for comparative assessment of different assessors
- First graphic evaluations for interpretation and decision support



To meet the first requirement, Excel was chosen as the software for a first version, as it is very widespread and frequently used. In the following chapters, the different elements of the tool are explained.

**Figure 8.13** Assessment mode selection options

**How do you want to use the innovation test bench?**

Do you want to compare several projects? Then please select "multi-project".

Or do you want to evaluate a project from different persons? Then please select "multi-evaluator".

**multi-evaluator**

If you use the Innovation Test Bench as "multi-evaluator": Which project do you want to evaluate? Enter a project name below:

**Testproject**

In multi-project mode, different projects can be assessed comparatively, while in multi-assessor mode, a project is assessed from different perspectives in order to capture the different assessments.

**Figure 8.14** Multi-project and multi-assessor mode Evaluation dialogue

<b>Use as:</b>	<b>multi-project</b>		
<b>Project number:</b>	1	2	3
<b>Please enter a project name.</b>	3D print prototyp	online configurator	digital twin
<b>Use as:</b>	<b>multi-evaluator</b>		
<b>the following project is evaluated:</b>	3d print prototyp		
<b>Evaluator number:</b>	1	2	3
<b>unction or something similar of the evaluators</b>	head R6D	head production	head sales

The core of the instrument is the evaluation with the help of the criteria developed in the previous chapters. For the assessment of novelty, i.e. the "N" in the formula "I=N\*U", the two questions "new for whom?" and "how new?" are asked, as shown in the example in the following figure. If there is no recognisable novelty or it is merely an adaptation, the criterion is assessed as 0 and already leads to a 0 in the overall result, i.e. the result that it is not an innovation.

**Figure 8.15** Assessment of novelty

Use as:	multi-project		
	1	2	3
Project number:	1	2	3
Please enter a project name.	3D print prototyp	online configurator	digital twin
<b>New for whom? (single response)</b>			
0: nothing new			
2: only for the company	2	0	4
4: for the whole industry			
<b>How new? (single response)</b>			
0: only adaption/enhancement, that means known market and solution			
2: new solution/combination in a known market/application	2	0	2
2: known solution/combination in a new market/application			
4: both, solution and market/application are new			

In the next part of the assessment, the degree of maturity and the benefits of the innovation project are evaluated. If it is only an idea or concept so far or has already been in series production for years, i.e. in the case of completed robust processes, this is assessed with a 0. The same applies if there is no discernible benefit. This ensures that, in the sense of the innovation formula "I=N\*U", we only speak of innovations if both novelty and a beneficial implementation are present. For the benefit aspects, multiple selection is possible in order to map the different benefit elements as developed in previous chapter.

**Figure 8.16** Assessment of maturity and benefits

Use as:	multi-project		
	1	2	3
Project number:	1	2	3
Please enter a project name.	3D print prototyp	online configurator	digital twin
<b>Level of maturity? (single response)</b>			
0: so far just an idea/concept			
1: prototypical implementation			
2: market entry phase/testing phase in company/pilot	1	0	2
3: in series respectively in use, but no completed robust processes yet			
0: for years in series respectively in use (completed robust processes)			
<b>Benefit? (multiple answers possible)</b>			
Yes/No: Is there a regonizable benefit? (internal or external benefit)	Yes	No	Yes
1: valuable increase in know-how/learning effect for the company	1		1
1: benefit for employees in the company (e.g. ergonomics, health, satisfaction, ...)	1		1
1: benefit for society (e.g. fair trade, education, charitable, ...)	1		1
1: benefit for environment (e.g. saving resources, renewable resources, environmental protection, ...)	1		1
2: economical benefit (first turnover or subsidies, respectively cost efficiency benefits)	0		0
<b>Total Benefit</b>	<b>4</b>	<b>0</b>	<b>4</b>

In order to arrive at an overall result in the logic of the innovation formula after the assessment of the individual aspects, the products are now formed from the various elements. This produces a result for the novelty, a result from the degree of maturity and benefit as well as the overall result for the assessment. The multiplication between the sub-aspects ensures that the basic idea of the innovation formula is represented in the result. This means that only if there is an existing novelty and an ascertainable benefit is the result greater than 0 and thus also an innovation. If not, it is only an idea so far or the project

shows no benefit or is actually already in series production and should no longer be treated as an innovation project.

**Figure 8.17** Intermediate results and final results from the multiplications

Use as: multi-project				
Project number:	1	2	3	
Please enter a project name.	3D print prototyp	online configurator	digital twin	
New idea: new for whom x how new?	4	0	8	
utilization: level of maturity x Benefit	4	0	8	
<b>Result: Innovation = N x U (new idea x utilization)</b>	<b>16</b>	<b>0</b>	<b>64</b>	

**Evaluations:** Two portfolio representations are used for an initial evaluation of the innovation test bed. Portfolio representations allow for a simple and easily understandable visualisation; in addition, initial recommendations for action can already be given for each result field.

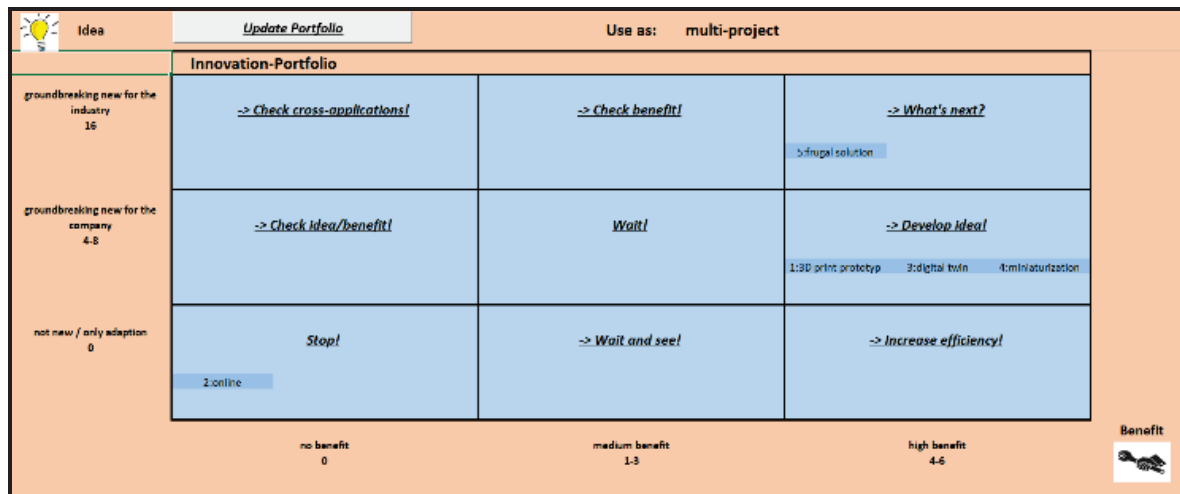
In the first portfolio, only the idea should be evaluated, in the two categories "New for whom?" and "How new?". In this way, the idea can be assessed independently of its implementation and, if necessary, help in the selection of different ideas. Suggestions for an initial interpretation are prepared in the individual fields.

**Figure 8.18** Ideas portfolio

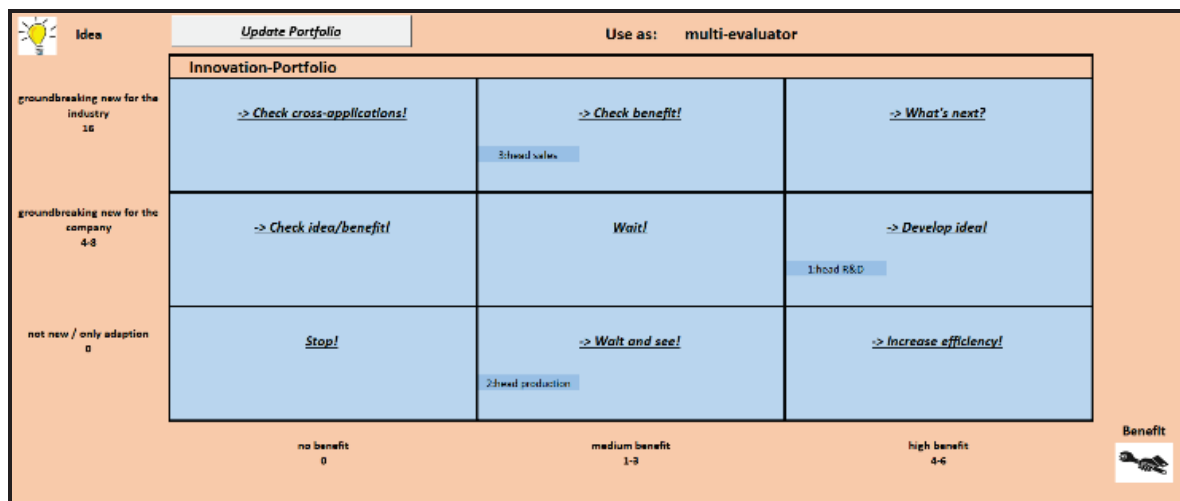
Idea	Update Portfolio			Use as: multi-project
New for whom?	Idea-Portfolio			
New for the industry 4	<u>Check evaluation!</u>	<u>Push idea, consider time-to-market!</u> 3: digital twin	<u>Go ahead but regularly run through opportunities/risk cycle!</u> 3: frugal solution	
New for the company 2	<u>Check evaluation!</u>	<u>Practice Benchmarking, monitor competition!</u> 1: 3D print prototyp 4: miniaturization	<u>Check risk and competitive advantages!</u>	
No novelty 0	<u>No novelty, check for Cash Cow!</u> 2: online	<u>Check evaluation!</u>	<u>Check evaluation!</u>	
	Only adaption/enhancements, that means known market and known solution 0	new solution/combination in known market/application or known solution/combination in a new market/application 2	new solution/combination and new market/application 4	How new?

The innovation portfolio is intended to present the overall result of the innovation review. In the nine fields, as in the idea portfolio, an initial recommendation for action is proposed.

**Figure 8.19** Innovation portfolio



**Figure 8.20** Exemplary representation for the multi-judge mode



If, after this assessment, which may have been carried out by the R&D department, the assessments are also to be obtained from other company divisions, this could now be implemented for selected projects in multi-assessor mode. In this way, the different assessments would become apparent and could be taken into account in further decision-making or in the course of the project.

## 8.5 Conclusion and Outlook

The innovation (status) formula approach presented here has already been used in teaching, both in Bachelor's degree courses and in courses of a Master's degree programme. The teaching of the basic

ideas and characteristics of innovation, as well as the use of the innovation test bench as a practical application could be used well and effectively in teaching. In addition to teaching, the approach was also evaluated through expert interviews and has already been applied in several projects with commercial enterprises. The experience gained from this could be successfully used in the revision, especially of the instrument. For example, the addition of the multi-assessor mode is a wish of business practice. Based on the good experiences with this approach, a further formula is to be developed subsequently, which, following on from the analysis of the innovation status, develops an approach that enables the assessment of the potential of (future) innovations. Similar to the innovation (status) formula, this should be as simple and easy to remember as possible and make clear that special expenditures and activities are necessary before a potential innovation success and that certain risks can occur.

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# 9

## **Cross Cultural Comparative Study of Sustainability Awareness in European Education: Cases of Italy, Germany and Romania**

*Elia Francesca Pacelli*

### **9.1 Internal and External Influences on Organisations and How Enterprise Architecture can help**

The construction of sustainable development (SD) is one of the major issues societies worldwide are currently facing. How to achieve both social and economic growth and environmental sustainability is the main issue at stake in the global sustainability debate. At international level, policies have highlighted the important role education plays for SD (e.g., UN-DESA 1992; UNESCO 2006, 2014). These point to the importance of cultural diversity and emphasize that education for sustainable development (ESD) needs to be framed in different ways to adapt to the cultural context (UNESCO 2006, 2014).

With the deadline Education 2030 Agenda approaching, it is crucial to accelerate the implementation of Education for Sustainable Development to deliver all 17 Sustainable Development Goals. To support Member States in implementing the UNESCO Framework for the implementation of Education for Sustainable Development (ESD) beyond 2019 and its Roadmap, and to follow up on the Berlin Declaration on Education to Sustainable Development (May 2021),

UNESCO is establishing the new ESD for 2030 Global Network (UNESCO, 2022). According

to the Global Action Programme (GAP), launched by UNESCO in 2014, one goal of ESD is that everyone should have “the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development”. However, in the vast and complex context of SD, cultural regions may have distinctive values, attitudes, and behaviors due to their varied histories and customs. The topic of how this broad goal might be achieved in a culture-specific way requires more research. Additionally, there is a need for cross-cultural studies that focus on how individuals perceive, believe, and act in relation to SD as it pertains to society, the economy, and the environment. For some time now, there has been an emphasis on ESD as central to promoting SD globally (e.g., Hopkins 2012; UNESCO 2006, 2014). Respect for cultural diversity is considered an important value in international ESD policy, and ESD is supposed to take different shapes to adapt to the cultural context. In line with studies that have compared different nations in relation to environmentalism (Olsson 2018; Fang et al. 2018; Yu et al. 2019), this article aims to answer a series of questions about the connection between the cultural, educational, and sustainable spheres of three nations: Romania, Italy, and Germany. Through a comparative analysis of the data, it is possible to understand the various aspects that influence sustainability consciousness in the three countries.

In fact, this research aims to investigate and compare sustainability consciousness (SC) among universities in Germany, Italy, and Romania.

The development and validation of the survey instrument measuring SC was reported by Gericke et al. (2019). The present study is the second to use the concept in a cross-cultural survey after the study conducted on students in Taiwan and Sweden (Teresa Berglund et al., 2019). A questionnaire was used to investigate students' awareness of sustainability (SC) based on students' sensitivity to the topic of sustainability and the inclusion of this topic within the university system. The SC construct probes knowledge, attitudes, and behaviors in relation to the environmental, social, and economic dimensions of SD. Three comparable samples of students living in three different European settings were selected to answer a questionnaire. The data were analyzed used by comparing the graphs outlined by the three questionnaires administered. By investigating

SC among students from Romania, Italy, Germany, it is proposed to contribute to the discussion of cultural differences in the educational context by highlighting the issue of social responsibility on sustainability.

## **9.2 Background**

### **9.2.1 Culture**

Defining culture is as crucial as it is difficult, due to the intrinsic elusiveness of the concept. The first definition relevant to the purposes of this paper is the one provided by UNESCO, which, in its turn, is borrowed from Tylor (1871), who defined culture as that complex whole which includes knowledge, beliefs, arts, morals, laws, customs, and any other capabilities and habits acquired by [a human] as a member of society.

Culture is approached from an anthropological perspective, which includes the body of knowledge shared by a society. This prevailing institutional view has generated a dualism between heritage, an unchanging set of human acquisitions, and culture in a more general and dynamic sense, an evolving and changing concept that embraces the anthropological view while being closer to the socioeconomic sense of the term.

The institutional conception is widespread: Raymond Williams (1986) identified three different meanings of the term: culture as spiritual development, as a set of values, and as work and intellectual activity. Williams' definition adds two additional layers to the UNESCO definition: an "upward," somewhat Platonic layer, defining culture as a state or process of human refinement (Williams, 1986), and a second "downward" layer, toward the socioeconomic meaning of the term.

Cultural value orientations represent the basic and fundamental beliefs of a culture; these basic beliefs concern human relationships with each other and their world. Culture is the complex system of meanings that a group holds in common, and this set of ideas can be very different from another group's culture. Culture pervades every aspect of a society and influences the thinking and acting of every member of a group. However, because culture is so pervasive and fundamental to a group, there are subtleties in culture that group members may know and understand but are unable to articulate with

others outside the group. This, in a sense, is the fundamental problem of understanding a culture other than one's own:

McCarty suggested that a starting point for understanding a culture and differences in cultures may be cultural value orientations. Kluckhohn (1951) defined value orientations as "a generalized and organized conception, influencing behavior, or nature, of man's place in it, of man's relation to man, and of the desirable and undesirable as they may relate to man-environment and interhuman relations." Cultural value orientations, therefore, represent the most basic and fundamental beliefs of a society. These beliefs form the central understandings that members of the culture hold and as suggested by Kluckhohn, relate to the human relationship with each other and the world around them.

Several cultural value orientations have been discussed by numerous social scientists in recent decades (Hofstede 1984; Kluckhohn 1956; Kluckhohn and Strodtbeck 1961; Triandis 1989). These authors have identified dimensions on which cultures may vary, and many of these will now be discussed. Among these we have:

**Individualism-collectivism.** The individualism-collectivism dimension refers to the human relationship with each other and has been studied by several social scientists (Hofstede 1984; Kluckhohn and Strodtbeck 1961; Triandis 1989; Triandis, et al. 1988). Individualist societies are those that value the individual over the group. Individual success, recognition, etc., are encouraged and rewarded. Collectivist societies, on the other hand, place emphasis on the group rather than the individual. Individuals are important only insofar as they are members of the group. Collectivistic cultures emphasize cooperation among group members and the importance of group goals rather than individual goals.

**Masculinity-Femininity.** The dimension of masculinity-femininity concerns the extent to which characteristics of one sex are favored in culture over characteristics of the other sex (Hofstede 1984). Thus, this dimension refers to the extent to which a particular culture values traits associated with males such as success, aggression, and dominance versus the extent to which the culture values female characteristics such as nurturing, availability, and affiliation.

**Temporal orientation.** Kluckhohn and Strodtbeck (1961) argued that cultures can vary depending on whether they are primarily oriented toward the past, present or future. Past-oriented societies tend to have respect for tradition and their cultural heritage. Such



cultures tend to believe that the way things have always been done is the way they should continue. Future-oriented societies tend to embrace the future and, in a sense, look forward to changing and all that the future will bring. Other cultures live for the present and, as Kluckhohn and Strodtbeck note, consider the past unimportant and the future unpredictable. For these cultures, therefore, orientation to the present is the only one that makes sense.

Avoidance of uncertainty. Cultures vary in the extent to which they are willing to tolerate ambiguity and uncertainty (Hofstede 1984). As Hofstede notes, uncertainty about the future tends to create anxiety and stress, and societies differ on the extent to which such uncertainties exist and the extent to which uncertainty and the resulting anxiety are avoided or tolerated. In general, high uncertainty avoidance is more common among cultures that are experiencing rapid change such as new democracies, while more advanced societies, such as old democracies, tend to have a higher tolerance for uncertainty.

Activity orientation. Activity orientation focuses on the position a culture takes with respect to action versus reflection. As Kluckhohn and Strodtbeck (1961) indicate, doing versus being as positions toward human activity have been discussed in much of the philosophical literature over the centuries. Doing cultures are those that reward activity and action. Achievement is considered important in these cultures, and one can only achieve something by acting or doing. Being cultures, on the other hand, focus on reflection and understanding.

The cultural value orientations that exist in a culture reflect the general inclinations of a culture as a whole. The beliefs of individuals within a given culture about particular dimensions of value may vary and deviate from the general position of a given culture. The extent to which there is homogeneity or heterogeneity of individual beliefs within a culture is itself a dimension on which cultures may vary. Triandis (1989) argues that there are "free" cultures that tolerate differences between people and "strict" cultures that are relatively intolerant of differences. Tight cultures have harsher sanctions against norm violations, for example, than relaxed cultures. It should also be noted that value orientations can change over time.



### **9.2.2 Education**

The concept of education involves all the outputs that come to us from the outside world, from family care to school contacts, from casual encounters to media input. It involves the physical and spiritual growth of each of us. The child who is born carries within him or her infinite possibilities, some of which are common to all people, while others are peculiar and specific to each individual. Education is the development of all aspects of human personality, physical, intellectual, affective and character.

In the provision of education for the successful development of global citizenship, the development of global citizenship can be divided into four concepts: 1) Curriculum and instructional management, 2) Participation of students, parents, and communities, 3) Enhancing the culture and learning atmosphere, and 4) the development of teachers and administrators' potential (Pratumsuwan, 2019).

In many countries of the European Union, education for sustainability is already part of the curricular activities of primary and secondary schools as a cross-curricular learning area.

Education is a universal right, that is, it is among those rights that must be protected by the simple fact of belonging to humankind. Every child and every adult, from every country, in every corner of the world should be able to receive education and care. But it is not just a quantitative issue. The United Nations Organization is making the case for this: among the 17 Sustainable Development Goals - Sustainable Development Goals, SDGs - that form the foundation of the UN 2030 Agenda, one is entirely dedicated to Education: Goal 4. The UN Programme of Action, signed in 2015 by the governments of 193 member countries and divided into 169 Targets or Goals, is a community march, composed of goals common to all humankind, to be achieved all together by 2030.

Although much progress has been made, both in access to education and in literacy levels, according to the UN we need to redouble our efforts to achieve even better results toward achieving the goals for universal education.

Sustainable Development Goals (SDG) (UN, 2015), whereas to achieve the objectives and values of SDG, multi-stakeholders in education have to promote and strengthen all activities in education to accelerate the sustainable development. To build sustainable world

through education, the policymakers, institutional leaders, learners, parents, educators, youth and communities are the important elements of the global target groups which can do strengthening ESD to contribute to achieve the SDG (UNESCO, 2020). To achieve the goals, the five priority action areas are seriously considered, they comprise 1) Advancing Policy, 2) Transforming learning environments, 3) Building capacities of educators, 4) Empowering and mobilizing youth, and 5) Accelerating local level actions (GAP, 2021). The other main areas synthesized from previous related research and international experts, three main areas of challenges many developing countries have faced in supporting teacher development are the weak subject content and pedagogical knowledge, and classroom skills; the poor quality pre- and in-service teacher training, and inadequate standards, certification and accreditation procedures; and the lack of ongoing support from head teachers, schools and districts (Asian Journal of Management Sciences & Education).

### **9.3 Sustainable Development**

Sustainable development is broadly defined as: 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'.

The pursuit of economic expansion has led to issues like social inequality and environmental deterioration. Social inclusion, environmental sustainability, and economic prosperity are the three fundamental pillars of sustainable development, which calls for a more balanced approach to growth.

Economic progress does not necessarily translate into happiness or a sense of well-being, according to quality-of-life surveys like the OECD's How's Life 2020 report. The demand on our biosystem and social equity grows along with the world population. Adoption of more responsible consumption and production habits is necessary for sustainable growth. The industrial revolution brought about unprecedented economic growth and many advances such as electricity. Coal has generally been an affordable source of energy for much of the world, but it has come at a huge cost to the environment and society. Coal is a finite resource, which produces harmful greenhouse gases that have largely contributed to climate change.

A wide word used to describe investments, programs, and policies that yield advantages today without compromising the environment, society, or individual health in the long run is sustainable development. Due to their emphasis on reducing the negative effects of development on the environment, these policies are frequently referred to as "green." Nevertheless, the advantages of sustainable development are also felt across a broad spectrum of human health and well-being, including declines in sickness linked to pollution and the environment, enhanced health outcomes, and reduced stress. Win-win measures for mitigation, health improvement, and cost savings offer a range of benefits for diverse stakeholders as the concerns of climate change grow more significant. For instance, more environmentally friendly health care practices can improve worker and patient health, reduce climate risk, and save money over the long run. In order to protect future generations from the escalating health dangers of the present, the World Health Organization is dedicated to promoting sustainable development in all areas of its activities.

In 2015, the United Nations and its 193 member countries adopted the ambitious Sustainable Development Goals (SDGs), a 15-year plan that addresses 17 global and interconnected issues, including reducing poverty and hunger, ending discrimination, and preventing the long-term consequences of climate change. They are seen as "the blueprint for achieving a better and more sustainable future for all. "

Combining social, economic, and environmental factors to address the major problems of our time means that the solutions pursued are more likely to be of long-term benefit and will not come at the expense of the environment or social justice and human rights.

This represents a significant change from previous approaches that distinguished between economic, environmental, and social goals. Although each goal has its own dedicated targets to achieve, the 15-year action plan outlined in Agenda 2030 also aims to move away from isolated implementation by recognizing the interconnected nature of the world's wicked problems and the need for joined-up approaches. The SDGs recognize that economic growth, social inclusion, and environmental protection are closely interrelated and that, to achieve these goals, they must be addressed together to create lasting and positive change. Global poverty and hunger cannot be separated from climate change and environmental degradation. The need to grow economies sustainably goes hand in hand with the need

to create more equitable and peaceful societies. The SDGs apply to all countries, regardless of whether they are developed or developing; each country will contribute, depending on its unique challenges and available resources. With only 10 years to go, an ambitious global effort is underway to deliver on the 2030 promise by accelerating sustainable solutions to all of the world's major challenges, ranging from poverty and gender to climate change, inequality, and closing the finance gap.

*Why is there a need to form a new leadership class that is sensitive and educated to the issue of sustainability?*

Sustainable leadership is when business leaders (often CEOs) manage companies with the environment, society, and long-term sustainable development goals in mind. It is often referred to as PPP, or the triple bottom line: people, planet, profit. Sustainable leaders consider stakeholders (everyone connected to a company from employees, to consumers, to future generations) not just shareholders (investors who are financially invested in the company). Companies need leaders who can balance both the pressure of short-term goals and priorities and long-term objectives and incorporate a new set of ideals focused on improving social and environmental issues in the world, according to this study. It is about leading in a way that benefits societies and the environment while maintaining financial performance. But big profit and financial return are NOT the only thing that matters. (Meghan Werft, 2015).

Leaders can have sustainable business development after implementing these behaviours: 1) promoting the vision of the organization; 2) operationalizing corporate social responsibility (CSR); 3) gaining the support of top management; 4) engaging diverse stakeholders; 5) stakeholder development and empowerment; 6) measuring performance; 7) communicating with stakeholders; and 8) establishing ethical standards.

Through sustainable leadership it is much more likely that the changes needed to create a better world with equality for all will occur. Corporations and the environment benefit when CEOs and companies prioritize sustainable leadership because environment, society, and governance (ESG) add to profits. How companies' benefit is a bit more complicated. Measuring success for companies is often calculated in financial returns. But when financial returns are measured along with ESG levels, research shows that companies performed much better financially when they had higher ESG.

To achieve the global goals and end poverty by 2030, there are some key characteristics that sustainable leaders should possess. Open-mindedness, integrity, and continuous education and learning are essential.

*How do different cultural spheres impact and develop the theme of sustainability in educational settings?*

Sustainable development is achieved once people around the world live together in dignity and develop their personality while considering resource scarcity and the inherent value of natural heritage - today and in the future.

This requires future-oriented thinking and action. Individuals worldwide need skills to understand the impact of their own actions and to learn how to deal with changes and risks. They need knowledge, skills, attitudes, and values that enable responsible behavior (UNESCO, 2020-2021).

ESD enables people to make decisions for the future and assess how their actions affect future generations or life in other regions of the world. It considers the social, economic, and environmental dimensions of sustainable development.

ESD is most effective when initiatives and institutions work holistically and address all aspects of sustainability. The comprehensive institutional approach is therefore a central quality attribute of good ESD practices. Exemplary ESD Initiatives Exemplary ESD initiatives are distinguished by the following criteria: Clear management, Quality improvement, Youth, Teaching and learning, Operations, Sustainability-oriented, Innovation and networking, Communication (German Commission for UNESCO).

## **9.4 Country Cases**

### **9.4.1 Germany**

The way energy is produced, consumer behavior, and education and awareness efforts on sustainability and corporate social responsibility (CSR) issues are the three main sectors in German society that need to change.

Even while the responsible role of institutions in the demand for a transition to sustainability is frequently discussed, it may be argued that significant sustainable development cannot be achieved without



the strong impetus of a responsible response from institutions. Change is required across a wide range of stakeholders, including business, government, decision-makers, society, and educators, according to Germany's foundation for sustainable development. People who identify as "teachers" and "researchers" may deliberately consider how their area of specialization relates, in a more general sense, to the quality of life of others who are impacted by their work.

### **9.4.1 Italy**

The MIUR (Ministry of Education and Merit) outlines that in recent years schools have seen their educational responsibility broaden to new transversal areas, school autonomy has laid the foundations for a different way of relating to the territory and the institutional and professional realities that operate there.

A promoter of culture and relationships, schools can also provide students, families, and the community with the necessary tools to communicate and implement a virtuous process that truly leads toward a more fraternal humanity.

In order to carry out adequate interventions, it is of great importance that the school world establishes relationships and synergies with the reference subjects present in the territory; it is essential to activate broad collaborations, to involve institutions, local authorities and all subjects of social life in the paths of common growth.

### **9.4.1 Romania**

According to UNESCO, education for sustainable development is a key instrument to achieve the SDGs (UNESCO 2017). Sustainable development is a paradigm based on ethics and education for sustainable development and has as its goal the development of competencies that enable individuals to reflect on their own actions, taking into account their current and future social, cultural, economic, and environmental impacts. This form of education should become an integral part of all quality education and inherent to the concept of lifelong learning (Romanian Government, 2018).

Higher education in Romania enjoys university autonomy, with the principle of public accountability being laid down in the university charter, and equity and ethics policies set out in the Code of Ethics



and Professional Conduct. The national higher education system is organised around the provision of different courses of study – degree, masters, doctorate, advanced post-doctoral research programmes, as well as graduate training and continuing professional development programmes and post-graduate programmes.

In order to improve the education system in Romania and make it more flexible, more coherent and better tailored to the needs of society, in 2009, the National Qualifications Framework for Higher Education (NQFHE) was established, while in 2011 the National Register of Qualifications in Higher Education (NRQHE) became operational in the form of a portal-style IT application in Romanian and English (Romanian Government, 2018).

## **9.5 Research Methodology**

This study uses a quantitative approach to investigate whether differences exist in the SC of German, Italian, and Romanian college students. Students in the 17-27 age group participated in a survey based on five questions measuring students' knowledge, attitudes, and behaviors regarding sustainability. Student samples were selected to be comparable. Data were collected in 2023 and statistically analyzed. The questionnaire, sampling process, data collection, and statistical data analysis are described in detail in the following sections.

### **9.5.1 Survey**

The questionnaire used is aimed at investigating the effects of the implementation of sustainability in the school system. The questionnaire includes three questions aimed at knowing the followings: Age, university, and subject of study. Next, five more questions are outlined to know how close students are to the subject of sustainability and how much this awareness of SC is due to the school system and the cultural sphere.

The version provided to the three samples of students was elaborated in English. Each item of the questionnaire is highly specific, and the possible answers have been outlined in ranges or in "yes, no, maybe" answers.

### 9.5.2 Sampling and Data Collection

The aim of this study was to see if there are differences in the SC of German, Italian and Romanian youth. If there are differences, to further investigate their characteristics. If not, an attempt was made to delineate the similarities of the three cultural spheres. The analysis included three main groups of students (ages 17-27) from Italian, Romanian and German universities. A total of 40 students responded to the questionnaire. The entire sample included students from European public universities.

The study focuses on cross-cultural differences and their awareness of sustainability, and the samples were considered to define whether there are differences in European universities. However, the results of this study are not and are not intended to be representative of the three countries.

### 9.5.3 Results

This section begins with some descriptive statistics, which are then used to interpret and discuss the results of the analysis submitted here. Next, the results of the analysis corresponding to the five questions submitted to the students are presented. The questions administered are generic, as they are intended to outline an objective analysis of the case.

The five tables show the five questions and the corresponding responses (in percentages) of the forty students who participated. From these responses it is possible to delineate similarities and differences among the students.

**Table 9.1** How close are you to the topic of sustainability?

Answers	Germany	Italy	Romania
0-20%	0%	11,4%	0%
30-50%	72,7%	31,8%	42,9%
60-80%	27,3%	45,5%	57,1%
90-100%	0%	11,4%	0%

**Table 9.2** Your cultural sphere, does it influence your sustainable choices?

Answers	Germany	Italy	Romania
Yes	54,5%	54,5%	85,7%
No	0%	11,4%	0%
May be	45,5%	34,1%	14,3%

**Table 9.3** In your nation, does the educational system deal with the topic of sustainability?

Answers	Germany	Italy	Romania
Yes	27,3%	20,5%	14,3%
No	27,3%	25%	28,6%
Sometimes	45,5%	54,5%	57,1%

**Table 9.4** Would you treat the topic of sustainability more in schools?

Answers	Germany	Italy	Romania
Yes	85,7%	90,9%	100%
No	14,3%	4,5%	0%
I don't know	0%	4,5%	0%

**Table 9.5** Can education, culture and sustainable development be linked?

Answers	Germany	Italy	Romania
Strongly disagree	9,1%	2,3%	0%
Disagree	0%	0%	0%
Agree	18,2%	45,5%	42,9%
Strongly agree	72,7%	52,3%	57,1%

## 9.6 Discussion

The main objective of this study was to investigate the SCs of students at German, Italian and Romanian universities, thus contributing to the discussion on the form and character of SD and ESD in different cultural contexts. Internationally, the importance of cultural diversity is emphasized, and awareness of SD is encouraged, which can take different forms to fit the cultural context. This study investigated awareness among students in the three countries that differ in history and cultural and educational context.

The research results showed similarities among the three countries as well as differences. In fact, as can be seen in Table 1, the awareness of sustainability in the three countries is in the middle range. Therefore, German, Romanian, and Italian students feel close to SC in the same way.

Subsequently, similarities are also found in Table 2 among students who conceive as true the hypothesis that their cultural sphere influences their approach to sustainable development.

Questions 3 and 4, reported earlier, focus on the impact that the education system has on SC and whether students would like to see this topic expanded in schools. Responses were positive in all three countries except for low rates of disagreement in Italy and Germany. Finally, Table 5 shows the birth theme of the above article, namely the correlation between education, cultural and sustainability. It can be seen from the table that the majority of students agree or strongly agree on the connection of these three pillars. This supports this thesis.

This is also true, according to the study's major results, for the sustainability field. Boeve-de Pauw and Van Petegem (2011a) concluded that, in the environmental dimension, people with higher conservation values demonstrate more pro-environmental behaviors, regardless of their cultural background, while the significance of use values in predicting pro-environmental behaviors varies across cultures. Based on history and cultural and educational character, we expected to find differences in SC between German, Italian and Romanian students. The results showed that there were no significant differences among the three samples of students, nor real similarities. The results indicate greater knowledge and awareness among Romanian students and following Italian students. However, this was not associated with stronger behaviors. In contrast, German students showed a greater consensus regarding the connection between the cultural, educational, and sustainable spheres. The differences between the three samples were minimal in terms of percentages. The results support previous research suggesting that the relationships between environmental attitudes or values and behaviors are behaviors are culture-specific (Aoyagi-Usui et al. 2003; Boeve-de Pauw and Van Petegem 2011a).

Future studies on cultural differences can benefit from the use of instruments that can record different pro-environmental behaviors (such as environmental activism, consumption patterns, non-activist political behaviors, etc.), according to Boeve-de Pauw and Van Petegem (2011a). This study can offer valuable insights from this angle because this instrument asked participants to disclose their own behaviors related to these factors.

## **9.7 Conclusions**

UNESCO guidelines indicate that education for sustainable development should be framed according to the cultural context in

which it is implemented. However, little is said in international policies about the ways in which this should or could be implemented in education. For example, holistic approaches to Sd can be interpreted and managed in different ways. Environmental, social, and economic perspectives can be approached from a multidisciplinary or interdisciplinary perspective, which can lead to different but mostly higher learning outcomes. Another example is the value-oriented nature of education for sustainable development, as emphasized in several policies (UNESCO 2006, p. 5; UNESCO 2009, p. 26; UNESCO 2014, p. 14).

The research findings outline similarities among the three groups of students. However, further research is needed to define and explore ways to encourage sustainability actions among students in different cultural contexts.

From this study, research limitations were outlined, given by national government action that should implement more specific actions. This cross-cultural comparative study contributes knowledge to the discussion of the cultural specificity of SD and ESD. Comparative studies of this kind are important in shedding light on the meanings and interpretations of SD and, as a result, are a piece of the puzzle regarding the needs, challenges, opportunities, and pathways of ESD in different parts of the world (Berglund 2019).

In conclusion, culturally sustainable development is the only idea that adequately captures all the meanings of culture and all of its deep connections with the social, economic, and environmental facets of human life.

Further research should be done on the multiple possible connections between culture, education, and sustainable development, as well as the connectivity of the performance characteristics of the cultural sector. Instead of merely enabling sustainable development via culture, the emphasis should be on enabling the sustainable growth of culture itself. In order to develop procedures based on evidence rather than learning, UNESCO's mid-decade review report (2009, p. 14) advocated for greater research in the areas of outcomes, impacts, and performance. The debate of the cultural character of sustainable development and sustainable development education is aided by this cross-cultural comparative study. Such comparative studies are crucial for shedding light on the definitions and applications of sustainable development and, as a



result, for contributing to our understanding of the demands and applications of SC.

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# 10

## Open Innovation Paradigm as Sustainability Booster in Supply Chains

*Sabrina Salsano*

### 10.1 Introduction

Given the contemporary volatile, uncertain, complex and ambiguous business environment, scholars and practitioners view innovation as a critical capability that makes or breaks the future of firms. The “winners” are those organizations that relentlessly look for innovation opportunities (Drucker, 2014; Edgett, 2014). Increasingly, organizations realize that innovation cannot come only from the research and development (R&D) department but should come from all possible internal and external sources. Firms can rely on different strategies to engage innovation (Goedhuysa and Veugelers, 2012). First, as most process innovation often involves small changes in the production method and operational routine of firms, firms can follow an internal innovation strategy. It can take shape using collaboration between their departments, incorporating, and applying useful techniques from skilled employees, developing their own technology, and creating their machine tools to produce better services at low cost (Tseng and Tseng, 2019). Second, firms can also adopt an externally oriented innovation strategy. When following this strategy, firms usually look for partners with relevant knowledge and set transactions (Nag and Mohapatra, 2012). Those partners could provide firms with external knowledge that would require more time and money to develop internally (De Clercq and Dimov, 2008). Externally, innovation can also be derived in the existing supply chains. The importance of supply chain collaboration in pursuing innovation is generally recognized in the supply chain management literature (Cao

and Zhang, 2011; Soosay et al., 2008; Soosay and Hyland, 2015). However, it is unclear what actions and efforts under collaboration with other supply chain entities drive innovation. Despite the existence of various forms of open innovation (OI) approaches, little is known about how companies innovate in external collaborations, benefit from their innovations (Stefan & Bengtsson, 2017), and with whom and for what reasons they cooperate with outside partners (Huizingh, 2011). In particular, this applies in the context of sustainability innovations (Hossain, 2010; Mustaquim & Nyström, 2014) referring to the need to re-think and re-design products, processes, and services to meet the requirements of Sustainable Development, which are being demanded by different groups, such as customers, NGOs, and governments (Ketata, Sofka & Grimpe, 2015; Tsai & Liao, 2017). Thus, organizations are being compelled to explore innovative measures to achieve integration of related aspects of sustainability (i.e., inclusion, environmental resilience, and organizational performance) (Geissdoerfer et al., 2017; Polese et al., 2018). Importantly, organizations may take different approaches to integrate sustainability-focused innovation. One relevant approach is to view it as an opportunity to include the sustainability perspective, and thereby re-engineer the organization to develop profitable business strategies (Alberti and Varon Garrido, 2017; Hahn et al., 2018). Nevertheless, as developing business strategies that align profit and sustainability is a challenge for both managers and strategists alike, this “re-engineering” approach should be addressed by a collaborative “user-centric approach,” instead of the traditional manufacturer-centered approach (Bustinza et al., 2019). Thus, one may conclude that OI practices within organizations, do have the potential to positively impact both sustainability and innovation because of the complementarities of knowledge and resources (Keupp and Gassmann, 2009). Past literature on OI has highlighted the need to extend an understanding of the area beyond individual organizations to a higher-level organizational aggregation (Rauter, 2019). The sustainability focus as an inclusive, innovative, and integrative measure, creates shared value for the organizations, its stakeholders, as well as society (Caputo et al., 2019b). Open innovation for sustainability (OIS) can help enhance innovation efforts by creating external pressure and facilitating knowledge exchange for environmental, social, and economic performance (Lopes et al., 2017). Further, OIS can assist organizations to look beyond their existing resource pool and business environment, and thereby include their partners and stakeholders for more inclusivity

(Di Fatta et al., 2018; Wang et al., 2020). There are limited studies that have explored OI with a focus on knowledge in the ecosystem dynamics (Spender et al., 2017). In other words, it is important for organizations to create an ecosystem that would serve as a platform to collaborate, encourage cross-boundary teams for setting up a community of practices and strengthen sociotechnical practice sharing on sustainability issues (Gawer and Cusumano, 2014; Caputo et al., 2018). In this study the area of Open Innovation for Sustainability in relation to the supply chain management is widened. The aim is to provide evidence of the cruciality of OIS integration as a core business strategy if combined with business and knowledge exchange from both internal and external stakeholders (Aloini et al., 2017; Santoro et al., 2018; Di Fatta et al., 2018).

## **10.2 Literature Review**

The theoretical framework analysis is focused on the connection among the open innovation strategy, the sustainability topic, and the key role of supply chain management for companies' successful outcome.

### **10.2.1 The Open Innovation Phenomenon**

Over the years, innovation has brought about increasing interest among scholars and it has been studied by different disciplines and from several perspectives (Paula et al; 2018; Fagerberg, 2009; Martin, 2012). In the field of business, innovation is understood, according to OECD (OECD, 2005), "as the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations."

Innovation is considered by scholars to be an important asset for organizational construction and strategic maintenance, enhancing the competitive advantage of companies and ensuring their sustainability and economic success (Yun et al; 2019, Le et al; 2019). Without innovation, businesses would probably disappear (Chesbrough et al; 2006). With increasing competitive and globalized conditions driven by innovation (Paula et al; 2018), businesses can no longer consider innovation the result of isolated contributions, but rather of a co-creative process with knowledge circulating within the economic and



social environment (Sivam et al; 2019). Organizations need to make innovation available to all active parties in the process. To do so, the collaborative side of innovation in the form of the open innovation phenomenon is used and an emerging field of research has gained popularity in innovation management as a result (Paula et al; 2018, Popa et al; 2017). Although the concept of open innovation is deep-rooted (Paula et al; 2018), this field of research has attracted increased attention in academic fields (Bogers et al; 2017) since the term open innovation was created. Henry Chesbrough conceptualized the key differences between the traditional closed model of innovation and the open innovation model in 2003 while coining the concept. Chesbrough (Chesbrough, 2003) defined open innovation as “a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology.” This definition opposes traditional “closed” innovation, where firms can rely on their internal research and development efforts (Chesbrough, 2003). Since Chesbrough’s first definition of open innovation, the concept has been further described by several authors who have introduced new notions (Chesbrough, 2006; Chesbrough, 2014). A relevant issue in the open innovation literature is the context of its application and the importance it has been having in the economic environments where it is developed. Thus, the connection between open innovation processes and the economic environment where they take place plays a key role in the empirical application of the OI paradigm (Shum et al; 2020; Cooke, 2020). From the economic environments’ perspective, a crucial issue is how open innovation contributes to development through efficiency improvements or increasing the value of activities, which can be generated with these practices in the economic field, in general, and the industrial field, in particular (Shum et al; 2020). Additionally, extant research has connected this paradigm with economic environments in different ways. These works have contributed to the open innovation trend and have emphasized the importance and applicability, through its connection with the fourth industrial revolution (Shum et al; 2020), the creation and appropriation of knowledge-related open innovation with digitalization/broadband networks (Rasiah et al; 2019), the entrepreneurship effect and, particularly, high-tech start-ups (Cooke, 2019), the open science with its social contract and contributions for society (Krishna, 2020), the power of data as crucial tool for increasing the corporate profits (Cooke, 2020), or the human ingenuity and transformation processes dedicated to sustainability



(Pika et al; 2019). The establishment of trusted relations in aligned communities, networks, and stakeholders will be integrated in the surrounding communities thus creating an ecosystem. Innovation 3.0 was proposed in 2010 as conceptual approach, as “Embedded Innovation”; the framework encompasses the digital transformation. SMEs (Small and Medium Sized firms) that emerged in a digital and dynamic environment should rely on combined knowledge as it is the most important source of innovation, being essential for survival and growth (Hafkesbrink et al; 2011). This framework captures how companies survive and the way they embed with the other players, focusing on the idiosyncrasies of each. The embedding of the different organisms requires the promotion of the “innovation ecosystems” and business models for innovation to generate sustainable ecosystems. Given the dynamic nature of the innovative process, the organizational process needs to encompass the exploration/exploitation binomial to survive the demanding environment (Hafkesbrink et al; 2011, Simanis et al; 2019). When fed with innovation, embeddedness is a self-sustained process in which the firms along with its stakeholders interact in a certain environment, coexisting and stressing for survival; the process will shape the environment. Mutual influences are exerted, and the innovation process is intertwined with the environment along the innovation life cycle (Simanis et al; 2009). Embedded innovation practices require the consumer involvement, and the perception of long-term ties between agents creating value and critical development of complementarities among them, seeding the sustainable economies of the future. Consequently, the framework cannot be considered a substitute but a complement to the conventional models. Structural innovations, despite their importance, are bounded to firms’ internal resources, limiting the ability to stay competitive in the long run and beat the competition (Hafkesbrink et al; 2011; Gerlitz, 2016).

### **10.2.2 Sustainable Innovation Criteria**

Innovation is essential for corporate and supply chain sustainability development and implementation (Schaltegger and Wagner, 2011; Klewitz and Hansen, 2014). Sustainable innovation can be defined as new or modified processes, techniques, practices, systems, and products to reduce social and environmental harm (Kemp, Arundel, and Smith, 2001; Beise and Rennings, 2005). This definition considers product and production process changes (De

Marchi, 2012). Recycling, waste management, green efficiency, green design and concerns essential to reduce the environmental and social impact of organizational products should also be considered in organizational sustainability innovations. The term green and sustainable innovation has been used interchangeably in the literature, with similar theoretical underpinnings (Hall 2002; Wagner 2008; Klewitz and Hansen 2014; Gupta and Barua 2017). Deeper insight is therefore required for better understanding of these concepts. Sustainable and green innovation antecedents and characteristics have been studied over the years with several findings. Stakeholder engagement, internal and external stakeholders, are important for promoting sustainable innovation in organizations (Ayuso et al. 2011). Drivers for sustainable innovation include strong business networks, seeking to build competitive advantage, R&D organizational support, cost savings, subsidies and tax cuts, compliance with regulations and customer demand (Vasilenko and Arbaciauskas, 2012). Applying sustainable innovations can also benefit organizations a number of outcomes that make the business case including reducing costs, improving profits and social image of the organization (Aguado, Alvarez, and Domingo 2013). Sustainable innovations can also be industry specific. For example, in the chemical industry, cost reduction, improved feedstock, improved yields and broadly increasing market share occurred from building sustainability into innovations. Risk management is also an important aspect for sustainability innovations. Organizations' that do not include social factors into their process innovations are at more risk than others (Iles and Martin 2013). Broadly, knowledge management and learning have also played important roles in sustainability innovation. Systematic reviews of literature and qualitative studies (De Medeiros et al;2014-2016) recently showed that knowledge on government regulations, inter-organizational collaboration, fulfilling customer needs, innovation learning, technology and R&D investments are essential for green innovations. Content analysis reviewing literature from 1991 to 2016 (Tariq et al. 2017) revealed various attributes of sustainable innovation including market factors, stakeholders' pressure, technological factors, collaborations and networking factors, organizational factors, and social, cultural, and ethical factors. All these dimensions, as in much literature, for green innovation, result in economic and financial, market and environmental performance outcomes. Building dynamic capabilities and the resource-based perspective can help explain various drivers and factors in sustainable innovation (Mousavi and Bossink, 2017).

Entrepreneurial capabilities to gather knowledge related to environmental policies and technologies; transforming opportunities into meaningful innovative processes and products; and reconfiguration to achieve strategic fit through realignment of resources according to requirements, have all been identified as ways for building and adjusting sustainability capabilities. Sustainability problems have become crucial in recent years due to the global concern about the impact that businesses can have on resources, the environment, and society (Yun and Liu, 2019). Sustainability brings inherent degrees of uncertainty, complexity, and big challenges compiled by the United Nations in the Sustainable Development Goals (SDGs) (Borgers et al; 2020). As mentioned before, open innovation entails that the company is more and more influenced by external stakeholders and their behavior (Payan-Sanchez et al; 2018). Therefore, stakeholders transfer their ideas and knowledge inside the innovation process of the company, which generates a need for coevolution between technological innovations and social innovations (Choi,2020).

### **10.2.3 The Supply Chain Evolution**

Since the advent of globalization, the majority of small and large firms have acknowledged the necessity of intercontinental integration to compete in the global market. Only broad cooperation and expansion outside of national borders and onto other continents might achieve the objectives of establishing a competitive advantage and lowering corporate costs. Supply chain research has emerged as a modern commerce solution to leverage this shift to the networked economy (Tseng & Hung, 2014). The supply chain term, initially defined by Oliver and Webber (1982), refers to the systematic collaboration between people, processes, and information of alike organizations to create tangible (i.e., product) or intangible (i.e., service) values and deliver them to the customers. In this regard, supply chain management evaluates and aligns end-to-end business processes with the market demand to create competitive advantage over the rivals, while it does not consider how the demand is generated. In the digital age, more complexity could be afforded when analyzing supply chains which changed its management perspective to accommodate flexibility, agility, and adaptability. This broader perspective implies the need for extending the supply chain objective from overall supply chain cost reduction to operational efficiency

improvement. Aligned with this change, the primary focus of research papers on supply chains shifted from pure economic goals to operational goals (Goetschalcks & Fleischmann, 2008). Reducing the total costs of supply chain operation, increasing the total income, and eliminating the asset's exposure to risk are some examples of financial goals supply chains sought to attain in the long-term (Goetschalcks & Fleischmann, 2008; Stadtler, 2008). To survive in increasingly competitive business environment, competitive strategy formulation could assist supply chains in gaining market leadership and maximizing the return on investment (Giunipero, Hooker, & Denslow, 2012). To achieve the determined competitive strategies, the core business functions of supply chains including transportation and logistics, manufacturing and service, and procurement were to be re-evaluated and re-designed (Mentzer et al., 2001). Many avenues of research on supplier selection and management, production planning and process optimization, logistics and distribution, transportation selection, workforce scheduling, resilience and risk assessment, finance and accounting have been developed for supply chain management (Kouvelis, Chambers, & Wang, 2006). After 17 years of Chesbrough's seminal work (Chesbrough, 2003), there has been growth in publications considering the chain as a system composed of knowledge sources from the perspective of openness. There is evidence of change from company level to interorganizational levels focusing on supply chain in one paper in 2010 and five in 2018. The importance of dealing with supply chain management in a brand-new perspective has also been influenced by nowadays sustainable revolution. Evolving over the years, sustainability has been discussed in various contexts and was presented in several ways to draw the attention to the environmental issues and the necessity to take serious actions. Most studies in Sustainable Supply Chain (SSC) literature were developed based on Brundtland commission definition for sustainability as meeting the needs of today without compromising the ability to meet the needs of the future generations (WCED 1987). While there are serious concerns about the meaning of this definition and vagueness about what present and future needs are, and what should be sustained (Voinov, 2017), the Brundtland report was pivotal to introduce the ideas of sustainable development to the political process. In most sectors, environmental effects linked to supply chains are thought to be becoming more crucial for sustainable growth. Businesses must decide whether to adapt in response to environmental concerns under internal and external pressures, and if so, what adjustments should be made to their supply chains. SSC is



the incorporation of socio-environmental sustainability goals into the systematic arrangement of key inter-business functions along a chain. It was seen as a potential solution to improve the sustainability performance in the long-term (Carter & Rogers, 2008). Several terms such as green supply chain (Srivastava, 2007), low-carbon supply chain (Shaw, Shankar, Yadav, & Thakur, 2012), social supply chain (Hutchins & Sutherland, 2008) and ethical supply chain (Seuring & Müller, 2008) can be found in the SSC literature.

### **10.3 The Research Methodology**

A systematic literature review summarizes existing evidence, identifying gaps and directions for future research (Petticrew and Roberts, 2006), hence identifying current boundaries in the discourse. It differs from a narrative review because of its methodical approach, implying a detailed description of the steps taken to select, scan and analyze the literature, aiming at reducing biases and increasing transparency (Fink, 2013; Tranfield et al., 2003). It amplifies opportunities for replication (de Zubielqui et al., 2017; Nascimento and da Silveira, 2017), allowing for review of commonalities and disparities, thus extending the knowledge in the field (Denyer and Tranfield, 2009). Despite the challenges – such as cross-discipline synthesis of data (Pittaway et al., 2004) – it remains valuable to identify the breadth of current propositions on open innovation and sustainable supply chain and, identify future research opportunities in the discourse. Descriptive rather than statistical analyses of results have been presented. The data presented refers to the findings resulting from computerized-database analysis.

#### **10.3.1 Review Topic and Research Questions**

The urge to find a way to make companies more sustainable in the shortest term has become the priority of this decade. Some scholars, as underlined previously, have recognized the relevancy of open innovation linked to a better supply chain management as a possible solution to simplify the sustainable transition. Nevertheless, it's necessary to focus on the topic deepening in how to concretize this transformation and to address the OI and SSC as enterprises' routine. Following such precedence, this systematic literature review offers a revealing stand-alone evaluation of purposefully considered literature

related to this thematic. Specifically, the aim of this study is to address the following research questions:

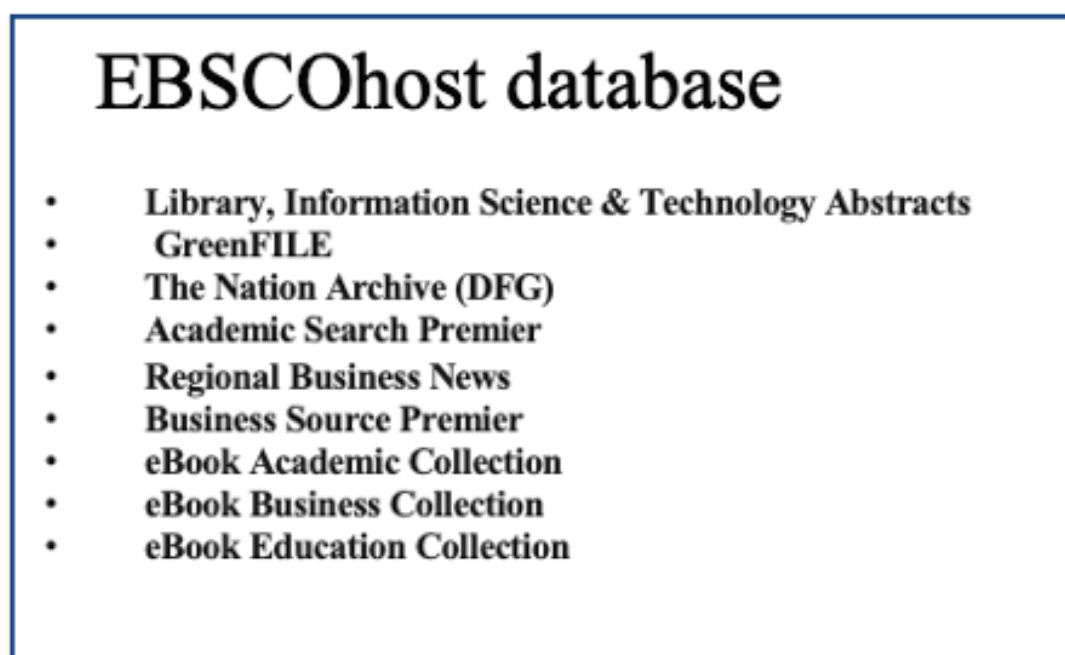
**Q1:** *How can open innovation and supply chain management concretely help companies during the sustainable transition?*

**Q2:** *Is the significance of this theme recognized by experts?*

### **10.3.2 The Search Process**

Tranfield et al.'s (2003) three-stage procedure - planning, execution, and reporting guided this research. Research objectives and key database sources were identified during the planning stage. To support the research aim, objectives were set to allow for broad scan of articles: to assess the range of paradigms, definitions, and operationalization in conjunction with theoretical and methodological similarities and disparities. The list of articles was generated by computerized-database keywords searches on EBSCO Host®. EBSCO Host® was chosen as the primary database as it simultaneously searches articles on databases such as Emerald®, the Sage®, Blackwell® and Science Direct®, thus demonstrating its scope and potential for a systematic review and meta-analysis study. This allowed for a broader search covering a wide range of disciplines with indexed content from more than 20,000 journals.

**Figure 10.1** Database choice





### 10.3.3 Identifying the Selection Criteria

EBSCOhost made it possible to consult many professional literary databases, getting the opportunity to evaluate and assess many sources in the fields of business, technology, information science and education.

At the beginning of the process, the keywords chosen were “open innovation” AND “sustainability” to gain a broader overview of the main topic. There were no filters regarding the year or type of publication, but due to the linguistic limitations, articles were only considered if they were available in English language. Likewise, to allow for appropriate review and analysis, articles were considered only if full text was available from the database. Subsequently, was taken the decision to extend the research including the supply chain management topic, this decision was considered due to (1) the imperative to narrow the field down, (2) the curiosity to check whether scholars dealt with OI, SI and SSC at the same time, and (3) the willingness to discover in what way these keywords were linked together. Since the scope was restricted and since this way of handling with the topic is not traditional, the only limitation left was the one regarding the need for English papers. The final search string is summarized below:

**Keywords:** {open innovation AND sustainability AND supply chain} OR {open innovation AND sustainable supply chain}.

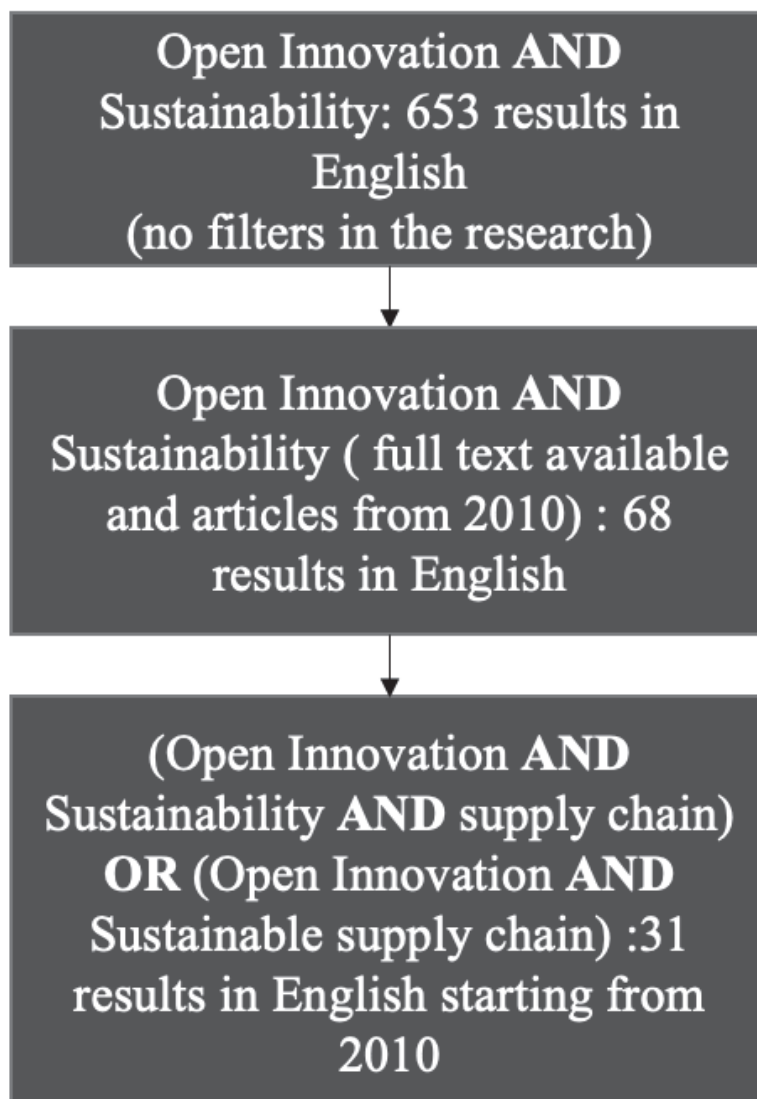
**Exclusion criteria:** Only English publications allowed, and date limitation: Starting from the 2010.

## 10.4 Findings and Discussion

Through the usage of EBSCOhost complete database, it was possible to report the following results. The main steps of this process are perfectly underlined by this own-produced scheme (Figure 10.2). Everything has started with broader research, as mentioned in the methodology, to have an overview of the main topic importance. As expected, more than 600 articles have been found proving prominence of the OI as sustainability ally. The first findings included articles from the 2000 to 2023 and many of those did not provide a full text version. Consequently, the criteria became stricter since articles with no text to examine or referring to more than twenty years ago are not worthy to be consulted. This change led to an intense

lowering of papers appeared, from 653 to only 68. At that point emerged the need to contextualize the argumentations presented in the previous pages so the supply chain management has been involved in the analysis. In fact, the real puzzle is to understand how the modern literature has linked the three topics together up to now. The selected criterion regards the combination of OI, sustainability and supply chain OR mixing the OI with the SSC. This typology of keywords conjunction gets to an immediate response: 32 English articles from 2010 arose on the database. The decision of not limitation of the results to the ones linked to a full text, has been driven by the awareness that this approach is not that common and that every paper talking about our keywords together deserve to be read and considered.

**Figure 10.2** Keywords findings



**Table 10.1** Keywords inside the abstract

OI, SI, SC	OI&SC	SI&SC	OI&SI
16	6	6	3

**Table 10.2** Some selected papers' objectives

Open innovation as a practice to enhance sustainable supply chain management in SMEs (Viale et al; 2022).
The Impact of Electronic Procurement Adoption on Green Procurement towards Sustainable Supply Chain Performance-Evidence from Malaysian ISO Organizations (Singh and Chan; 2022).
A consumer-centric open innovation framework for food and packaging manufacturing (Tsimiklis et al; 2015).
Open for green innovation: from the perspective of green process and green consumer innovation (Yang and Roh,2017).
Open innovation in the manufacturing Industry: A review and research agenda (Obradovic et al;2021)
Eco-Innovation, Sustainability and Business Model Innovation by Open Innovation Dynamics (Pichlak and Szromek; 2021).
Investigating open innovation strategic alignment for sustainable competitive advantage in the automotive supply chain in South Africa (Gonyora et al; 2021).
The role of manufacturers in food innovations in Sweden (Beckeman et al; 2013).

From this point on, the explanations will be referring to the 31 articles resulting from the most specific procedure. A strict work of checking has been accomplished to prove and show how many papers are connected to the aim of this research. The first move has been the reading of the various abstracts, this process allowed to investigate the real number of texts talking about open innovation and its effects on sustainable innovation thanks to the groundbreaking help of a better supply chain management. The results are showed briefly in Table 10.1: 16 articles out of 30 are concretely talking about the topic, while 6 are about the relationship between open innovation and supply chain, 6 about the sustainable supply chain paradigm all alone and ultimately 3 texts are dedicated to the general topic of open

innovation for sustainability. This proceeding could be compared to a skimming protocol, in fact it makes it possible to focus the attention on the precious data excluding papers that can be deceiving but in the end are useless for the purpose.

It highlights open innovation as a practice within a sustainable supply chain that offers opportunities for mutual gain and learning without creating imbalance between customer and supplier and by developing sustainable purchasing. The study recommends that demand for environmentally friendly products and services be fueled by OI based purchases, resulting in a greener supply chain. It presents a new ICT based framework that embraces open innovation to place customers in the product development loop but at the same time assesses and eventually coordinates the entire manufacturing and supply chain in a sustainable way. This alternative approaches to open and green innovation will contribute to corporate sustainability in the future. Collaborating throughout the supply chain and sustainability study, represent important future research streams for OI.

The adoption of an open innovation strategy strengthens sustainable business leaders' propensity to generate eco-innovation. Moreover, developing such changes is dominated by the adoption of strategic and operational forward supply chain collaboration.

This study provides a further academic understanding of the open innovation strategic alignment imperatives and assists management to understand how they can ensure that strategic alignment between and amongst themselves, as managers should cascade to all levels in their firms to enhance sustainable competitive advantage.

Manufacturers and the whole supply chain would benefit from an "open innovation" mindset to work differently, build trust, and meet sustainability requirements.

At this point of the paper, the time to substantiate the thesis has come. The most relevant findings, that are linearly connected to the argument that has to be proven, are here reported (Tab.2). After deepening inside these papers, a summarization of their message has been proposed, the results evidence the utility, but also the necessity, of a new approach to companies' sustainability issues. Those sentences sum up perfectly the answers to our research questions. Indeed, OI and SCM are considered essential components to drive a sustainable change, this has been stated according to all 16 specific texts. In the Tab.2 have been inserted the most interesting articles in

terms of explanations and findings but none of them has diverged from the common message.

## **10.5 Conclusion**

This systematic literature review paper has provided an overview of the current trends of sustainability paradigms in open innovation and the linked supply chain management. The analysis showed that large numbers of articles on OIS have positive expectations on the future evolution of this phenomenon. However, when it comes to narrowing down the topic with specific and updated research, the results are not that convincing. This paper has identified most popular articles that want to study and forecast the feasibility of OIS together with SSC. The findings are inspiring but limited in terms of number of papers worth to work on, geolocation of the companies used as case studies and at the level of accuracy. Whereas the well-known concept of open innovation has frequently been used in recent empirical studies, the aim was to enlarge the concept within the context of sustainability innovations and expanding the list of potential stakeholders as collaboration partners. If on one side the significance of open innovation for sustainability is widely recognized, contrariwise, despite its vital importance in contemporary business and the need for more research, understanding the key drivers of enhancing supply chain innovation remains underdeveloped (Cottrill and Rice, 2013; Fawcett et al., 2014; Singhry, 2015; Soosay et al., 2008). Sustainability-related studies have strongly entered in the innovation discipline in the last several years with almost 80% of the articles being published from 2015 to 2019, thus becoming one of the most relevant elements in today's research on open innovation. This increase has been mostly influenced by the boost experienced with the appearance of the journal *Sustainability* (Switzerland), that mainly focuses on publishing sustainability and environmental related papers about open innovation (Payan-Sanchez et al; 2021). This study is an attempt to overcome the traditional implication of OI and SI relationship conceptualizing an open innovation approach in a supply chain setting.

***Limitations of the Study and Suggestions for Further Research:*** lthough this study does have several contributions, there exist some limitations and concerns. These limitations do provide useful and additional opportunities for more studies into the subject. The study



is a snapshot in time, and much broader empirical and longitudinal investigation to determine if the open innovation importance as a facilitator for a sustainable supply chain development may change over time is required. Moreover, a broader analysis inside the literature review is demanded to scholars and experts equipped with professional databases and softwares. The findings presented in this paper have opened up significant opportunities for future research. First, as this study did not dive into the comparison and differentiation among companies' fields in terms of OI for SSC application, future studies can involve a bigger data set from any two types of industries and performing a comparative analysis of results of these two industries. Second, it would be interesting to additionally analyze how company factors influence the internal acceptance and implementation of open innovation for sustainability along their supply chain. Third, a need to understand the differences between the organizational practices of SMEs and multinational companies is highlighted, and further delineation of what is effective for incremental and radical sustainable open innovation (SOI) inside companies' value chain. I invite studies to explore the extent and under what conditions these findings may be transferable. This paper sets an initial stage for further and future research investigation and practical application of open and sustainable innovation of supply chains.

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# 11

## **Green Finance for Sustainability: Practices by Turkish Banks**

*Yağmur Rençber and Halit Targan Ünal*

### **11.1 Introduction**

The concept of innovation has become increasingly important in recent years, appears in many places with the meaning of innovation. However, if there is no commercial benefit in the end, it is not possible to talk about innovation in an innovation. Innovation is an economic and social process. It allows the transformation of knowledge in a way that will provide economic and social benefits. As a result of innovation, a product, service or management style may occur. With innovation, a new feature can also be developed, a need can be answered or an existing problem can be resolved. Thus, it responds to expectations for a more useful and beneficial purpose. In order for innovation to be sustainable, the product produced must be environmentally friendly. Products produced with the logic of ecological production represent sustainable innovation. Because the way to be sustainable is to comply with all environmental rules. For example, the production of plastics that can be lost in nature is an example of sustainable innovation. In this sense, in this study, green banking and green banking products will be introduced, green finance applications that pave the way for sustainable innovation will be introduced, and it will be aimed to emphasize the market cycle and importance of green loans, which provide resources for green bonds, especially renewable energy investments.

Today, as a result of various environmental problems such as the reduction of natural resources (underground and water resources) in the world, deforestation, climate change, loss of biodiversity, global warming, water pollution, ozone layer depletion, environment and air

pollution, humanity is unconsciously consumed by fossil fuels (oil, coal, natural gas, etc.) has been in search of a solution. The world economy has turned to various renewable energy sources in order to restore the balances that have been disrupted due to the carbon-dependent production process, which is called the brown economy. Again, energy-efficient products have been used to protect natural resources, to produce without harming the environment, to release less greenhouse gasses to the atmosphere, and to pollute less. Here, encouraging people to this new type of energy use, which is formed with environmental awareness and environmental awareness, and financing this use is also an important issue. In this process, where new ideas are started to be produced by applying sustainable innovation;

- Soiless farming practices
- Software that regulates traffic flow using advanced algorithms and reduces the time spent in traffic
- Special window systems that change position according to sun and weather conditions to reduce energy consumption in homes
- Systems that detect leakage in irrigation channels and send a message to the farmer
- Storage solutions that collect waste food in restaurants and turn it into biogas
- Online education solutions and many other innovative ideas have been brought to those who have difficult access to education, and the production process has been tried to be sustainable, which is compatible with the green economy.

When looked at, it is accepted that the world is in a difficult period in which climate changes trigger migration waves and migration waves trigger wars and conflicts.

In this sense, from past to present, countries have set main targets such as creating employment, ensuring price stability and creating economic growth in order to keep their economies alive.

Within the scope of the target of the Paris Agreement ( 2015), a global strategy should be developed to reduce the activities that will destroy the environment and to impose sanctions, to attract the attention of the private sector to green projects, and to provide incentives and tax support. The OECD Green Growth strategy is an example of this (2010:3). The Green Growth Strategy Interim Report consists of 5 main titles and basically targets greener growth.

## **11.2 The Relationship between Sustainable Innovation and Green Finance**

It is almost impossible for businesses to be financed with only equity. In this sense, the banking market has an indispensable place in the capitalist system. Businesses with insufficient own resources have to turn to either the capital market or the banking market. The banking market is of great importance as it can provide resources faster and easier than the capital market and small enterprises have almost no chance to enter the capital market. Small businesses make loan agreements with multiple banks. In 2007, Ogawa et al. observed this situation for Japan. When looked at, businesses with high debt and liquidity problems have worked with more than one bank. In 2006, Aaboen et al. It has been observed that basic capital support for 183 SMEs with advanced technology is provided by more than one bank for Sweden. In 2003, Hooks showed that small businesses in the USA made more loan agreements with banks, just as they did in Japan. Large enterprises, on the other hand, use credit intensively if the credit information they receive from banks cannot be easily obtained from outside. While using loans from banks is a necessity for small businesses, it is perceived as a loss of reputation for large businesses. For this reason, Hooks (2003) states that state authorities have a duty to protect the reputation of businesses. On the other hand, the traditional bank-operation relationship has taken a different dimension in recent years and has begun to take shape within the framework of the concept of sustainability. Sustainability of investments has become an important prerequisite for both loan providers and loan demanders. Reasons such as legal regulations, increased operating costs, awareness of the negative ecological impacts of their activities and stakeholder pressure have caused businesses to strategically reconsider their perspectives on the natural environment (Kassinis and Soteriou 2003). Non-environmental investments of businesses have also led to loss of income in various ways. Heinkel et al. (2001) states in his research that green investors show less interest in the shares of the relevant enterprises due to the fact that the enterprises do not make ethical investments or do not renew their technologies, and therefore the value of the securities of the enterprises that pollute the environment decreases. The authors state that this situation increases the capital costs of the enterprises and for this reason, the enterprises necessarily turn to green investments. Stating that 25% of a company's stocks are green shares,

Heinkel et al. (2001) on the other hand, states that the ratio of green shares owned by enterprises is around 10%.

In this sense, the term green finance represents a nature-friendly, environmentally beneficial perspective. It is also aimed to use less harmful products and to implement projects. For this purpose, these products and projects are financed by offering appropriate opportunities by financial institutions. Here you can find low interest rates, low bank charges, donations to environmental organizations, etc. In these ways, customers are encouraged to use green financial products. Today, green finance is seen as one of the important pillars of sustainable global development (Kuloğlu and Öncel, 2015: 3). Meeting the increasing energy need with oil has increased environmental pollution, and the fluctuation of the oil market has increased the costs. In addition, the focus on global warming with the development goals in question has directed investments in the world in recent years to the green economy, which represents clean energy. In other words, investments have been converted to green financing. Governments, financial institutions and investors have started to spend their money on technologies that will cause the least damage to the environment. It offers appropriate solutions to the problems caused by rising energy demand, depleted fossil fuels and natural resources in our era of green financing. The use of renewable energy sources and other environmentally friendly technologies not only triggers socio-economic growth, but also offers attractive opportunities to investors around the world (Browne, 2011). For financial institutions that play important roles in economic development, environmental protection and social responsibility due to their financial investment and lending decisions, the concept of sustainability means managing “social and environmental risks” in the decision-making and lending stages (IFC 2007). The International Finance Corporation (IFC) (2007) defined sustainable finance as “the transfer of financial capital and risk management into projects that do not harm and promote economic wealth, environmental protection and social justice”. Why do we merge with banks? Because the institutions that are the locomotive of the economy that support production with loans are banks. It is possible that renewable energy is an expensive investment and companies can overcome this with banks. This brings up the term green banking. Because investments financed by banks may cause direct or indirect damage to the environment (Thompson 1998; Cowton and Thompson 2000). In order to eliminate or minimize these losses, it is important for banks



to support investment projects aimed at protecting the natural and human environment within the scope of sustainability. In addition, considering the financial dimension of sustainability in the discussions held at international environmental conferences, financial institutions were asked to direct their resources to sustainable investments (White 1996). Countries were asked to encourage their financial banking sectors in this regard (Aizawa and Yang 2010). Bouma et al. (2001) by sustainable banking; It is defined as “the provision of financial services and products to individuals and businesses that take into account the environmental and social impacts that may arise from their activities”. Sustainability banking activities; It has been an approach that paved the way for “green banking” activities, where environmentally friendly investments are supported by a corporate social responsibility approach and environmental reports are prepared.

One of the other factors that makes green finance companies preferable is green energy certification. This certificate is a document given on a project basis to companies & organizations that provide output through renewable energy sources during production. By including its investment in the green certificate system, the producer company in question can find the opportunity to trade international certificates and earn additional income per kWh of its current production (by reducing the cost of resources by finding cheaper loans by the certified company). It is mostly practiced in the Netherlands, Denmark and Italy.

The product should provide customers with a transparent option to mitigate indirect effects from banking activities. Negative environmental effects must be eliminated or environmental benefits must be achieved. The following includes environmentally friendly financial products and services in developed regions such as Europe, USA, Australia, Japan, as well as unique green financial regulations proposed or implemented by the International Finance Corporation (IFC). The financial services sector is divided into four sub-sectors. These are:

- Retail Banking;
- Corporate Banking and Investment Banking;
- Asset Management and
- It is in the form of insurance (UNEP FI, 2007: 15).

Considering the use of green financial products and services in the world, the Netherlands is one of the first countries in Europe to take

the lead. The Netherlands offers green financial products within the scope of ABN AMRO, Dutch Bank, Rabobank, and similar companies. The UK provides green financing support with companies such as Barclays, CFS, Abbey, HBOS and Halifax. Germany Deutsche Bank and its affiliated banks, Ireland Bank of Ireland and Switzerland Credit Suisse are the countries where green financial products are seen. Also, The USA (Bank of America, Citigroup, JP Morgan, Wells Fargo, etc.), Canada (CHMC, VanCity, etc.), some Latin American countries (especially in the forest bonds area) and Australia (Bendigo Bank, etc.) are among the countries where green financial products are developed after Europe. Turkey Sustainable Energy Financing Program (TURSEFF) is accepted as one of the institutions providing the most foreign resources in the field of renewable energy in Turkey. Vakıfbank supports entrepreneurs who want to produce energy from solar energy within the scope of innovation with the agreement it has made with the European Bank for Reconstruction and Development. On the other hand, it also offers financing to projects related to wind, geothermal and biomass energy. The Industrial Development Bank of Turkey also provides support for energy efficiency loans. Turkish Economy Bank, Denizbank and İşbank also offer green financing loans for hydroelectric power plants, wind panels, pumps and equipment required for geothermal energy production.

In 2006, Scholtens defines this banking activity, which he calls environment-friendly project finance, as the allocation of financial resources to investment projects that care about and support the protection of resources, with a priority for the protection and development of the natural and human environment. The fact that American banks were fined in large amounts by the courts in the 1980s for causing direct or indirect environmental damage can be considered as the starting point of green banking (Sahoo and Nayak 2008). With the CERCLA Act enacted by the American Congress on 11 November 1980, the owners of industries and banks that pollute public health and the environment were found guilty and banks providing funds to businesses were sentenced to pay compensation (Weber 2008). Penalties for some banks greatly exceeded the amount of financial resources they provided. Green banking can be expressed as a financial tool that encourages businesses to implement more environmentally friendly policies, supports investment projects that are based on the protection of the natural environment and reduce environmental and social problems. Depending on the intensity of environmental, social or cultural disruptions faced by countries, the

separation of resources may differ. For example, Ökobank, the world's first green bank founded in Germany in 1988, directed its funds to environmental issues, social justice, education and equal opportunities, while South Shore Bank, established in the USA, directed its resources to investments that base its resources on rainforest protection and prioritize environmental and economic development (White 1996). Banks that adopt the green banking strategy create new financial resources for various industries by providing resources to projects that are supported by the society and that can also be beneficial to the environment, as well as the traditional firm and project risk control applied when funding investments (Güler ve Tufan, 2015).

### **11.3 Green Finance Models**

#### **11.3.1 Green Loans**

Green loans are loans developed by many international financial institutions such as the World Bank, European Investment Bank (EIB), Exim bank, French Development Agency (FKA), Japanese Development Bank (JKB), German Development Bank (AKB) and extended in the fields of renewable energy and energy efficiency. The risks in these loans belong to the banks that operate in the country and act as an intermediary. The point that distinguishes it from other loans is that the institution using the loan includes projects that reduce environmental, social and economic disruptions. Green credit applications, user's energy efficiency, energy saving, etc. by evaluating its green performance, it provides customers with a decrease in interest rates. In Turkey, the World Bank provides green loans with Ziraat Bank and Vakıfbank through the SME Energy Efficiency program. The French Development Agency, on the other hand, runs Renewable Energy Loan and Energy Efficiency Loan programs with Halkbank. The European Investment Bank also carries out the European Investment Bank Loan program with İşbank. For example, the first green loan extended in Turkey was used in a foreign investment for 4 wind power plants. This green loan, amounting to 260 million dollars, was provided by 4 Turkish banks and German investment banks (KfW) and the European Bank for Reconstruction and Development (EBRD).

### **11.3.2 Green Stocks and Index Funds**

The fact that some investors have high environmental awareness causes them to choose companies that give importance to the environment in the production process. For this reason, it prefers to invest in the stocks of publicly traded companies that carry out activities that support clean energy, energy efficiency and low-carbon economy due to their corporate characteristics. Sometimes, based on portfolio diversity, they may not prefer to have investments in a single company. In this context, the index funds created are a preferred investment tool. These investment instruments, which are called clean index or green index in international markets, include a wide geography and technology/activity area. The first index for green securities is the Luxembourg Green Index (LGX), launched by the Luxembourg Stock Exchange in 2016.

### **11.3.3 Green Bonds**

They are interest-bearing debt securities used to allocate capital to initiatives that are the subject of green projects such as energy efficiency, biodiversity conservation, clean transportation, renewable energy, sustainable water management, pollution prevention and water. Today, in addition to green bonds, Social Bonds and Sustainability Bonds have also been issued in recent years. Social Bonds are defined by the International Capital Markets Association (ICMA) as bonds in which the proceeds of the bonds are used to finance new or existing projects for the purpose of providing social benefits. Sustainable bonds, on the other hand, are defined in such a way that their proceeds are used wholly or partially in green and social projects. In order to create an integrated bond market, ICMA announced the transparency, disclosure and reporting standards for social and sustainable bonds in June 2018 (The Sustainability Bond Guidelines (SBG) 2018). 75% of the funds obtained in green bonds in the world are used in the field of energy efficiency and renewable energy. In 2016, it issued its first green bond in Turkey for 5 years through TSKB.

### **11.3.4 Green Sukuk**

Renewable energy is an interest-free financing model to finance sustainable and environmentally beneficial projects. The first green sukuk in Turkey was introduced by the Industrial and Development Bank of Turkey (TSKB) on behalf of Zorlu Energy in 2020 for

sustainable infrastructure and clean transportation (Altunkaya and Özcan, 2021). They are asset-backed securities structured to provide financing for renewable energy and environmental projects. Southeast Asian countries such as Malaysia and Indonesia finance renewable energy projects through green sukuk. While it was used for renewable energy investments in 2018, Malaysia, which is experiencing climate crises, used it to finance losses caused by natural disasters. Its whole operation is the same as the green bond, and its difference from the green bond is that it is interest-free. Turkey realized 450 million TL green sukuk by TSKB in the name of challenging energy in 2020.

### **11.3.5 Green Securitization**

Securitization is the transactions in which installment receivables are converted into cash in the assets of the balance sheets. Investors' returns on assets are derived from the cash flows of the underlying low-carbon assets. The same can be applied to projects such as social housing, hospitals and social/sustainability securitizations. Market demand for Green Securitization started in 2014 and reached a volume of \$40 billion in 2017. \$25 billion of this is comprised of housing loans (CBI: 2018:1).

### **11.3.6 Green Insurance**

Today, risks have also been integrated into the green economy. Green insurance is defined as ecological insurance, and it finances policies arising from environmental risks, liabilities arising from soil and air pollution. Green Vehicle, Green Housing, Carbon Insurance and Green Activity Insurance are among these investment instruments.

## **11.4 Green Finance Practices in Turkish Banking**

***Türkiye İş Bankası:*** It offers environmentally friendly loans for buildings such as heat and water insulation, solar energy panels, natural gas conversion. In order to use the loan, there are various conditions such as proving that it will be used in heat and water insulation of the house of residence, switching to the central heating system in the house of residence.

***Vakıfbank:*** The bank mainly provides support to green loans within the scope of environmentally friendly housing loans. In other words, it extends loans to customers who participate in housing projects with



an Energy Performance Certificate (EKB) and environmentally friendly housing projects. According to energy performance, 90% of the appraisal value for Class A houses and up to 85% of the appraisal value for Class B houses.

**Denizbank:** The bank supports renewable energy and energy investments. It provides loans of minimum 10 million EUR and maximum 40 million EUR per project with a maturity of up to 15 years with foreign resources.

**Garanti BBVA:** The bank has been the pioneer of the field by providing Turkey's first green loan (\$10 million) to Zorlu Energy. This investment is used for Zorlu Enerji's working capital.

**Halkbank:** The bank offers Green Energy Loans, FKA Renewable Energy Loans, and FKA Energy Efficiency Loans. It provides financing to SMEs that are energy intensive and want to generate their energy from renewable energy sources.

**Industrial Development Bank of Turkey (TSKB):** It has become one of the leading banks in the field of green finance in Turkey by extending a significant number of loans (as of 2020-end, 290 loans). In this respect, TSKB has been involved in 15% of Turkey's renewable energy operations. The bank has got two major programs namely "FKA Renewable Energy Loan", and "FKA Energy Efficiency Loan" in cooperation with other financial institutions. **FKA Renewable Energy Loan:** Renewable Energy Loan is provided in cooperation with the French Development Agency and Halkbank. Conditions include being a Hydroelectric Power Plant (HEPP), Wind Power Plant (RES), Solar Power Plant, Geothermal Power Plant, Biomass company. It provides a maximum of 5,000,000 EUR. **FKA Energy Efficiency Loan:** It focuses on reducing energy costs in enterprises. It is important to increase efficiency in capacity increase. The credit upper limit is 2,000,000 EUR, the number of employees should not exceed 500 and the conditions are required to operate in Turkey.

## 11.5 Conclusion

In order for innovation to be sustainable, the product or activity in question must be environmentally friendly. When looked at, as a result of the conferences held since the 1960s, it has gained importance that production is based on the principles of green

economy with the outputs of the Millennium Development Goals, Sustainable Development Goals, Paris Climate Agreement. Achieving sustainable development goals and achieving 2030 sustainability goals will only be possible with the creation and use of sustainable financing opportunities. The strategic importance of sustainable finance issuances is increasing, especially in the fight against the global climate crisis and the transition to a low-carbon economy (Şimşek ve Tunalı, 2021). If we can quickly direct the transfer of capital to a fossil fuel economy towards a low-carbon economic structure, we can avoid destructive global warming and environmental pollution (Silver, 2017:3).

With green finance, both the environment, society and the economy are environmentally friendly, using resources effectively and making investments without destroying the environment. With the green bonds, green loans, green securitization, green stock, green index and green insurance types, which are among the green banking products, both renewable energy investments were supported by the cooperation of international resources and national banks, and companies were financed. As a result, if companies have a project or want to be a part of the future, they follow the procedures and then they are selected as a suitable company to work with and they can benefit from the funds. In fact, what we need are good projects. Cost is no longer a major issue with the support of green loans. The important thing is to develop projects that are attractive, financially and ecologically sustainable. Then the necessary financing is found for this. If companies do their part with strong projects, they will see that financing is not a big problem. These projects are supported. There are international development agencies that are very interested in financing. Therefore, the priority right now is to develop the right, innovative projects.

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# 12

## **Developing Multicultural Leaders for International Entrepreneurship: An Examination of Effective Leadership Styles**

*Jessica Mantel*

### **12.1 Introduction**

International entrepreneurship (IE) has various facets. It summarised all entrepreneurial activity crossing country borders, therefore also including established companies undertaking such projects. Further, ventures starting out on an international basis are obviously included in the term international entrepreneurship just as much as domestic startups quickly growing internationally to find suitable talents (Shaker & Gerard, 2017).

Research has found that specifically those ventures operating on an international basis from almost their inception derive a real competitive advantage from their cross-border activities. That is since the incoming resources just as much as their sale of products are immediately directed at multiple countries (McDougall, Shane, & Oviatt, Explaining the formation of international new ventures: The limits of theories from international business research, 1994). Therefore this paper will mainly focus on such rather than established international companies' entrepreneurial activities.

Contrasting domestic entrepreneurship with its international version, strategic and structural differences appear. IE generally pursues more aggressive entry strategies and more diverse market segments. They control several distribution channels and achieve a higher visibility, penetrating a larger number of geographical areas

(McDougall, International versus domestic entrepreneurship: New venture strategic behaviour and industry structure, 1989).

IE is framed by numerous contextual developments. The digitalisation allowing Industry 4.0 to rise, globalisation leading to higher dependencies, New Work asking for more flexible workplace solutions. More and more IE players are using the benefits of these trends, meaning there are more multicultural teams to be lead even within small ventures.

Leadership is defined as the process of one individual influencing a group of individuals in a specific manner to achieve a common goal (Northouse, 2004). Theories around effective leadership have been around since the ancient Greek, but interest is peaking once again in recent years with new trends arising (Bolden, 2004): A new distribution of power, psychological empowerment and different styles of directing employees (Iqbal, Anwar, & Haider, 2015) has led to a variety of leadership style nuances with a different justification each.

In startups, there usually is no set leadership style in the beginning. Focus is on the core business and the founders set the tone with their personality, vision and inspiration. The atmosphere is coined by risk-taking, supporting new ideas, trial-and-error, openness for failure and a passion for the idea with shared resources towards one major goal (Burns, 2016). As soon as the team starts growing, new structures have to be introduced to continuously guarantee success though.

## **12.2 Objective and Research Design**

The aim of this chapter is to establish which leadership style is the most effective one in international entrepreneurial companies as they grow to larger teams. The chapter takes into consideration psychological knowledge and a multicultural background of international ventures. The research data were collected from interdisciplinary expert papers and books. The samples were selected for both recency reasons when current developments matter and stability reasons when essential findings were made a while ago.

This chapter will give an overview of existing literature on leadership styles as well as psychological biases and their intersections. Next, the methodology will be described before



findings of the analysis will be presented. A discussion of the relevant points will be conducted before an actionable summary will happen in the conclusion.

### **12.3 Literature Review**

Current contexts with a rise in remote work allow people from different cultures to collaborate more easily. IE uses these opportunities to bring together the best talents as needed. These culturally heterogenic groups, however, do not just bring along advantages (Ely & Thomas, 2001). The demographic differences in gender, ethnicity and age will indeed contribute a wide array of experiences and problem-solving strategies (Ancona & Caldwell, 1992). Though they will also hinder seamless communication, establishing trust and development of work norms (Bettenhausen & Murnighan, 1985), leading to a more conflict-filled group atmosphere overall (Jehn & Mannix, 2001). Cultural models by Schein (1990) and Hofstede (1984) have helped categorise cultures to better understand how

Multicultural groups are more heterogenic with demographic differences among the individual team members, e.g. in ethnicity, gender, age (Behfar, Kern, & Brett, 2006)

(McGrath, MacMillan, & Scheinberg, 1992) contrasted entrepreneurs and non-entrepreneurs in eight countries. Their findings indicated that there is an underlying pattern of values shared by entrepreneurs despite the cultural diversity of their origins.

#### **12.3.1 Leadership Styles**

The following paragraphs will describe different leadership styles with their implications on team work effectiveness and entrepreneurial success, specifically in multicultural settings.

**Authoritarian Leadership:** The authoritarian leadership style is what used to be classically assumed as leadership in the past and is clearly based on Theory X, with a work-centred view. The focus lies on performance, with a one-way top-down communication of expectations. Personal needs are barely respected, leading to lower job satisfaction and consequently lower output. There is little participation, which allows for quick decision making and clear

hierarchical structures, but little flexibility. Financial reward is the only form of extrinsic motivation (Luthans & Doh, 2006).

Job satisfaction being one of the antecedents of performance, the purely authoritarian leadership style is nowadays often recognised as too impersonal (Siddique & Siddique, 2020). Personal attention and consideration are great promoters for job satisfaction, which in turn increases performance (Bass & Riggio, 2005).

***Paternalistic Leadership:*** The paternalistic leadership is a derivative of the authoritarian style. While still mainly work-centred, there is more concern for the employees. This leads to longer retention periods and organisations caring for their team members also in non-financial forms of compensation.

In such leadership situations greater motivation on the employee's side is established via a trust-based relationship with the leader. The emotional and motivational meaning of relations at work is recognised. It allows for two-way communication, even if direct influence on decision making is not intended (Erben, 2008). Hawthorne's studies demonstrated that the social system at work and recognition alone lead to an increased productivity (Mannevu, 2018).

***Participative Leadership:*** As the name suggests, team members in a participatively managed group can take part in debates and have a valid say in decision making processes. While this may slow down in time critical situations, more considerate and informed decisions can be made. Employees experience a far greater feeling of motivation, moderated by the responsibility for their own work. This enables creativity and innovation, which are essential for problem solving in entrepreneurship.

This approach is both work- and people-centred with a continuous, liberal flow of information in either direction. Job satisfaction is raised in participative settings as employees can actively influence their work conditions (Hodgetts, 2002).

***Laissez-faire Leadership:*** Leadership may be the wrong term in this case. Laissez-faire refers to very independent working, requiring a self-sufficient, confident and in the best case experienced project team that has worked well together in the past, which is rarely given in entrepreneurial settings. This style often occurs naturally from a lack of control by managers.

According to Hacker's action regulation theory, there are two options to achieve a complete work action, leading to job satisfaction. Either sequential integrity or hierarchical integrity (Mustapha & Schweden, 2021). Laissez faire allows for both systems with the independence and freedom given by the leaders. For employees with suitable personalities, cultures and tasks, this leadership style hence can permit significant job satisfaction.

***Transformational Leadership:*** In transformational leadership, the objective is to "transform" team members by using their own strengths. The approach is highly people-concentrated and requires authenticity as well as individual consideration and is therefore less suitable for larger teams with one manager. Focus lies on the interactions between leader and subordinate, as typical for interactionist approaches, and its performance-raising effects are especially useful in change or founding settings (Luthans & Doh, 2006).

Leaders have the self-conception of a coach and utilise enthusiasm and optimism, strengthened by individual consideration, to motivate employees (Bass & Riggio, 2005). Therefore, studies show a high correlation between this leadership style and satisfaction with leadership as well as extra efforts at work (Arnold, Randall, Patterson, Silvester, & Robertson, 2010).

***Characteristic Leadership:*** This type of leader aims to inspire employees with his or her personality and positive vision. This often fits with founders convinced of their product. Applicable traits are high self-esteem, power inhibition and slight neuroticism (House & Howell, 1992). The manager has to be a skilled communicator to reach his or her followers at an emotional level, using basic human instincts, including power, social relations and performance (Conger & Kanungo, 1998). However, charismatic managers often trust only themselves without a deep relationship to their employees. The entire operation thus depends on performance and reaching the visionary goals, which is unpractical for entrepreneurial settings since challenges arise frequently. Subordinates often notice, especially in case of encountering obstacles, the missing psychological trust, leading to lower performance (Luthans & Doh, 2006).

***Contingency/Situational Leadership:*** As the term describes, this leadership style aims at matching the personal characteristics of the leader to the respective situation. The leadership style may therefore vary as required over time to allow for a certain

flexibility (Mueller & Turner, 2010). Alternatively, this leadership might be enacted by inexperienced leaders that frequently change their style. This also demands a high degree of flexibility from team members as they cannot rely on a constantly stable relationship with their manager. It can therefore lead to either increased or decreased job satisfaction, depending on the employee's character traits (Judge, Zhang, & Glerum, 2020) and is also not an optimal leadership style with positive results on a reliable basis.

***Leadership and Culture Interaction:*** Regardless of their general leadership style, every project manager reacts differently to the existence of multiculturalism in their team. No overarching leadership style that is equally effective in all cultures can be established (Lutsch, 2019). Nonetheless, styles that require high flexibility from the employees as well as overly strict or loose styles are often less recommended for multicultural settings. They do not provide the required stability to get used to it or deviate too much from some team members' habits. To develop cultural awareness and sensitivity, followed by adjusting the leadership style accordingly, companies should invest in cross-cultural trainings and intercultural management skills within their employee base (Deresky, 2014).

Leadership has to adapt to digital communication and cyber-physical systems, not only changing corporate and national cultures (Cakmakci, 2019). Furthermore, the leadership strongly varies with the type of industry (Mueller & Turner, 2010).

### **12.3.2 Psychological Biases**

Cognitive biases happen wherever people act. They can be described as simplifying tool sets to solve particular complex problems. In groups their application can lead to misunderstandings and misjudgements (Haselton, Nettle, & Murray, 2015). The following paragraphs describe the major types and their impact on leadership effectiveness.

***In-group Bias:*** In-group bias belongs to the category of behavioural biases and describes the phenomenon of favouring individuals belonging to one's own group, as mentioned with stereotyping. It is one of the most documented biases and is psychologically rooted in the wish for identity, belonging and group pride building the basis for discrimination (Lutmar & Reingewertz, 2021). In multicultural groups, in-group bias can lead to conflicts with or favouring particular

team members, thus impeding communication, and trust (Okech, 2016).

In order to avoid the negative consequences, the in-group bias has to be brought down to a healthy level. This can be enforced by the leader by emphasising rational information and morals (Hetherington, Hendrickson, & Koenig, 2014). A second option is to form sub-groups, work parallelly and be re-assigned after a specific time frame. This activates interaction processes including de-categorisation (Gaertner, Dovidio, Rust, Nier, & Banker, 1999).

***Fundamental/Ultimate Attribution Error:*** As a perception bias, the ultimate attribution error is human's tendency to overattribute events to an individual's characteristics rather than external circumstances. In multicultural entrepreneurial teams, the fundamental attribution error can occur in different ways: Between two individual project team members of same or different culture or between the manager and the team.

Based on the in-group bias, the attribution error often happens between in- and out-group members. There are differences depending on the situation. Asian cultures, for example, are less likely to apply the in-group attribution bias, while intense emotions impactfully change the application of the ultimate attribution error (Pettigrew, 2020). Other studies suggest that personality traits influence the. Individuals with a more cognitive processing style reduce the risk (Hicks, 1985).

***Risky Shift:*** Risky shift negatively impacts the actions a group is taking. It is a behavioural bias whose effects are more severe with greater group cohesion, similar to group think. It describes the phenomenon of individuals leaning towards more extreme opinions, called polarisation, and more risky decisions when in a group (Fuellbrunn, Luhan, & Sanfey, 2022). While group cohesion is an intended state for any team, it is obvious that the effects of risky shift, namely taking on higher risks in decision making, are not desirable even though risk is part of entrepreneurial activities.

There are gender-specific differences, with male dominated groups exhibiting a higher degree of risky shift than female dominated ones (Lima de Miranda, Detlefsen, & Schmidt, 2019). Further, risky shift can be reduced by minimising group think, for example through a moderator in discussions. On top of this, the leader should not state his preference on a matter in advance, but subordinates should be asked to start with their opinion. This makes



it harder to change a statement at a later point due to the fear of losing face (Clayton, 2020). The phenomenon of losing face exists everywhere, but is executed more often in Asian cultures. It could be paraphrased as avoiding social embarrassment (Miron-Spektor, Paletz, & Lin, 2015). Especially with these cultures more consideration is necessary.

***Halo, Horn, Primacy, Recency:*** Effect All of these describe an error of generalisation. Individuals who draw positive assumptions based on one very positive event are subject to the Halo effect. Its opposite is the Horn effect, describing the mechanism of applying several negative attributes (Pohl, 2022). Additionally, the primacy effect, where first impressions build the basis for the lasting image about a person or concept, and recency effect with most recent events respectively (Sullivan, 2018), play a big role. Thus, these biases form a major threat to interpersonal evaluation, more even in the starting phase of a team. Activating rational processes and analytical thinking can prevent such errors from wrongfully altering one team member's opinion about other individuals (Wen, Georgiou, Huang, & Wang, 2020).

## **12.4 Findings**

***Leadership Style Recommendation:*** Concluding, a suitable leadership style valuing differences between the team members evidently leads to higher performance (Turner & Mueller, 2005), so that this matter should be given plenty of consideration in intercultural teams. Depending on technical complexity, leader characteristics and cultural background, the most motivational, but most effortless leadership style should be chosen (Mueller & Turner, 2010). Having to put too much thought into details of daily leadership routines distracts from important topics.

Further, it is concluded that collaborative leadership styles are most useful in the long term (Iqbal, Anwar, & Haider, 2015). For entrepreneurial ventures coined by risk taking, acceptance of failure and idealising founder figures, a certain degree of additional focus on this one leading person is recommended in the beginning of the growth phase (Burns, 2016). Nonetheless, it is inevitable for a startup's success to deeply root the entrepreneurial spirit into the company culture for guaranteed success even after the original founder steps out of the company at a later point.

To name examples, mixtures of the participative and the characteristic leadership style seem well suited in international entrepreneurship. However, the advice always given in these matters also counts in this realm: Every team and every employee are different, which makes a one-fits-all solution impossible (Val & Kemp, 2012).

***Relationship between Leadership Style and Team Performance:*** No matter which leadership style is chosen, utilising psychological empowerment as an additional modern tool will improve performance (Seibert, Wang, & Courtright, 2011). It is obvious that people with different combinations of the five character traits prefer different leadership styles based on the ease and authenticity they can implement them with. In an intercultural entrepreneurial setting, a rather strong openness to new experiences is favourable, while a suspicious behaviour endangers efficient project leadership (Kirkpatrick & Locke, 1991).

Psychological empowerment increases employee satisfaction, which in return increases team performance (Bass & Riggio, 2005). Further, with higher satisfaction and a feeling of confidence and autonomy in their job, employees are less likely to apply psychological biases in a negative manner (Haselton, Nettle, & Murray, 2015). These reasons combined demonstrate how important attention to the matter of the correct leadership style, added tools and attention for cognitive patterns is.

## **12.5 Discussion and Conclusion**

It is recommended for leaders of growing startups to shift their main attention from the core business towards leadership style, personal interactions and employee satisfaction. It is indeed a difficult change to make, but can be fostered step by step. Introducing concepts like open communication, slowly paying attention to cognitive patterns and then finding the personal leadership style is a process and will not happen from one day to the next. Training and early consideration of the topic are recommended.

While the strategies for addressing psychological biases are mentioned for each of them above, it is difficult for an entrepreneurial leader to take all these counter measures at the same time. Similarly,

it cannot be expected by the managers to be aware of all the behavioural nuances of various cultures. The practical implications hence should be filtered based on industry, set up of the group and experience as well as personality of the leader.

The aim of this paper was to establish which leadership style is most effective in international entrepreneurial ventures as they grow to larger teams, taking into consideration psychological knowledge and a multicultural background of international ventures. The results of the literature review suggest that employee satisfaction should be the major goal. This can most efficiently be achieved by applying leadership styles in the participative, slightly founder-focused context, while it remains clear that every team has their own preferences. Being aware of additional helpful tools like psychological empowerment and strategies to decrease impact of psychological biases can further ensure success of international entrepreneurial leadership.

***Limitations of the Study and Suggestions for Further Research:*** Although this research provides valuable insights, it is not without its limitations. Firstly, the findings are merely based on a literature review. While the data basis takes into consideration recent as well as established, older literature to get the best picture of scientific findings, the practical perspective is fully missing. Confirmation of the findings should be sought by applying other research methods, such as a survey. An opportunity for further investigation would hence be interviewing respective experts who are or have been in the described situations.

Secondly, a closer look at the specific cultural requirements should be taken. While scientific cultural models, like the one from Schein or Hofstede, were respected in the findings, a more detailed review of cultures or cultural regions would be helpful in their application. Leaders would benefit from straight-forward guidelines on how to handle which team set up. Therefore, a further literature review looking at more local aspects rather than this general overview can provide impactful insights.

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