



**Digital Transformation in German Family Firms:
Internal Enablers and Barriers for the Development of Dynamic
Capabilities for Digital Transformation**

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ABSTRACT ENGLISH

Title: Digital Transformation in German Family Firms: Internal Enablers and Barriers for the Development of Dynamic Capabilities for Digital Transformation

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Keywords: Digital transformation, dynamic capabilities, family firms

This dissertation investigates family firms' unique resources to sustain their competitive advantage over non-family firms. In addition, this work draws on the Dynamic Capabilities View to analyze sensing, seizing and transforming capabilities that are needed to cope with the challenges of digitalization. In this context, this dissertation explores how such dynamic capabilities apply to family firms when coping with digital transformation. Specifically, the work unveils family firms' internal enablers and barriers for the development of dynamic capabilities for digital transformation.

A qualitative research of ten case interviews with senior executives of German family firms across traditional industries has been conducted. This approach allowed to collect a broad scope of data to make sense of digital transformation in family firms. In addition, by applying the dynamic capabilities framework to the family firm context, the interviewees shared lived experiences on various activities of how family firms cope with digital transformation.

The findings show that the definition, the scope and the emphasis of digital transformation depend on the size of the family firm. This study shows that for smaller family firms' lack of strategic planning for digital transformation initiatives and digital innovation represent a crucial barrier for the development of dynamic capabilities for digital transformation. Furthermore, the findings indicate that the family firms' key differentiating resources, the organizational culture represented through exceptional commitment and loyalty of its human capital, and the allocation of its patient financial capital, represent critical barriers to cope with digital transformation.

ABSTRACT PORTUGUESE

Título: Transformação Digital em empresas familiares alemãs: Facilitadores internos e barreiras para o Desenvolvimento de Capacidades Dinâmicas para a Transformação Digital

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Palavras-chave: Transformação Digital, Capacidades Dinâmicas, Empresas Familiares

Esta dissertação investiga os recursos únicos que das empresas familiares para manter a sua vantagem competitiva sobre as empresas não familiares. Além disso, baseia-se na visão das capacidades dinâmicas para analisar as capacidades de sensoriamento, captação e transformação que são necessárias para lidar com os desafios da transformação digital. Neste contexto, esta dissertação explora como é que as capacidades dinâmicas se aplicam às empresas familiares quando lidam com transformação digital. Este trabalho revela os facilitadores internos e as barreiras das empresas familiares para o desenvolvimento de capacidades dinâmicas para a transformação digital.

Foi feita uma pesquisa qualitativa, através de 10 entrevistas com executivos de empresas familiares alemãs de indústrias tradicionais. Esta abordagem permitiu recolher dados para entender a transformação digital em empresas familiares. Além disso, foi aplicada a teoria das capacidades dinâmicas no contexto de empresa familiar. Os entrevistados, de diferentes atividades, partilharam as suas experiências de como as empresas familiares lidam com a transformação digital.

Os resultados mostram que a definição, objetivo e importância da transformação digital dependem do tamanho da empresa. Este estudo mostra que a falta de planeamento estratégico das pequenas empresas familiares para iniciativas de transformação e inovação digital representa uma barreira para o desenvolvimento de capacidades dinâmicas para a transformação digital. Além disso, os resultados indicam que os principais recursos diferenciadores das empresas familiares, a cultura organizacional representada por um comprometimento e lealdade excepcionais do capital humano, e a alocação do capital financeiro de longo-prazo, representam as principais barreiras para lidar com a transformação digital.

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LIST OF ABBREVIATIONS

DCV	Dynamic Capability View
DT	Digital Transformation
IoT	Internet of Things
IT	Information Technology
RBV	Resource-based View

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1. INTRODUCTION

The key question in the field of strategic management is how firms can achieve and sustain competitive advantage (Teece et al., 1997). However, in today's economic environment maintaining a long-term competitive advantage remains an exception. Competitors and customers have become too unpredictable, and industries too dynamic (McGrath, 2018). In fact, economies increasingly face significant shifts in competitive, technological, social and regulatory domains (Barreto, 2010). Therefore, companies increasingly use disruptive digital innovations as the means to shape their business environment to sustain their competitive advantage. For example, in the traditional steel trading industry, the German steel- and metal-trading company Klöckner & Co is successfully driving the technological shift in steel and metal trading through the development of an industrial platform (Klöckner & Co SE, 2019). Through its platform, Klöckner & Co is bringing together supply and demand for steel and metals by eliminating market inefficiencies such as delays in delivery, incorrect shipments and surplus inventories. This digital business model is generating about 18% of Klöckner & Co's total turnover of 6.292 billion in 2017 (Wocher, 2018).

Like in the case of Klöckner & Co, information technology (IT) has become the main driver for technological shifts in our ecosystem today and IT strategies play a key role at top management levels with the capability to shape business models and organizational structure and as such lead to competitive advantage (Henderson & Venkatraman, 1999). One phenomenon within information technologies that gained increasing attention in the management field is digital transformation (DT). DT can be defined as the use of digital technologies that have the potential to fundamentally change internal processes, products or services as well as the entire organizational structure of companies (Warner & Wäger, 2018). In almost all industries, companies have recently started initiatives to exploit opportunities in digital technologies in order to capture value (Matt et al., 2015). Fintech companies in Finance, carsharing platforms in the automotive industry or omni-channel strategies in retail are only a few business models that show the disruptive potential of IT solutions to shape market change in today's digital economies. However, managing DT is considered as a highly complex change process and represents a major challenge for established firms and their leadership teams (Warner & Wäger, 2018).

A concept that explains strategic change in organizations is the Dynamic Capabilities View (DCV). Scholars and practitioners recognize that the capabilities to adapt to fast-changing environments, "dynamic capabilities", are important to explain how some firms are better at adapting to fast-changing environments (Barreto, 2010). According to the DCV, these dynamic capabilities as such can lead to competitive advantage (Teece et al., 1997).

The challenges of DT and its implications on strategic change in organizations are exacerbated in family firms. Such firms appear to be reluctant to change (Beckhard & Dyer, 1983; Vago, 2004) and consequently to digital transformation. Reasons for this reluctance lie on missing financial resources, fear of conflict or simply unwillingness to modernize which finally leads to stagnation and loss of market share, and eventually end of the business (Kellermanns & Eddleston, 2006; Beckhard & Dyer, 1983).

In this context, research on family businesses in Germany is of utmost importance because they form the backbone of the German economy. 91% of all privately-held companies in Germany are family-controlled or managed. They employ 57% of all employees and generate 55% of the total turnover (Gottschalk et al., 2017). According to a study conducted by the "Institut für Mittelstandsforschung", 75% of all surveyed companies state that DT is particularly important to them. However, 58.8% of German family businesses with sales of more than 50 million Euros in revenue per year report that they are not well or not at all suited to cope with the challenges of DT (Bundesverband der Deutschen Industrie & Deutsche Bank AG, 2018).

Apparently, family firms have understood that DT is currently one of the biggest challenges that they have to undertake in order to remain competitive in the market place. Nevertheless, it seems that family firms lack the means to shape DT in their organization and business environment.

Prior research on family firms has mainly focused on the unique set of resources and the role of family members that can create a competitive advantage over non-family firms. Nevertheless, research on family firms lags behind to explain why these unique set of resources can help family firms to cope with DT and sustain a competitive advantage in fast-changing environments (Sirmon & Hitt, 2003; Chirico & Nordqvist, 2010). Attempts to explain that family firms appear to be reluctant to change maybe not fully applicable in the context of today's recognized need for DT.

Due to this research gap, this dissertation strives to understand how family firms in Germany try to cope with the ongoing process of DT. Following research questions are studied in particular:

1. What are the main dynamic capabilities that enable DT in organizations?
2. How do such dynamic capabilities apply to family firms when coping with DT?
3. What are the key internal drivers and barriers that influence the building of dynamic capabilities for DT?

This dissertation provides theoretical background information on DT, family firms and dynamic capabilities. It gives special attention to family firm characteristics and the dynamic capabilities needed to cope with DT. The objective of this dissertation is to identify processes and critical internal drivers and barriers of family firms to build the required dynamic capabilities to shape DT inside the organization.

A theoretical process model is built by extracting distinct digitally based dynamic capabilities from prior research. On base of this theoretical concept, a qualitative study on a sample of 10 family firms is executed to explore current efforts, key drivers and barriers to build dynamic capabilities for DT. Moreover, it provides insights into the status of digitalization in family firms and their digital maturity.

The discussion part is used to classify the study's results and compare them with findings from the literature review. Furthermore, implications for theory and practice, limitations of research as well as ideas for future research are presented.

2. LITERATURE REVIEW

2.1 DIGITAL TRANSFORMATION

2.1.1 DEFINING DIGITAL TRANSFORMATION

In recent years, a new phenomenon called digital transformation gained increasing attention in companies (Kane et al., 2015). Digitally transforming a business became one of the key challenges on leadership agendas and firms in almost all industries started initiatives to explore the profit potential of digitalization (Warner & Wäger, 2018; Matt et al., 2015).

Yet, the term is used inconsistently in business for describing various activities on a strategic or organizational level (Warner & Wäger, 2018). No company has yet reached the end state of DT nor definitively defined it (Kane et al., 2015). From an academic point of view, the concept of DT still needs to be further researched (Matt et al., 2015).

Attempts to explain DT define it as a companies' transformation that integrates digital technologies and operational processes in a digital economy (Liu et al., 2011). It can be seen as a concept that changes products, processes and organizational structures with the use of digital technologies (Matt et al., 2015). Other scholars draw attention to the term "transformation" as DT goes beyond functional thinking and needs to be viewed from a holistically perspective to exploit all profit opportunities (Singh & Hess, 2017). Another approach includes the importance of "digital capabilities" that are required in order to create, capture and deliver value through digital activities. Scholars tried to define digital capabilities as kind of IT capabilities that have structural implications on firms. They can be explained as *"the application of physical or intangible IT resources such as technology, knowledge, practices, relationships, management skills, business process understanding and human resources to further organizational goals"* (Sandber et al., 2014; Henriette et al. , 2015).

The goal of DT is to exploit the profit potentials enabled by digital technologies along the value chain of the company. For this study, DT is defined as an evolutionary process that uses digital capabilities and new technologies to create value (Morakanyane et al., 2017). The value created can be achieved by several organizational dimensions such as new operational processes, business model innovation and new customer experiences (Westermann et al., 2014; Hess et

al., 2016; Fitzgerald et al., 2014; Morakanyane et al., 2017). For example, through productivity improvements in business operations, cost reductions or new digital business models that create value through new customer experiences (Hess et al., 2016). Therefore, one of the crucial elements of DT is the use of digital technologies that can be seen as combinations of information, computing, communication and connectivity technologies. The most common examples in business nowadays are artificial intelligence, blockchain, data analytics, cloud-computing, internet of things (IoT), mobile applications and social media (Warner & Wäger, 2018; Kane et al., 2015).

2.1.2 DIMENSIONS OF DIGITAL TRANSFORMATION

Digital technologies can impact companies on four broad dimensions: strategy, structure, value creation and culture (Hess et al., 2016; Warner & Wäger, 2018; Matt et al., 2015; Kane et al., 2015).

First, in order to manage this complex DT endeavour, strategy plays a critical role. Achieving a competitive advantage through digitalization affects the company on the strategy dimension as digital transformation requires a definition about how to approach the exploration and exploitation of new digital technologies (Hess et al., 2016). A clear DT strategy is required as the strength of digital technologies lays in the integration to transform businesses (Kane et al., 2015). Even in the early information systems research, the alignment of IT strategies with business strategies on a strategic and operational level has been identified as critical for business transformations (Henderson & Venkatraman, 1999). In addition, other scholars argue that while undertaking such transformations, both executives and employees have to navigate the change process together (Bouée, 2015). In this context, attracting and keeping digital talents in companies to master DT is pointed as a top strategy challenge (Kane et al., 2015).

Second, after strategically deciding to integrate new digital activities, an organizations' structure has to be revised and eventually changed. This can affect processes and capabilities in different degrees (Matt et al., 2015). For example, there is a clear digital operations advantage by optimizing or automating operational processes. The strong potential for increases in productivity often represent the base for competitive advantage in companies (Westermann et al., 2014). Therefore, operational efficiency plays a key driver for DT on the organizational level.

Third, the use of digital technologies leads to changes in value creation of firms. Product or service portfolios can be augmented that create additional value previously unknown to companies. Especially, from a customer-centric perspective, the development of new customer experiences offers new profit potential to firms (Matt et al., 2015) (Henriette et al. , 2015). Moreover, either existing business models can be reshaped, or entire new business models can emerge that open other markets or new customer segments for companies (Downes & Nunes, 2013; Henriette et al. , 2015). Business model innovation in the means of finding new mechanisms to create, capture and deliver value through new technologies can be considered as the final stage of DT as it integrates all major stages from rethinking internal operations, user experiences until the reinvention of entire new business models (Westermann et al., 2014).

Fourth, the capability to digitally reimagine processes and business models relays also to a large extent on a culture that can change the existing and invent the new (Kane et al., 2015; Warner & Wäger, 2018). Digital mature organizations have a strong propensity to encourage risk-taking, foster innovation and develop collaborative work environments (Kane et al., 2015). In order to facilitate risk-taking in companies, research suggests that executives need to change their mindsets and create an environment where employees are less risk-averse. Research also suggests that digitally mature organization are more likely to use cross-functional teams to implement digital initiatives. Enabling risk-taking and creating collaborative work styles are key drivers of organizational culture for innovation (Kane et al., 2015).

The challenges of DT can be daunting for most companies as the implications of its implementation have structural impact on the organization. The continuous process of reinvention, adaptation and strategic renewal in times of digital economies became a strategic imperative in most firms. Therefore, the development of an entrepreneurial mindset to identify and exploit digital opportunities to sustain their market position becomes critical for the success of firms (Kellermanns & Eddleston, 2006, Chirico & Nordqvist, 2010). Family firms are particularly vulnerable to such changes as the scope of the change can threaten their existing market position in their competitive landscape (Kellermanns & Eddleston, 2006).

2.2 FAMILY FIRMS & THE ROLE OF ENTREPRENEURSHIP

Family business research is growing and has become a popular research field with specialized journals such as Family Business Review and special issues in top journals like

Entrepreneurship Theory & Practice or Business Venturing (Zahra & Sharma, 2004). In general, research on family firms has focused on explaining differences between family and non-family firms and on variations in the behaviour among family businesses.

Scholarship still has difficulties in defining family firms (Chua et al., 1999; Brockhaus., 1994; Dyer & Handler, 1994). In general, scholars agree that the involvement of a family differentiates a family business from other businesses. Furthermore, it is a valid approach to define a business as a family business when it is owned and managed by a nuclear family (Brockhaus, 1994; Chua et al., 1999). Consequently, these businesses are managed by the family's values and decision-making processes are influenced by family dynamics.

A concept that tries to define the nature of family firms is the concept of "familiness" that emphasizes "family firm identity" as a unique form of organizational identity reflecting the family's characteristics (Zellweger et al., 2010). The concept of "familiness" is defined as "resources and capabilities related to family involvement and interactions" which "leads to a firm's competitive advantage that, in turn, creates wealth." (Chua et al., 1999). It takes into account the family's unique behaviour and is based on the Resource-based View (RBV). For example, family members may provide financial, intellectual, cultural or human resources in the form of labour to the company that facilitates decision-making or the adoption of appropriate strategies for achieving superior firm performance (Astrachan, 2010; Chrisman et al., 2005). In addition, according to Habbershon and Williams' concept of "familiness" (1999), the strong interaction among the family, its individual members and the business needs to be added to the initially identified resources in order to explain the competitive advantage of family firms over non-family firms. The concept of familiness is useful because it shows that such firms possess a unique set of resources that explains the family firm characteristics and its capacity to update such resources through their strong interaction and processes as the market evolves.

In fact, following the work of Sirmon and Hitt (2003), an analysis of four main family firm-specific resources is proposed that can lead to a competitive advantage over non-family firms (Sirmon & Hitt, 2003):

- **Human Capital:** Family businesses often experience an exceptional level of commitment from their managers and specific knowledge within their workforce, but human resource management does not meet the high standards of non-family

businesses, leading to a structural problem of attracting and retaining well-trained employees.

- **Social Capital:** Family businesses may have better access to information or technology through their network. They can develop long-lasting and comprehensive relationships over generations (e.g. suppliers or customers).
- **Patient Financial Capital:** Access to capital markets differs for family businesses due to their reluctance to issue equity. Capital is managed more effectively because of long-term strategies and less pressure to achieve short-term profits.
- **Survivability Capital:** It refers to capital raised by family members in the form of work, loans or investment in their business, which is particularly valuable in times of economic crisis.

Sirmon and Hitt's concept reflects the idiosyncrasies of family firms regarding their resources and capabilities. The importance of human resources as well as the commitment of family members and non-family employees is stressed as a vital aspect for competitive advantage. Conversely, the problem of attracting and retaining talented employees is pointed out. It is recognized that the family firm's network regarding suppliers and customers is also critical for achieving competitive advantage. Long-term thinking concerning both financial investments and sustainable management due to the intention for trans-generational control is seen as a key trait of family firms (Sirmon & Hitt, 2003; Chrisman et al., 2003a).

To maintain such resources family firms face the challenge of succession. Entrepreneurship within family firms and its effect on the entrepreneurial orientation of the firm across generations play an essential role in family firms (Kellermanns & Eddleston, 2006). The challenge of succession management represents an interesting and emerging field in entrepreneurship research as the entrepreneur needs to decide if and how to sustain an entrepreneurial orientation across generations to achieve the goal of creating long-lasting family legacies. Family succession can, therefore, be considered as an entrepreneurial problem (Chrisman et al., 2003b).

Entrepreneurship encompasses a company's activities and mindset towards product-market and technological innovation, risk-taking and proactiveness (Miller, 1983). Corporate entrepreneurship is consequently related to these entrepreneurial activities within an established organization (Zahra, 1995). Indeed, corporate entrepreneurship is critical to firms' survival and

plays a key role to a companies' success. Research suggests that it increases revenue streams and improves profitability (Kellermanns & Eddleston, 2006).

Capabilities of corporate entrepreneurship are particularly useful for family firms that need to cope with changing environments like in the case of DT through emphasizing innovation or changing the competitive profile (Zahra, 1995). Especially, given the fact that family firms are often criticized for resisting change (Levinson, 1987) or being reluctant to change (Beckhard & Dyer, 1983; Vago, 2004; Kellermanns & Eddleston, 2006). Family firms need to develop an entrepreneurial spirit in order to drive change by adopting a proactive attitude. This often entails high levels of risk and resource commitment that will most likely be driven by an innovative approach to markets and products. Only then, family firms can sustain their competitive position across generations (Kellermanns & Eddleston, 2006).

Evidence shows that resources may not be enough. Dynamic and turbulent environments mean that resources that are valuable today can quickly become obsolete. Take the case of the hotel industry that watched their most strategic resources being quickly outdated by innovative short-stay platforms that quickly endangered existing business models. To deal with such scenarios, academics developed the Dynamic Capabilities View that studies in detail how organizations can cope with fast-changing environments. This framework offers a powerful lens for studying strategic change in organizations (Barreto, 2010).

2.3 DYNAMIC CAPABILITIES FOR DIGITAL TRANSFORMATION

The dynamic capabilities view has its roots in the Resource-based View (RBV) that explains how firms can create and sustain competitive advantage through superior physical, human and organizational assets (Barney & Clark, 2007). First-order capabilities that are valuable, rare and not easy to replicate are at the centre of the theory and represent the base for dynamic capabilities. Scholars have built an impressive body of research on dynamic capabilities, and it has gained much attention in academia and business (Barreto, 2010; Warner & Wäger, 2018). The dynamic capabilities framework tries to answer the shortcomings of the RBV. Namely, dynamic capabilities address the fact that difficult to replicate assets such as knowledge are insufficient in an ever-changing business environment open to global competition and characterized by exogenous shocks and disruptive innovation and manufacturing (Teece, 2007).

Moreover, dynamic capabilities are directed toward strategic change in organizations. Research has focused on what distinguishes dynamic capabilities from other ordinary capabilities, how they produce strategic and organizational change, and what are the performance outcomes (Helfat et al., 2007). Considering the disruptive nature of DT, the DCV is a powerful framework to examine how firms can cope with DT (Warner & Wäger, 2018). In fact, scholars suggest that firms need to develop strong dynamic capabilities to quickly build, implement, and transform business models in order to remain competitive in the emerging digital economy (Teece, 2018; Karimi & Walter, 2015; Achtenhagen et al., 2013).

Dynamic capabilities can be defined as a firms' ability to systematically solve problems by (1) sensing and shaping opportunities and threats, (2) seizing opportunities through right and timely decision-making processes, and (3) changing its resource base, namely its tangible and intangible assets (Teece, 2007; Teece et al., 1997; Barreto, 2010; Zahra et al., 2006; Daniel & Wilson, 2003). The term "capabilities" is referring to the firms' organizational and strategic routines that use resources to adapt to and shape market change (Teece et al., 1997; Eisenhardt & Martin, 2000). The term "dynamic" refers to the potential to continually renew such routines (Teece et al., 1997).

Following this definition, sensing, seizing and transforming capabilities are needed to address rapidly changing business environments. However, in the context of DT where new digital technologies are at the core of the activity, the nature and purpose of dynamic capabilities is fundamentally changed (Warner & Wäger, 2018; Daniel & Wilson, 2003). With technologies such as cloud-computing, IoT- and digital platforms, companies can now scale up or scale down their operations at a speed, ease and cost that was not possible before (Warner & Wäger, 2018). This changes the nature of dynamic capabilities as digital capabilities are required to efficiently transform a company in its operational setup, organizational structure and value creation (Warner & Wäger, 2018; Karimi & Walter, 2015).

Warner and Wäger (2018) identified (1) digital sensing, (2) digital seizing and (3) digital transforming capabilities as the essential dynamic capabilities that are needed to be built to cope with the challenges of DT. Each capability is based on sub-capabilities that enable an organization to adapt to and shape market change in a digital economy.

Digital sensing capabilities refer to a set of skills that enable a company to identify new technological, customer and competitor-based trends (Warner & Wäger, 2018; Daniel & Wilson, 2003). New technologies such as big data analytics and artificial intelligence help companies to pinpoint these trends in the business environment (Warner & Wäger, 2018). Moreover, sensing capabilities refer to the development of a digital culture. Creating a long-term digital vision while enhancing an entrepreneurial and digital mindset within the organization increases the potential for the firm to sense technological opportunities and threats (Kane et al., 2015). In addition, developing such a digital culture across the organization is critical to build seizing capabilities that in the end enable the organization to take advantage of the latest trends (Warner & Wäger, 2018).

Digital seizing capabilities refer to sub-capabilities that relate to the strategic agility of the firm, its decision-making processes and its rapid prototyping. Strategic agility is a critical dynamic capability for established firms in order to take advantage of the latest trends and to better position itself against competitors (Warner & Wäger, 2018). Entrepreneurial methods and processes can help firms to strengthen strategic agility and finally respond quickly to unexpected opportunities and threats (Zahra et al., 2006). Moreover, rapid prototyping offers the opportunity for firms to accelerate its DT activities. It enables customer feedback to be collected quickly and used to respond to new customer-driven trends (Warner & Wäger, 2018).

Finally, digital transforming capabilities refer to a wide range of activities that redesign internal organizational structures to become flexible and dynamic to its environment and to improve the digital maturity of the firm (Daniel & Wilson, 2003; Warner & Wäger, 2018). Transformational leadership and decentralization become an integral part of renewing organizational structures, e.g. through decentralizing business units and establishing independent subsidiaries (Warner & Wäger, 2018). Furthermore, improving the digital maturity of the workforce by involving "digital natives" receives a vital role in the process of building digital transforming capabilities (Kane et al., 2015).

2.4 THE CONCEPTUAL FRAMEWORK FOR FAMILY FIRMS

The above mentioned digitally based dynamic capabilities build the groundwork for enabling DT in established organizations. The development of these dynamic capabilities can be triggered by contextual factors. Research suggests that external triggers for the capability

building process can be disruptive digital competition, changing consumer behaviours or disruptive digital technologies. For example, due to disruptive technologies such as the internet and smartphones, the newspaper industry had to change from analogue printing to creating digital content on online platforms that are accessible anywhere at any time. In addition, changing consumer behaviour is facilitating the DT of the publishing industry as more and more consumers access information online through their smartphones. Traditional publishers had to quickly build digital platform capabilities and transform their business models and organizational set-up from printed to online content management (Karimi & Walter, 2015). Furthermore, disruptive digital competitors like Amazon or Alibaba are pressuring traditional retailers to transform their business models from only offline retailing to omni-channel branding through digital services, online shops and new offline shopping experiences.

Figure 1 shows the conceptual framework of external triggers and the main dynamic capabilities that enable incumbents in traditional industries to cope with DT.

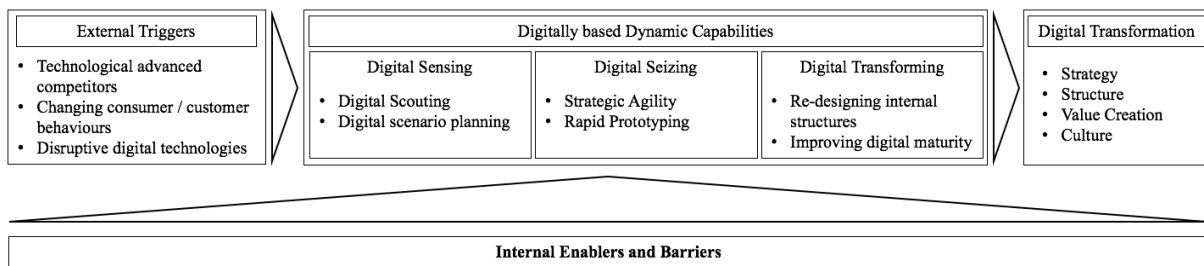


Figure 1: Conceptual Framework for the Development of Dynamic Capabilities for Digital Transformation

However, the dynamic capability building process can additionally be enabled or blocked by internal factors inside organizations. For example, for incumbents in traditional industries, rigid strategic planning or high level of hierarchy can slow down the process of building capabilities to efficiently sense digital trends in the environment. On the contrary, fast decision making and cross-functional teams enable innovation and strategic agility of the firm to quickly adapt to changing environments and seize digital trends in the market place (Warner & Wäger, 2018).

Nevertheless, the question remains whether these internal factors apply to a family firm setting. On the base of the existing body of research on DT and dynamic capabilities, the above conceptual framework is applied to the family firm context. The understanding of a context-specific situation (family firms) is necessary as these firms have idiosyncrasies in their resource

base and constitute an essential part of the economic development in most economies. The model is used as the base for the analysis of internal factors that enable or block the development of dynamic capabilities for DT in German family firms. In addition, linkages between the internal enablers and barriers to each dynamic capability are made. Finally, the key findings are compared with research on family firms' unique resources as outlined in chapter 2.2.

3 RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN & SAMPLE

This study is based on a qualitative research with multiple case interviews to examine which internal factors enable or block German family firms in traditional industries to develop dynamic capabilities for DT. The focus of this study is on the perspective of practitioners and their lived experience with DT in family firms in order to extract meaning from internal processes through the explorative nature of a qualitative method. This approach allowed to collect a broad scope of data to make sense of DT and analyze the various activities of family firms to cope with this challenge. As source of inspiration, this study is basing on the work of Warner & Wäger (2018) who developed an extensive process model to explain how incumbents in traditional industries develop dynamic capabilities for DT as an ongoing process of strategic renewal of the firm. The model proposed by Warner & Wäger acts as a framework to merge the different strings of research on DT and dynamic capabilities and to apply it to the family firm context. Therefore, this study is focusing only on family firms in Germany and their distinct enablers and barriers for building dynamic capabilities for DT.

The lack of quantitative data regarding DT initiatives of family firms in Germany over time, for example, panel data of revenues through digital products or services, impede a quantitative analysis. It is not the focus of this study to measure the effects of DT on variables such as firm performance or growth in family firms. In combination with the very recent developments of the companies' DT activities, a qualitative approach was chosen in order to contribute to existing research why family firms seem not to have the ability to digitally transform their businesses.

Senior executives and owners of ten family firms have been interviewed. All companies are currently undergoing DT activities and are based in Germany. To ensure a valid reflection of family firms' characteristics, the sample firms are required to be in family ownership – either entirely or at least in their majority. The sample is a depiction of small to medium-sized family firms in traditional industries such as industrial production, logistics and publishing. Seven out of ten companies are active in industrial production and vary in size between 30 to 2001 employees with abt. three to 500 million Euros in turnover per year. Two family firms are from

the publishing industry with 84 resp. 501 employees and annual turnovers of abt. 17 resp. 101 million Euros. One family firm in the sample is active in logistics and is employing 2039 employees with a turnover of abt. 316 million Euros per year. Eight firms have global sales and marketing activities whereby two firms are generating their revenues in the German market only. All firms have been founded between the early and late 1900th century.

Figure 2 summarizes the sample and allocates pseudonyms to maintain the confidentiality of each participating firm.

Company	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6	Company 7	Company 8	Company 9	Company 10
Industry	Publishing	Industrial	Industrial	Industrial	Logistics	Industrial	Industrial	Publishing	Industrial	Industrial
Size (employees)	508	101	160	30	2039	2001	54	84	356	403
Revenues	101 million €	35 million €	30 million €	3 million €	316 million €	500 million €	8 million €	17 million €	86 million €	95 million €
Digital Maturity	3	3	3	3	6	5	3	6	4	4
Founded	Mid 1900s	Late 1900s	Mid 1900s	Mid 1900s	Early 1900s	Mid 1900s	Mid 1900s	Late 1900s	Late 1800s	Late 1900s
Market Focus	Global	Germany	Global	Global	Global	Global	Global	Global	Global	Germany
Position of Interviewee	Owner	Head of Production	Chief Information Officer	Owner	Chief Information Officer	Owner	Owner	Owner	Owner	Owner
Leadership Experience	26 years	5 years	7 years	30 years	6 years	32 years	23 years	21 years	8 years	28 years
Education	PhD	MSc	Diploma	Diploma	MSc	Diploma	Diploma	Diploma	MSc	Diploma
Interview Type	Personal	Personal	Telephone	Personal	Telephone	Video Conference	Telephone	Video Conference	Video Conference	Personal

Figure 2: Overview of Sample

The potential family firms have been contacted through three different channels. First, initial contact has been made through the chief executive office of the firm. Out of ten requests, one firm has accepted to participate in the study and arranged for an interview. Second, professional network platforms like LinkedIn and Xing have been used to make direct contact with senior executive members and owners of family firms in Germany. Out of ten enquiries, four interviewees accepted to participate in the study. Thirdly, the private network of the researcher has been used in order to gain participants for the study through recommendation. From five enquiries, all contacts agreed to participate in the study.

3.2 DATA COLLECTION

All interviews were conducted with either executives in senior leadership positions or with the owner of the respective company itself. All participants have several years of senior leadership experience and shared important characteristics of being senior managers.

Four out of ten interviews were conducted on a personal level through face-to-face interviews. The remaining six interviews were conducted via telecommunication devices, three each via

video conference and telephone. The length of the interviews ranged from 35 to 75 minutes. All interviews took place in August 2019.

To start the interview process, the participants have been asked a screening question to assess the companies' digital maturity. First, the respondents have been presented with the following scenario:

“Imagine an ideal organization transformed by digital technologies and capabilities that improve processes, engage talent across the organization and drive new value-generating business models.”

After imagining this ideal, the interviewees have been asked to rate their company against that ideal on a scale of one to ten (Kane et al., 2015).

For the case interviews a semi-structured interview questionnaire has been developed that contains 28 questions divided in three main parts: Digital Transformation, Dynamic Capabilities for DT and Family Firms.

The first part of the questionnaire was designed to make sense of DT in family firms. It has been structured according to the literature review on DT and includes open questions about the participants' understanding of DT as well as about the implications of DT on the strategy and the value creation of the firm.

The second part of the questionnaire was designed according to the conceptual model on dynamic capabilities extracted from the literature. That way, the design of the questionnaire helped to strengthen the contextuality of the findings with the applied framework. For each digitally dynamic capability, the interviewees have been asked open questions to explain (a) their understanding about it, (b) how the firm is currently managing it, and (c) how the firm is ensuring to develop the dynamic capability in future.

The third part of the interview questionnaire was directed towards the family firms' specific characteristics and its implications on the dynamic capability building process for DT. The interviewees have been asked questions about the influence of the family members on DT and the role of the family firms' entrepreneurial culture on the development of dynamic capabilities for DT.

Please see Appendix A for the complete interview questionnaire.

3.3 DATA ANALYSIS

The data analysis focused on making sense of the family firms' understanding of DT and on exploring the underlying process of developing the required dynamic capabilities for DT. Focus was given to the perspective of practitioners and their experience with ongoing DT projects within family firms in Germany. The goal of the data analysis was to unfold key internal enablers and barriers from the spoken language of the participants.

First, a summative content analysis has been followed to identify and interpret keywords and content across the interviews. A summative content analysis involves "counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context" (Hsieh & Shannon, 2005). This analytical process was particularly helpful to provide a first overview of the data and to direct the analysis and interpretation of the interviews to topics that are critical to answer the research questions.

Second, the answers to each interview question were examined using the "Gioia Methodology". The "Gioia Methodology" structures qualitative data from interviews into "first-order concepts" which reflect what has been said in the language of the interviewees. These concepts describe the key activities of the family firms to cope with DT. Similar first-order concepts across the interviews are grouped in a set of "second-order themes". These "second-order themes" in turn are aggregated into a third dimension that finally relate to the superordinate dimensions of key drivers and barriers of family firms when developing dynamic capabilities for DT (Gioia et al., 2013). Please see Appendix B for an example of the Gioia methodology applied to one of the interview questions.

4 RESULTS

The analysis of the case interviews revealed different streams of results:

First, through the screening question evidence has been found for the digital maturity of the participating firms. According to the answers of the interviewees, two groups emerged: five out of ten participants assessed their firms to be at an "early stage" of digital maturity, rating their firms at a three on a scale of one to ten. The remaining five interviewees assessed their companies to be at a "developing stage", rating their firms from four to six on the same scale. No interviewee has rated its firm as "digital maturing". Relating the answers to the size in terms of turnover of each firm, the data indicates that smaller family firms tend to be less digitally mature. Four out of the five firms at an "early stage" of digital maturity generate a turnover between three and 35 million Euros per year. On the contrary, four out of the five firms at a "developing stage" of digital maturity generate revenues between 86 and 500 million Euros per year.

Second, according to the interview answers that relate to the participants' understanding of DT, the data indicates differences in the definition of DT. Depending on the size of the participating firm, the scope of DT and its implication on the business varies. Detailed explanations about the differences in the DT definitions are outlined in chapter 4.1.

Third, through the analysis of the answers for the second and third part of the interview questionnaire specific enablers and barriers have been derived from the data that can be directed to the development of dynamic capabilities outlined in the literature review.

Figure 3 represents the data structure for these internal enablers and barriers and summarizes the interrelations of second-order themes and the aggregate dimensions according to the "Gioia Methodology". The data structure represents the foundation of the conceptual model that has been extracted from prior research and applied to the family firm context. Detailed evidence on the findings is given in chapter 4.2.

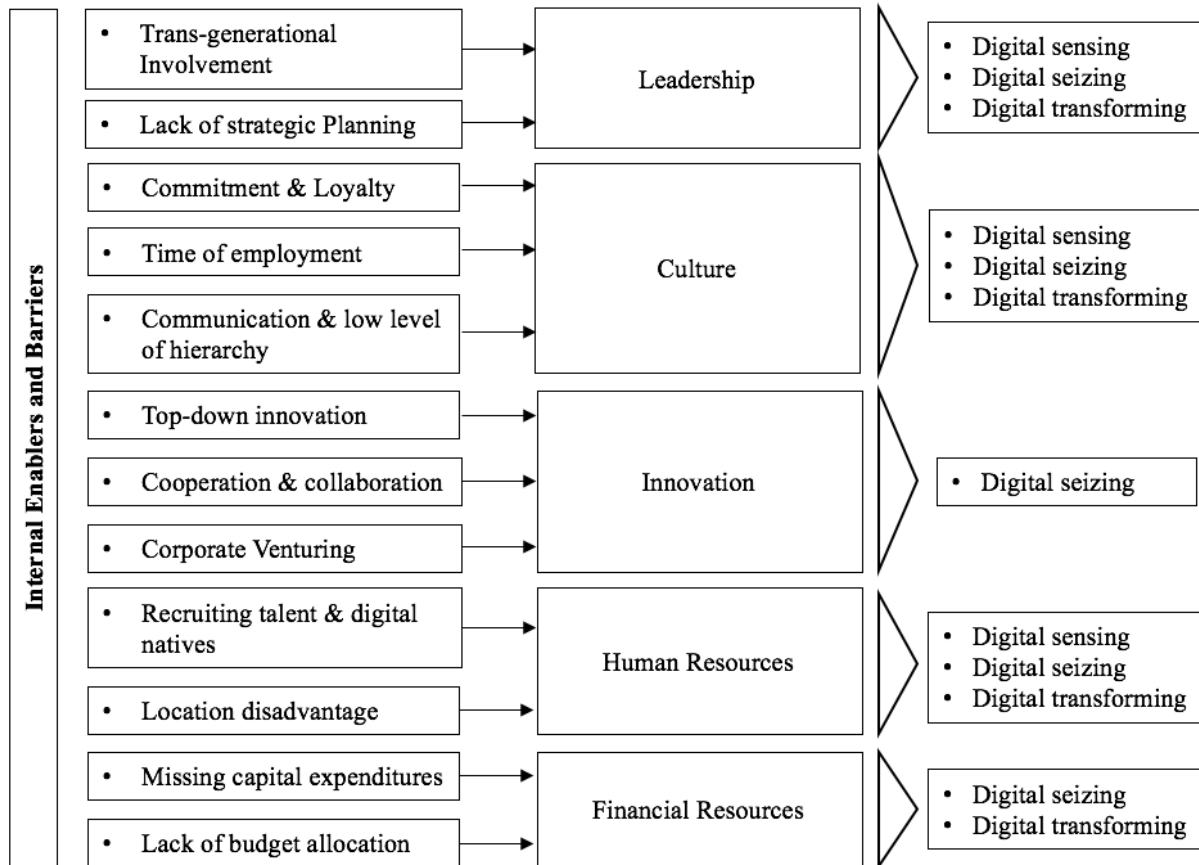


Figure 3: Data structure and influence on digitally based Dynamic Capabilities

4.1 UNDERSTANDING DIGITAL TRANSFORMATION IN FAMILY FIRMS

All interviewees agreed that DT is currently on the top of their leadership agendas and all participants mentioned DT has a very high priority compared to other strategic projects in the company. Furthermore, all interviewees used the word “digitalization” as a synonym for DT and to describe different DT activities of the company ranging from the automation of production processes to the use of data in sales and marketing.

According to all interviews, essential element of DT is the collection and analysis of data to improve internal processes and increase productivity.

For example, the owner of “Company 8” describes DT as “*the generation and evaluation of data to make processes better and faster*”. Another executive (Company 5) states that DT describes “*the collection of complex data from different parts of the business and the analysis of this data to derive specific measures efficiently and fast*”.

Interestingly, the data indicates that the definition, the scope and the focus of DT varies depending on the size of the family firm.

For example, for family firms in industrial production that generate revenues below 50 million Euros¹ per year digitalization in the production processes has the highest priority. The executive of “Company 3” described the influence of DT on his company as *“mostly limited to the production process with limited transformation potential in marketing and sales”*. The executive of “Company 2” offers a similar view and explains that currently the digitalization of the production is the *“easiest and most important DT activity”*.

Furthermore, it was evident that there was no DT strategy defined in smaller family firms. Digitalization activities are executed on a project-to-project basis with certain project-based measures only. One owner explained (Company 4):

“We do not have an overall strategy for the digital transformation of our company. We are too small for it. We have initiated a new project and defined certain project-based measures that have to be completed by a small group of employees. The employees are executing the project alongside their day-to-day business.”

On the contrary, in family firms with above 50 million Euros² in turnover, the focus has shifted to the transformation of marketing and sales processes and ultimately to the transformation of products and business models.

The owner of “Company 6” pointed out that they are very advanced on manufacturing standards but that he sees huge upside potential in IoT, cloud-computing and big data to increase sales and margins as well as ultimately transform the business model from only “business-to-business” (B2B) to “business-to-consumer” (B2C).

Another owner (Company 1) added that the digital mindset of the company is the key element of a successful DT endeavour:

“The employees have to think digital, see digital opportunities inside and outside the company and act on digital trends timely. The company as a whole and we as the owning family have to facilitate a digital culture so that our employees are encouraged to do so.”

Furthermore, in the larger family firms there has been a company-wide DT strategy defined and communicated to every level in the company. One executive pointed out (Company 5):

¹ In the following Family Firms with revenues below 50 million Euros per year are referred to as “smaller family firms”

² In the following Family Firms with revenues above 50 million Euros per year are referred to as “larger family firms”

“The DT strategy has been defined by the owners and the chiefs of staff and we were very much focused that this roadmap is communicated to every employee in our company and to our partners, like customers, suppliers and service partners as well. We organized roadshows, informational sessions, events and workshops to make sure that everyone understands the way we want to go ahead.”

According to the data, it is evident that size in turnover is a key differentiating factor for the definition and scope of DT as well as the emphasize that is given on DT for respective business areas. In larger family firms, the participants had a much more comprehensive understanding of DT and its profit potential within their business context. The focus differs from only optimizing the production processes in smaller family firms to changing the way how business is done in larger family firms.

4.2 ENABLERS AND BARRIERS FOR THE DEVELOPMENT OF DYNAMIC CAPABILITIES FOR DIGITAL TRANSFORMATION

On base of the final data structure extracted from the interviews, this study revealed five main dimensions in family firms that either enable or hinder the dynamic capability building process for DT:

- **Leadership:** The leadership style and the spirit of the family members in family-owned businesses play a crucial role in developing the needed capabilities for DT. The data indicates that the family members' role in strategizing influences the development of all three dynamic capabilities: sensing, seizing and transforming. In particular, trans-generational involvement facilitates digital transforming capabilities, whereby strategic planning enables the sensing and seizing of digital opportunities.
- **Culture:** The culture within family firms is considered to be a key differentiating factor between family and non-family firms. In the context of DT, the data indicates that the employees' extraordinary commitment, loyalty and long periods of employment are consequences of the family firms' culture and play a crucial role for slowing down the development of digital sensing, seizing and transforming capabilities
- **Innovation:** It was evident that innovation in family firms is driven to a large extent by the family members' involvement and is characterized by a top-down approach. However, evidence has been found that the scope of digital innovation depends on the size of the family firm. Furthermore, the data indicates that innovation is especially enabling family firms to better seize digital trends in the market place.

- **Human Resources:** The data indicates that human resources management in family firms is not able to attract young and talented digital natives. In addition, the location disadvantage for most family firms facilitate these difficulties. It was evident that the low standards in human resources management is a key barrier for family firms to develop all three dynamic capabilities for DT.
- **Financial Resources:** The lack of financial resources, especially for smaller family firms, reveals to be another central barrier to develop digital seizing and transforming capabilities for DT. The data indicates that missing capital expenditures and the lack of budget allocation increase the difficulties to hire young and digital talents to remain agile and facilitate a digital culture within the company.

Figure 4 shows the conceptual model from the literature review extended to the family firm context. It illustrates a process model of external triggers that trigger the development of digitally based dynamic capabilities for DT. Furthermore, it incorporates the internal enablers and barriers extracted from the case interviews that facilitate or block the development of dynamic capabilities for DT in family firms.

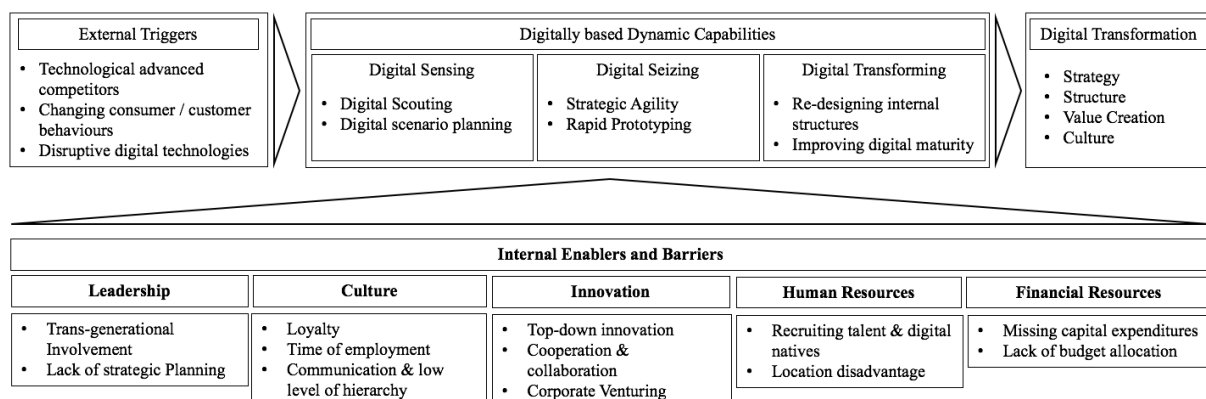


Figure 4: Conceptual Framework for the development of Dynamic Capabilities for Digital Transformation in Family Firms

4.2.1 LEADERSHIP

Five out of ten participating companies are currently facing or have recently faced a succession in the company. All of them suggested that the involvement of the new generation of family members increases the dynamics in the process of developing dynamic capabilities for DT. The involvement of the younger generation facilitates the DT process, especially in sensing digital trends and improving digital maturity through the initiation of new digital projects beyond

existing organizational structures. For example, the owner of “Company 4” explained the role of the younger successor as follows:

“My son grew up all his life with digital technologies and has gathered so much information during his studies that he has a much better understanding of digital opportunities in the market than I have. For example, he recently initiated to use a new marketing platform to continuously update our website for search-engine-optimization. His first project in the company was also a digitalization project to improve production processes through the installation of digital terminals and paper-free communication between operational planning and production.”

The owner of “Company 1” explained her first initiative in the company as follows:

“Coming from the outside, it became clear to me very fast that we have to merge the departments for printed and digital content management. Otherwise, our company would never be truly digitized.”

According to the data, it was evident that the involvement of the younger generation of family members facilitates the DT process. As digital natives, the new generation is more responsive to digital trends and can initiate transformational projects accordingly to reconfigure existing structures. (Companies 1, 4, 5, 9 and 10).

Furthermore, the data indicates that strategizing facilitates the DT process depending on the size of the family firm. This indication is coherent to our earlier findings on the definition, scope and emphasize of DT that varies depending on the size of the respective firm. The findings show evidence that smaller family firms usually follow a project-to-project based approach to digitalization in their production processes only. One executive (Company 7) explained:

“For new ideas to further digitize our production, usually a small group of executives is getting together to first exchange on the topic and then start a new project. The owner is only involved for approval of the project.”

In this context, it was also evident that the family members of these firms were mainly involved in other areas of the company such as sales and product development. In fact, in six out of the ten interviewed family firms with revenues between three and 95 million Euros per year, the owner is actively involved in sales to certain key-accounts of the company. As another executive (Company 2) put it:

“Our owner is not very much involved in operational projects concerning the production. He is more active in sales and product development.”

Conversely, in larger family firms, the data indicates that strategizing towards a common goal of DT is more sophisticated. The executive of “Company 5” explained that the owner of the

company is leading the DT activities of the company which involve the cooperation of all departments across the organization:

“Our owner is actively involved in communicating our DT strategy and in aligning the different activities to a common goal. For example, he has regular status-quo meetings with all executives responsible for DT”.

Due to the evidence that the operational involvement of the family members in smaller family firms is more directed towards sales and product development, it seems that the lack of strategy in digitalization projects might slow down the process of sensing and seizing digital opportunities for the respective area of these companies. On the contrary, in larger family firms the more sophisticated strategic planning represents an enabler for DT activities.

4.2.2 CULTURE

When asking the participants about the influence of the family firms’ culture, the interviewees mentioned the family firms’ culture is represented by the employees’ strong commitment and identification with the company. As a consequence, the answers of the interviewees indicate that the employees in family firms tend to be very loyal with long periods of employment. All interviewees mentioned that the time of employment for a considerable number of employees are above 20 years, for some even above 30 years. In this context, all participants mentioned that long periods of employment for a large number of employees makes it more difficult to remain agile and flexible in today’s business environment. In fact, one owner (Company 1) explained:

“With employees that have been with the company for more than 20 years it is almost impossible to move digitalization forward. You need new people who are capable of thinking digital, who have innovative ideas that bring value to the company and that facilitate a digital mindset within the company.”

Furthermore, another executive (Company 10) explained:

“The culture of our company with its strong values that have been lived by every employee since such a long time is to some degree contrary to the capabilities that we would need in order to be agile and flexible in our digital transformation activities.”

Basing on all interviews, it seems that to some extent the culture and the above-average periods of employment are an essential barrier for family firms to develop the needed dynamic capabilities for sensing and seizing digital trends and for improving the digital maturity of the company. Spotting digital trends in the market, developing innovative digital ideas as well as building a digital mindset appears to be very difficult for those employees in particular.

Furthermore, the interviewees mentioned that the personal contact and the communication between family members with non-family employees are important characteristics of the firms' culture. As the executive of company 3 put it:

“All employees know our owner personally because he often walks around the corridors and the production facilitates. I think for him it's important that the employees have a personal relationship with him.”

One owner (Company 9) explained:

“The communication in our company is very straight-forward. The people know what their colleagues are working on and should there be an issue they know who to talk to.”

In this context, the participants highlighted the role of the organizational structure of the firm represented though low levels of hierarchy. All interviewees agreed that important matters such as change of direction, milestones decisions or innovative ideas could be executed with very few meetings where family members are involved directly.

According to the interview answers, the data indicates that the culture of straight-forward communications in family firms translates to some degree into low levels of hierarchy that, in turn, enable quick decision-making. Consequently, it seems that the interrelation between family firms' culture and low levels of hierarchy help family firms to be agile and seize on digital trends.

Considering the findings on the role of the family firms' culture, the data indicates two main results. On the one hand, the employees' strong identification and loyalty translates into long periods of employment that, in turn, indicates a strong cultural barrier for the firm to develop digital sensing and seizing capabilities for DT as well as to improve digital maturity. On the other hand, family firms tend to have low levels of hierarchy that in part are a consequence of the family firms' specific communication culture and that translates ultimately to fast decision-making which facilitates strategic agility and DT within the firm.

4.2.3 INNOVATION

Innovation has been identified by all participants to be a crucial capability for seizing digital opportunities and threats. It has been recognized that most of the times innovation for DT is initiated by a top-down approach coming from the family members or from chief executive managers. Furthermore, the seizing of digital opportunities, trend and competitor analyses are often done or supervised by the family members.

In addition, all participants stated that there is a structured bottom-up innovation system through an employee's suggestion system. However, some interviewees admitted that it is limited to suggestions regarding manufacturing standards, but it does not encourage new ideas for DT across the organization (Companies 2, 6 and 10).

From the collected data, it was evident that the level of digital innovation changes with the size of the family firm. The larger the family firm, the more advanced are the mechanisms to facilitate digital innovation inside the company.

For example, in smaller family firms the innovation processes concerning the DT of the company are not organized and only on a project-to-project basis. As one owner put it (Company 7):

“Unfortunately, digital innovations, may it come from either a customer requirement or internally from one of our executives, are identified most of the time by chance. Yet we just have not enough specialized know-how to force this kind of innovation in a more structured, effective and continuous way.”

Another interviewee (Company 4) explained:

“Digital innovations concerning new products or services are developed most of the time together with a customer. We do not have the budget to follow these kinds of innovations without a customer project at hand.”

These findings indicate that smaller family firms do not follow a digital innovation strategy and consequently do not allocate resources for digital innovation. Therefore, the development of digital seizing capabilities for DT are limited in smaller family firms to specific customer requirements that trigger the innovation.

On the contrary, larger family firms appear to have more advanced mechanisms to facilitate innovation within the company. New strategic cooperations with suppliers and service companies are essential activities to facilitate digital innovation for DT (Companies 1, 5, 6, 10). For example, the executive of “Company 5” explained that a considerable part of digital innovation comes from the cooperation with external service companies:

“We formed cooperations with a network of different service companies in every country we are currently active. These companies help us to offer digital services to our customers such as the digital tracking of break bulk cargo.”

Moreover, corporate venturing activities through investments into external startups or in newly founded sister companies are becoming popular in larger family firms (Companies 1, 6, 9, 10).

As the owner of “Company 1” put it: *“We increasingly decide to invest in start-ups to facilitate digital innovation as this is usually faster than deciding to develop such innovation on our own.”*

Finally, the findings show evidence that in larger family firms new approaches to collaborative work environments seem to be implemented more likely. For example, cross-functional teams have been implemented for the initiation of DT projects in several larger family firms to facilitate the exchange between employees and encourage digital innovation (Companies 1, 5, 6, 9).

From the findings on digital innovation processes in family firms, it is evident that for larger family firms innovation is a critical driver for DT and facilitates the development of digital seizing capabilities. However, for smaller family firms the lack of a digital innovation strategy and missing resource allocation inhibit the development of digital seizing capabilities and consequently slows down the DT process of the firm.

4.2.4 HUMAN RESOURCES

In all interviews, young and talented digital natives have been identified as a key enabler for developing the dynamic capabilities needed for DT.

The data indicates that new talent facilitates DT on all three dimensions: First, all interviewees mentioned that digital talents would help to easier sense digital trends in the market place. Second, the participants commented that they would increase strategic agility because they would introduce a new digital mindset in the company. Third, new employees who grew up with digital technologies would help to encourage existing employees in the company to move the path of DT forward. As one owner (Company 5) put it:

“We try to attract new and talented employees in key positions who manage to take existing employees onto our DT journey.”

However, every participating firm mentioned that it finds it difficult to attract young talents. Especially, those firms located in the countryside are reporting a substantial location disadvantage against companies from metropolitan areas because they usually do not find the right and young people for their vacancies. Furthermore, shortcomings in the digital maturity as well as in employer branding are additional reasons why family firms are facing problems to attract young talents (Companies 1, 2, 3, 4, 7, 8). As one owner explained:

“We often hear that young talents are saying that they would like to join a modern and digitally more advanced company.”

The executive of “Company 5” stated that to some degree they seem to be stuck in a dilemma:

“On the one side, our employees with periods of employment of 20 or even 30 years are guaranteeing that we can keep on performing for our customers. But on the other side, the same employees are facing difficulties to act on complex digital projects so that we are losing speed on the digitalization of our company.”

From the interviews across all participants, it was evident that human resources management in family firms are facing serious difficulties. In combination with the location disadvantage, both represent significant barriers for developing the required dynamic capabilities for DT. Furthermore, the data indicates an interrelation between the shortcomings in human resources management and the shortcomings in fostering a digital culture among the employees. Both barriers seem to facilitate each other and amplify the effect of slowing down the DT in the companies.

4.2.5 FINANCIAL RESOURCES

Finally, the last dimension that incorporates enablers and barriers for family firms to develop dynamic capabilities for DT are financial resources. The data indicates that the allocation of financial resources in the means of capital expenditure for DT initiatives depends on the size of the family firm.

From the interviews, it was evident that smaller family firms are facing difficulties to allocate financial resources for the DT of the company. For example, the interviewees of smaller family firms advised that they usually can seize digital opportunities only when they come alongside with a customer project. In addition, these family firms advised that they are not always able to invest in new talent with university degrees. One executive (Company 3) explained:

“One problem is that in our company new employees have to know everything, but they should cost nothing. Therefore, many of our employees do not have a university degree”

The findings about the allocation of financial resources show evidence that the lack of financial resources and budget allocation represent a major barrier for smaller family firms to seize digital trends and to improve their digital maturity through the employment of new employees. Moreover, the findings indicate an interconnection between missing innovation strategies that prevents resource allocation. As a consequence, smaller family firms have difficulties in allocating capital expenditures for DT projects.

5 DISCUSSION

The findings presented in the previous chapter represent the family firms' internal enablers and barriers that facilitate or inhibit the development of dynamic capabilities needed to cope with DT. Consequently, these internal factors can enable or hinder family firms' ability to remain competitive in changing environments.

This study focused on practitioners' perspectives on dynamic capabilities for DT to extract meaning from lived processes to cope with DT by qualitative methods. The main conclusions of this study are multi-faceted:

First, this study shows evidence that the degree of DT activities and the development of dynamic capabilities for DT depend on the size of the family firm. According to the findings, smaller family firms mainly approach DT on a project-to-project basis. Lack of strategic planning leads to a loss of focus and consequently to a deficit in the development of dynamic capabilities to cope with DT. In addition, the allocation of financial resources in terms of capital expenditures for DT projects are not sufficient. Research on incumbents in traditional industries is indicating similar evidence. Kane et al. (2015) for example report that firms in "early" stages of digital maturity report lack of strategy as a top barrier for the DT of the firm.

Moreover, the approach of smaller family firms to digital innovation seems not to be sophisticated enough to facilitate digital seizing capabilities for DT. Due to the lack of digital innovation strategies, resources are not allocated appropriately. According to the research of Kane et al. (2015), companies in an "early" stage of digital maturity do not fully incorporate improvements in innovation as part of their digital strategy.

Second, the findings indicate that family firms' culture represents an important barrier for building digital sensing, seizing and transforming capabilities. The exceptional commitment of non-family employees and their loyalty towards the company lead to above-average periods of employment for the majority of the workforce. As a consequence, these employees often do not have the digital mindset and the skills needed to sense and seize digital opportunities in the market place. The findings of this study draw a close connection between the family firms' culture and the employees' long periods of employment. Research on the role of organizational culture in family firms and its influence on strategic change point to the same direction by highlighting the importance of young and talented employees that are proactive and less risk-averse (Kane et al., 2015; Chirico & Nordqvist, 2010).

Third, human resource management in family firms fails to attract young and talented digital natives. This slows down the development of dynamic capabilities on all dimensions: Sensing and seizing digital trends in the market place as well as transforming organizational structures through fostering a digital culture within the company. The location disadvantage for many family firms in the countryside in Germany amplifies this challenge which finally leads to a key barrier in the development of dynamic capabilities for DT. In fact, research emphasizes that family firms often undervalue managers that are well trained which leads to a small number of skilled managers with outside work experience or university trainings. (Sirmon & Hitt, 2003).

Fourth, trans-generational succession has been reported by all affected interviewees to be a key driver for DT inside the company. The combination of the unique leadership style of family members and the incoming expertise in digitalization is facilitating the dynamic capability building process for DT. However, family members need to pay attention to their priorities concerning the succession and their DT projects. Research shows that competing or too many priorities represent considerable barriers for companies in an "early" or "developing" stage of DT (Kane et al., 2015).

6 CONCLUSION

DT as a central topic in management research is quite novel. However, it gains momentum in management theory and practice. As the digitalization evolves and digital technologies disrupt the economic landscape, DT has been widely recognized as one of the biggest challenges for companies to sustain their competitive advantage (Matt et al., 2015; Hess et al., 2016; Kane et al., 2015). With its potential to change entire organizational set-ups including processes, products, business models and ultimately the organizations' culture, DT became essential for the study of strategic change in management research (Warner & Wäger, 2018).

In this context, the Dynamic Capabilities View is a powerful framework to examine strategic change in organizations (Barreto, 2010). Research suggests that dynamic capabilities such as sensing and seizing new technological trends as well as transforming the organizational resource base, help companies to sustain their competitive advantage in fast-changing environments (Teece et al., 1997).

However, while digitalization and disruptive technologies drive changes in the environment forward, family firms in Germany seem not to be sufficiently equipped to cope with digitalization. Prior research on family firms has mainly focused on their unique set of resources and the role of the family members that can create a competitive advantage over non-family firms (Kellermanns & Eddleston, 2006; Sirmon & Hitt, 2003). Nevertheless, research lags behind to explain why these unique set of resources can help family firms to cope with DT and sustain their competitive advantage in fast-changing environments. Attempts to explain that family firms appear to be reluctant to change is perhaps not fully applicable considering today's recognized need for DT. Due to this gap in research, three main questions had to be asked: First, what are the main dynamic capabilities that help organizations in the case of DT. Second, how do such dynamic capabilities apply to family firms when coping with DT? Finally, what are the key internal enablers and barriers for the development of the required dynamic capabilities for DT.

To answer these questions, distinct digitally based dynamic capabilities for DT have been extracted from research and complemented by external factors that trigger the development of dynamic capabilities for DT. The resulting conceptual model has been applied to the family firm context to identify key internal enablers and barriers for the development of dynamic capabilities for DT. Through in-depth qualitative case interviews, senior executives in German

family firms have shared their lived experience with DT activities. By asking the participants to use the dynamic capabilities framework, several internal drivers and barriers have been identified that enable or inhibit the development of dynamic capabilities for DT in family firms.

6.1 IMPLICATIONS FOR THEORY

The classification of enablers and barriers to aggregate dimensions acc. to the “Gioia Methodology” revealed certain resources that complement the research of Sirmon and Hitt (2003) on family firms’ unique set of resources to remain competitive over non-family firms:

On the one hand, human capital represented by exceptional commitment and specialized know-how of the family firms' workforce seem not to be a resource that solely help family firms to sustain their competitive advantage in times of DT. According to the findings of this study on the family firms' culture, the companies are characterized by employees with exceptional loyalty that translates into above-average periods of employment for the majority of employees. However, this workforce tends not to have the necessary digital mindset to sense and seize digital opportunities in the market place effectively. While all interviewees stated that employees are committed and an important asset regarding the transformation, they explain that a large part of their staff is not skilled enough for the tasks to come. Therefore, the results on family firms’ culture indicate that the human capital, at least to some degree, represents a barrier to develop the necessary dynamic capabilities to cope with DT. In this context, the findings on the lack of ability of human resources management in family firms to attract young talents and digital natives are coherent to prior research (Sirmon & Hitt, 2003). However, this study indicates that this barrier is amplified by the location disadvantage that most family firms in the countryside face.

On the other hand, the ability of family firms to manage their financial resources more effectively due to long-term strategies and less pressure for short-term profits appears not to facilitate DT in smaller family firms. In fact, the results of this study indicate that for those firms missing capital expenditures and the lack of budget allocation are significant barriers to transform their businesses accordingly. Surprisingly, this is contrary to the concept of patient capital in family firms that is intended to preserve the business for future generations (Sirmon & Hitt, 2003).

6.2 IMPLICATIONS FOR PRACTICE

The main implications for practice concern the family firm's key barriers for the development of dynamic capabilities for DT:

First, the exceptional commitment and the strong loyalty of the employees towards the company are essential components of the family firm's culture and are needed to perform in the day-to-day business. Nevertheless, a possible approach to counter the cultural barrier could be the installation of digitally-responsive managers in key positions. Managers with stronger digital capabilities in key positions can facilitate a digital mindset across all employees in their divisions. Another possibility could be to identify groups of managers in the company to form "digital transformation committees". These committees, in turn, can share their expertise in DT and foster cross-functional teamwork for digital projects.

Second, human resources management lags behind the standards of non-family firms. As a consequence, family firms fail to attract and retain young talent and digital natives. However, the younger generation of the workforce is crucial in order to sense and seize digital trends and increase the digital maturity of the firm. In order to reduce this barrier, family firms need to improve their employer branding while collaborating with universities, chambers of commerce and handicraft as well as with vocational schools. Furthermore, modern approaches to work environments e.g. through the presence in co-working spaces can help to attract and retain digital natives.

Third, family members and senior executives need to define clear strategies for DT and digital innovation in order to appropriately allocate resources to digitally transform their businesses. Especially, family members and senior executives of smaller family firms need to have a full understanding of the profit potential of DT beyond the digitalization of production processes.

6.3 LIMITATIONS AND FUTURE RESEARCH

This study contributes to existing research on DT as a mean of strategic change in organizations. Especially, it contributes to the research on family firms by applying the conceptual framework to study the development of dynamic capabilities of incumbents in traditional industries to the family firm context. That way, this dissertation narrows a little bit the research gap of how family firms can cope with DT and sustain their competitive advantage in changing environments.

Nevertheless, the present dissertation is not without its limitations. First, the results do not apply to a broader population of family firms. In fact, the findings are basing on family firms across different industries such as publishing, logistics and industrial production. All these industries vary from fast-changing to moderately dynamic environments. Furthermore, a transferability of the findings to non-family firms from the same or other industries is not given. Moreover, the scope of research on ten family firms limits the research significantly.

In addition, this study does not analyze the effects of the identified enablers and barriers on firm performance or the family firms' digital maturity. The lack of panel data across the sample firms and over a longer period limits the research for taking a more comprehensive evaluation.

For future research, this study can be used as an orientation for key enablers and barriers that influence the capability building process for DT in family firms. The study's results underline the importance of further research to explore the influence of the family firm's unique set of resources on DT and strategic change.

Moreover, this dissertation contributes to the base for future quantitative research on the effects of the internal enablers and barriers on digital maturity and firm performance. Especially, quantitative research is needed in order to measure the effect of DT investments on firm performance in order to have a deeper understanding of the concept of patient financial capital in times of DT.

Therefore, this dissertation calls for quantitative research on family firms that operationalizes the conceptual framework to create new insights on the long-term organizational implications of DT.

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APPENDIX

APPENDIX A: INTERVIEW QUESTIONNAIRE

INTERVIEW FRAGEBOGEN

Datum: ___/___/___

EINLEITUNG (5 MINUTEN):

Hintergrund zum Studium:

- Int. MSc in Management | Strategy & Consulting
- Católica Lisbon School of Business & Economics, Lisbon – Portugal
- TOP30 Business School in Europa

Ziel der Studie:

- Das Ziel der Studie ist es herauszufinden, wie Familienunternehmen in Deutschland die notwendigen Kompetenzen für die digitale Transformation im Unternehmen aufbauen.

Umfang der Studie:

- Interviews (ca. 30 Minuten)
- Folgetelefonate oder Email-Korrespondenz (wenn nötig)
- Einsicht in interne Berichte oder Dokumente (wenn zutreffend)

Datenschutz:

- Die Namen der Interviewpartner und der teilnehmenden Firmen werden nicht veröffentlicht. In der Master-Thesis werden Pseudonyme verwendet, um die Vertraulichkeit zu gewährleisten.
- Das Interview wird nur zu Zwecken der Studie aufgenommen. Die Universität Católica Lisbon School of Business & Economics erfüllt die Anforderungen der “General Regulation on Data Protection” der europäischen Union.

Struktur des Interviews:

- Das Interview ist in 3 Schwerpunktthemen eingeteilt und verwendet offene und geschlossene Fragen.
 1. Verständnis und Relevanz von „Digital Transformation“ im Familienunternehmen.
 2. Wie entwickeln Familienunternehmen die notwendigen Kompetenzen zur Bewältigung der digitalen Transformation im Unternehmen?
 3. Was ist der Einfluss von Familienunternehmensspezifischen Charakteristika auf die digitale Transformation im Unternehmen.

Information zum Interviewpartner:

- Position:
- Verantwortung:
- Erfahrung:

EINLEITUNG

Stellen Sie sich ein ideales Unternehmen vor, das durch digitale Technologien und Kompetenzen, die Prozesse verbessern, Talente im gesamten Unternehmen einbinden und neue wertschöpfende Geschäftsmodelle vorantreiben, vollständig transformiert wurde.

1. Bitte bewerten Sie Ihr Unternehmen auf einer Skala von 1 bis 10 nach diesem Ideal.

TEIL 1 („DIGITAL TRANSFORMATION“)

Definition und Relevanz:

2. Was verstehen Sie unter "digitaler Transformation" im heutigen Geschäftsleben?
3. Wie ist Ihr Unternehmen von der Digitalisierung betroffen? Können Sie Beispiele nennen?
4. Wie wichtig ist die digitale Transformation für Ihr Unternehmen im Vergleich zu anderen laufenden strategischen Projekten? Warum?

Strategie:

5. Haben Sie eine Strategie zur digitalen Transformation in Ihrem Unternehmen definiert? Wenn ja, was beinhaltet diese? Wenn nicht, haben Sie Maßnahmen definiert, die auf die digitale Transformation Ihres Unternehmens abzielen? Was sind das für Maßnahmen?
6. Wie stellen Sie eine erfolgreiche Umsetzung Ihrer digitalen Transformationsstrategie oder Ihrer Maßnahmen sicher?
7. Was ist das Ziel Ihrer Strategie bzw. Ihrer Maßnahmen zur digitalen Transformation im Unternehmen? Was erwarten Sie für Ergebnisse?
8. Wie messen Sie den Erfolg Ihrer Aktivitäten zur digitalen Transformation?

Wertschöpfung:

9. Was steht im Mittelpunkt Ihrer digitalen Transformationsstrategie bzw. Ihrer Maßnahmen? Wo sehen Sie das größte Gewinnpotenzial in Ihrem Unternehmen? Warum? Können Sie Beispiele nennen?
10. Wie versuchen Sie, das Wertschöpfungspotenzial der Digitalisierung zu nutzen?

11. Glauben Sie, dass sich Ihr Geschäftsmodell durch die Digitalisierung verändern wird? Warum oder warum nicht?

TEIL 2 („DYNAMIC CAPABILITIES“)

„Digital sensing“:

12. Was verstehen Sie unter "digital sensing" von Chancen und Risiken?
13. Wie erkennen Sie derzeit digitale Chancen und Risiken in Ihrem Unternehmen?
14. Was hilft oder blockiert das Unternehmen dabei, digitale Chancen und Risiken zu erkennen? Können Sie Beispiele nennen?

„Digital seizing“:

15. Was verstehen Sie unter "digital seizing" von Chancen und Risiken in Ihrem Unternehmen?
16. Wie werden digitale Chancen und Risiken in Ihrem Unternehmen verarbeitet (im Sinne von Chancen ergreifen und Risiken abwehren)? Können Sie Beispiele nennen?
17. Wie stellen Sie sicher, dass das Unternehmen rechtzeitig auf digitale Chancen und Risiken reagiert?

„Digital Transforming“:

18. Was verstehen Sie unter „digital transforming“ in Ihrem Unternehmen?
19. Wie stellen Sie sicher, dass das Unternehmen in einem heutigen digitalen Geschäftsumfeld agil (flexibel und dynamisch) bleibt?
20. Wie fördern Sie eine digitale Unternehmenskultur?
21. Wie können Sie den digitalen Reifegrad Ihres Unternehmens verbessern?

TEIL 3 (FAMILIENUNTERNEHMEN)

Kultur:

22. Welche Rolle nehmen die Familienmitglieder in der Digitalisierung des Unternehmens ein?
23. Welchen Einfluss hat die Unternehmerfamilie auf den Digitalisierungsprozess des Unternehmens? Warum?

24. Wie beeinflusst die Beteiligung der nächsten Generation von Familienmitgliedern (Nachfolgeregelung) die digitale Transformation des Unternehmens?
25. Welchen Zusammenhang sehen Sie zwischen der Unternehmenskultur und dem Erfolg der Digitalisierungsziele?

Unternehmertum und Innovation:

26. Wie beeinflusst der Unternehmergeist der Familie die Digitalisierung des Unternehmens?
27. Wie fördern Sie eine innovative Denkweise in Ihrem Unternehmen? Können Sie Beispiele nennen?
28. Wie hilft der Unternehmergeist Ihres Familienunternehmens die Digitalisierung des Unternehmens zum Erfolg zu führen? Warum? Können Sie Beispiele nennen?

APPENDIX B: Example of Qualitative Analysis using Gioia Methodology

Question Name	16. Wie werden digitale Chancen und Risiken in Ihrem Unternehmen verarbeitet (im Sinne von Chancen ergreifen und Risiken abwehren)? Können Sie Beispiele nennen?	Second-order themes	Aggregate Dimension
Company 1	Rechtzeitiges erkennen ist schwierig. Traditionelles Verlagshaus --> Personal mit langen Zugehörigkeiten. Digitale Chancen und Risiken werden selten frühzeitig und regelmäßig erkannt. Möglichkeit nur über neues Personal. Neues Personal zu rekrutieren ist schwierig, weil junge Menschen immer vorab gucken wie digital ist das Unternehmen.	Lack of recruiting talent & digital natives Location disadvantage	Human Resources
Company 2	Meistens werden Chancen zu spät erkannt. Impuls kommt nur von höherer Führungsebene oder der Unternehmerfamilie. Umfang ist aber zu gering. Mitarbeiter habe lange Betriebszugehörigkeiten und neue Mitarbeiter sind schwer zu finden.	Lack of recruiting talent & digital natives	Human Resources
		Long periods of employment	Culture
		Lack of strategic planning	Leadership
Company 3	Es finden keine Trendanalysen über digitale Chancen statt. Wenn, dann kommt der Impuls von der Unternehmerfamilie oder aus dem mittlerem Management. Proaktiv, werden kaum Chancen im Unternehmen erkannt. Chancen kommen meistens über Kundenanforderungen. Es gibt kaum junge Mitarbeiter mit Universitätsabschluss. Daher ist das digitale Verständnis im Unternehmen sehr gering.	Lack of strategic planning	Leadership
		Lack of recruiting talent & digital natives Location disadvantage	Human Resources
		Long periods of employment	Culture
Company 4	Meistens durch Zufall. Wenn wir was erkennen, dann gibt es die Innovation bereits im Markt. Impuls kommt von der Familie, sonst nicht! Mitarbeiter mit zu langen Betriebszugehörigkeiten erkennen keine digitalen Chancen. Rekrutierung neuer Mitarbeiter ist fast unmöglich --> Standortnachteil. Nachfolge springt Schwung in die digitale Transformation. In erster Linie durch neue Ideen, bessere Strategien und ein hohes Maß an Verständnis für digitale Technologien und Projektmanagement.	Lack of recruiting talent & digital natives Location disadvantage	Human Resources
		Lack of strategic planning	Leadership
		Trans-generational Involvement	Leadership
		Long periods of employment	Culture
Company 5	Mitarbeiter mit langen Betriebszugehörigkeiten sind eine Mehrheit des kompletten Mitarbeiterstamms. Führt zu relativ geringem "digital mindset" und dadurch zu kaum Impulsen von den Mitarbeitern zu digitalen Möglichkeiten in und außerhalb des normalen Geschäftsumfeldes.	Long periods of employment	Culture
Company 6	Aufspüren von digitalen Chancen, Trend- & Wettbewerberanalysen werden meistens durch die Unternehmerfamilie durchgeführt. Wenig Impuls durch die Mitarbeiter. Rekrutierung von Mitarbeitern in ländlichen Standorten unserer Werke ist schwierig. Nachfolge des Sohnes schafft viele Impulse für neue Ideen, Technologien und Marktchancen.	Trans-generational Involvement	Leadership
		Lack of recruiting talent & digital natives Location disadvantage	Human Resources
Company 7	Es finden Trendanalysen in unregelmäßigen Abständen statt. Wenn, dann werden Sie von der Unternehmerfamilie durchgeführt. In den seltensten Fällen kommt der Impuls von den Mitarbeitern. Chancen werden häufig durch Kunden aufgezeigt. Es gibt kaum junge Mitarbeiter mit Universitätsabschluss, es sind eher lange Betriebszugehörigkeiten vorzufinden. Digitales Verständnis im Unternehmen ist sehr gering.	Lack of strategic planning	Leadership
		Long periods of employment	Culture
		Lack of recruiting talent & digital natives	Human Resources
Company 8	Impuls kommt meistens von der Unternehmerfamilie oder manchmal aus der mittleren Führungsschicht. Mitarbeiter an altem Firmenstandort hatten sehr lange Betriebszugehörigkeiten und haben keine Impulse für digitale Innovation gegeben. Daher wurde für den Bereich "digital" der Standort verlegt in eine größere Stadt.	Lack of recruiting talent & digital natives Location disadvantage	Human Resources
Company 9	Eher schwach ausgeprägt. Personal mit langen Zugehörigkeiten haben kaum digitales Verständnis um digitale Chancen richtig einschätzen zu können. Regelmäßiges und effektives "digital sensing", das auch in "digital seizing" mündet geht nur mit neuem Personal. Dieses ist schwer zu finden, weil wir einen Standortnachteil haben.	Long periods of employment	Culture
		Location disadvantage	Human Resources
Company 10	Erkennen von digitalen Trends erfolgt meistens durch den Inhaber. Chancen werden über Kundengespräche und Anforderungen erkannt. Es gibt keine regelmäßigen Trendanalysen. Impulse von den Mitarbeitern halten sich für digitale Neuheiten in Grenzen. Vereinzelt werden Ideen kommuniziert, diese entwickeln sich aber selten weiter.	Lack of strategic planning	Leadership