CHAPTER 5

DISCUSSION AND CONCLUSION

This dissertation aims to explore the unique insights of digital transformation drivers that potentially explain why firms fail when engaging in this complex strategic action. I conducted three empirical projects using multiple datasets and appropriate techniques. The results provide insights going well beyond the extant research on digital transformation drivers. This final chapter will provide a summary of the findings and show how my research contributes to the understanding of digital transformation drivers. Second, this chapter elaborates on the practical implications of my research. This chapter will also provide directions for future research on digital transformation.

5.1. OVERVIEW OF THE FINDINGS AND CONTRIBUTIONS TO THEORY

This dissertation has identified the identification and interplay of organizational, environmental, and managerial aspects as an opportunity to advance our knowledge of the drivers of digital transformation. The integration of these aspects in three empirical studies leads to several contributions. The findings also offer extensions to the current theories used in the strategic management and information system literature. This section provides an in-depth discussion on the advancement of our understanding of the digital transformation drivers by providing novel insights on (1) the complementary perspective of organizational drivers, (2) the configuring perspective of environmental drivers, and (3) the motivational and collaborative (dual) perspective of managerial drivers. Figure 5.1 provides a summary of the main findings of the three empirical chapters.
5.1.1. Complementary Perspective of Organizational Drivers

A large body of research uses the theory of dynamic capabilities to examine the drivers of digital transformation (Karimi and Walter, 2015; Li et al., 2018; Nwankpa and Roumani, 2016; Vial, 2019; Warner and Wäger, 2019; Yeow et al., 2018). This theory emphasizes that dynamic capabilities allow firms to build strategic flexibility that is potentially beneficial for digital transformation. However, the implications of organizational flexibility are not clear in extant research as scholars identify inconsistent effects of flexibility on the firm's innovation outcomes (Herhausen et al., 2021; Li et al., 2010, 2017; Miroshnychenko et al., 2021; Wei et al., 2014; Zhou and Wu, 2010). Further, the digital transformation literature has shown that organizational capabilities alone might not be sufficient for digital transformation (Hanelt et al., 2020; Vial, 2019). Digital transformation involves a cultural shift and requires a sense of direction in which digital technologies should be implemented and capitalized. An in-depth analysis of the potential synergy among the drivers is necessary to render an account of how...
these drivers individually and jointly influence digital transformation. Without this knowledge, our understanding of the organizational drivers of digital transformation remains incomplete.

Chapter 2 underscores the synergistic effects of three key drivers of digital transformation: digital proactiveness, change commitment, and organizational flexibility. It demonstrates that the impact of digital transformation drivers is not straightforward but rather multiplicative and complementary. It theorizes that a rich exploration that includes all three key drivers provides a more fine-grained understanding of the interplay of the drivers. From a managerial perspective, this understanding is crucial as the absence of a single key driver may result in problems that hinder digital transformation. Particularly, a lack of digital proactiveness creates a limited cognition whereby the firm neglects the importance of digital technologies. A lack of change commitment may result in inertia by which the firm relies on path-dependent development and preference for the status quo. Similarly, the lack of organizational flexibility generates greater misalignment and conflicts that might stall the progress of digital transformation. The results from survey data of SMEs in the Northern Netherlands provide empirical support for the synergistic hypothesis, thereby extending the understanding of why capable firms may still fail in digital transformation.

In addition, chapter 2 also illuminates the role of flexibility in digital transformation. Organizational flexibility is pivotal for digital transformation because it allows firms to resolve core rigidities, misalignment, and resource constraints when engaging in the radical transformational process. However, organizational flexibility should be combined with digital proactiveness and change commitment. Proactiveness with digital technologies enables firms through providing necessary information and shape their technological frame, while change commitment facilitates inertia breaking and consolidates a can-do belief. Their simultaneous presence helps firms effectively drive digital transformation. The cube-view complementarity
analysis confirms this notion and reveals that organizational flexibility most strongly depends on the presence of the other drivers; it enables digital transformation only when digital proactiveness and change commitment are simultaneously present. This finding not only helps to explain the mixed results on the benefit of organizational flexibility but also highlights its crucial enabling role. Organizational flexibility fosters the creation of synergy but only in conjunction; it does not have a direct impact itself.

5.1.2. Configurating Perspective of Environmental Drivers

While past research emphasizes the prominence of the firm-level digital readiness when firms adopt, implement, and institutionalize digital technologies, it offers a limited understanding of what constitutes digital readiness. Digital readiness is context-specific and might be differently construed across industries. Prior empirical studies thus far define digital readiness as a uniform state of being prepared for digitalization, and implicitly assume that digital readiness is treated equally by all organizations. However, the construal of digital transformation and digital readiness can differ between industries (Kutnjak et al., 2019). Yet, this industry-level shaping view has rarely been discussed in the literature. Thus, we hardly know how firms build digital readiness differently according to industry-level conditions.

Chapter 3 underlines the importance of the industry-level technological roles in shaping firms' digital readiness. More specifically, this chapter draws on the industry-level strategic role of technologies literature and theorizes the different technological needs of transform industries in which digital technologies introduce radically different business models versus informate industries where digital technologies provide information to support decision making (Anderson et al., 2006; Dehning et al., 2003; Otim et al., 2012). This chapter proposes configurations of digital readiness for transform (e.g., professional service and information/communication) and informate (e.g., manufacturing and retail) industries should
be different to attend to specific technological needs. Employing a fuzzy-set qualitative comparative analysis (fsQCA), a technique that allows for studying non-linear combinatorial dimensions, this chapter investigate the digital readiness configurations across transform and informate industries. Particularly, chapter 3 argues that firms in transform industries face high technological, market dynamism and fierce competition. Accordingly, the results show that for transform industries, digital capabilities to sense and respond to digital opportunities quickly and effectively are more crucial. Either complementary assets or commitment to transformation support digital capabilities to enable digital transformation. Put differently, complementery assets and commitment to transformation replace each other, such that their simultaneous presence does not necessarily benefit firms in transform industries. Firms in informate industries, conversely, face challenges related to the lack of urgency and establishing a learning curve to engage in digital transformation. In other words, these firms often find it challenging to effectively use digital technologies to improve their business and are less committed to doing so. Therefore, complementery assets and commitment to transformation are essential for firms in informate industries. Complementery assets facilitate the integration and value generation with digital technologies, while commitment to transformation encourages firms to actively pursue digital transformation. Digital capabilities provide supporting conditions for these firms. Although drawing on a different theoretical perspective (i.e., theory of organizational readiness) that centers on organizational capabilities and commitment rather than awareness, chapter 3 closely investigates how the organizational drivers (i.e., the resources, capabilities and commitment dimensions of digital readiness) configure alongside the industry-level role of technologies. Hence, the findings are relevant to those of chapter 2. Chapter 3 highlights the (potential) synergy between resources, capabilities, and commitment. In other words, the digital readiness dimensions form varying configurations under different industry-level technological needs. Importantly, chapter 3
resonates with chapter 2 by showing that in specific circumstances – that is when digital technologies play an informate role – digital capabilities are supportive drivers, but not an independent driver of digital transformation.

Chapter 3 demonstrates the configurating role of the industry-level strategic role of technologies – an environmental driver and highlights the context-specificity of firm-level digital readiness. The digital readiness configurations depart from past research by considering the industry-level roles of technologies and show the combinatorial promise of digital readiness dimensions in response to the industry-level technological needs. The refined theorizing of digital readiness configurations emphasizes the research context – that is the industry level technological role and extends the understanding of how firms may differently build digital readiness for implementing and generating value with digital transformation. Moreover, moving beyond the multiplicative nature of general synergy suggested in chapter 2, chapter 3, through its configuration perspective, highlights the nuance in the synergy of digital transformation drivers. Put differently, chapter 3 suggests configurational synergy by showing the combinations of the ambivalent degrees of organizational drivers according to the industry-level technological needs. Thus, chapter 3 extends the synergistic effect in chapter 3 with a more nuanced, context-specific view.

In a broader perspective, the configurations of digital readiness also align with and augment the mixed findings on the organizational drivers and strategic implications of digital transformation (Felipe et al., 2020; Karimi and Walter, 2015; Nwankpa and Datta, 2017). For instance, Felipe et al (2020) maintain that digital capabilities are more beneficial to firms in the more technologically intensive industries, which is in line with our findings. This chapter adds to the ongoing discussion by showing that complementary assets and transformational commitment substitute each other in technologically intensive industries. Similarly, examining the newspaper industry, Karimi & Walter (2015) found that digital capabilities
stimulate digital product innovation but not the additional revenue. The findings of this chapter resonate with them and clarify that for less technologically intensive industry such as the newspaper industry, digital capabilities play a supporting role at best and does not work without complementary assets and commitment to digital transformation.

5.1.3. Incentive-Inducing and Collaboration-Enabling Perspective of Managerial Drivers

Chapter 4 examines the managerial drivers of digital transformation by investigating the role of IT executives within organizations and top management teams in a firm's digital transformation. A current review of the literature reveals that relevant expertise such as the digital knowledge of top members has been investigated as the main managerial driver. Drawing on the notion that digital transformation is a risky endeavor that requires sufficient motivation from individual managers to engage in it and a socio-political action that necessitates collaboration among members to warrant its success, this chapter argues that digital knowledge does not sufficiently address both mechanisms and renders an incomplete account of the managerial drivers for digital transformation.

With a focus on managerial drivers, chapter 4 demonstrates the importance of the IT executive-TMT power dispersion and its dual effect on digital transformation. This chapter argues that power dispersion at the medium level provides an incentive-inducing mechanism that motivates IT executives to participate in and contribute to the firm's attempt to digitally transform. On the other hand, a high level of power dispersion hampers collaboration between the IT executives and the TMT, thereby hindering the success of digital transformation. These empirical results lend support to this hypothesis and reveal a robust inverted U-shaped relationship between IT executive-TMT power dispersion and digital innovation – an indication of the success of digital transformation. Thus, this chapter contributes to the theory
by showing that the balance of power dispersion is a managerial driver of digital transformation such that the IT executive is incentivized and collaborates with the TMT to jointly drive digital transformation.

In addition to this dual effect (both positive and negative effects at play) of power dispersion, chapter 4 also demonstrates the conditions under which the inverted U-shaped relationship is prominent. Drawing on the digital innovation and IS leadership literature, this chapter shows that IT expertise of IT executives steepens the inverted U, while firm-specific expertise of IT executives flattens the curved relationship. This provides a better understanding of how firms utilize power dispersion to engage IT executives (Singh et al., 2020; Tumbas et al., 2018). Particularly, chapter 4 proposes that when the IT executive has high IT expertise, s/he should be monitored with a moderate level of power dispersion to maximize his/her incentivizing benefits. In contrast, when the IT executive is long-tenured and possesses a great amount of firm-specific expertise, a high level of power dispersion is preferred because the executive can then facilitate collaboration under the differential relative power thanks to his/her human capital and commitment to the TMT and the firm.

Jointly, this dissertation enriches our understanding of the digital transformation drivers. It emphasizes that complementarity is continually important in digital transformation and firms should adopt a systems perspective aimed at stimulating synergies (and avoiding negative ones) when driving digital transformation. Moreover, mindfulness of the environment when configuring firms’ digital transformation strategy proves helpful for them not only in achieving the desired state of digital transformation but also in generating additional value with digital transformation. Finally, designing relative power in the TMT might be important for firms when engaging in digital transformation.
5.2. CONTRIBUTIONS TO PRACTICE

This dissertation has several managerial implications when organizations want to foster their digital transformation. First, chapter 2 of my dissertation highlights the importance of achieving proximal synergy of the three important types of organizational drivers, namely awareness, motivation, and capability. Chapter 2 finds that while building organizational flexibility through reinforcing firm-level dynamic capabilities or restructuring the organization is important for digital transformation, a sole focus on flexibility building might be harmful to this complex process. Cognitive and motivational factors synergize with flexibility help firms to overcome major managerial problems emerging from the organizational transformation. If firms score low on digital proactiveness and change commitment, organizational flexibility cannot resolve the neglect of digital technologies or handle the inertial effects of incumbent resources, processes, and routines (Svahn et al., 2017; Warner and Wäger, 2019; Yeow et al., 2018). Simultaneously securing proactiveness, change commitment, and organizational flexibility is crucial to enable firms to effectively drive digital transformation.

To ensure that proactiveness, change commitment and flexibility are concurrently developed and sufficiently attended to, involving top management teams and especially relevant members such as the technology executives is a key action point (Li et al., 2016; Singh et al., 2020; Tumbas et al., 2018). Nevertheless, full involvement of the TMT might not be simple. Importantly, the three studies show that digital transformation is a complex and risky process and requires cross-functional collaborations of the technology executives with other TMT members to warrant its success. Chapter 4 provides insights into fostering the involvement of technology executives and the rest of the TMT. The relative power of the technology executive should be carefully monitored and aligned with her expertise to reap full
benefits. Particularly, the results show that when the executive has expert knowledge of technology, s/he should be managed with a moderate level of power dispersion to the rest of the team. This allows the technology executive to be sufficiently motivated, and at the same time, able to collaborate with other top members. When the executive is long-tenured, it is recommendable to create an environment characterized by a higher level of power dispersion. Through the commitment to the firm and the social capital s/he built throughout his/her tenure, IT executives will be capable of maintaining collaboration and self-motivated to lead the success of a firm's digital transformation. Moreover, chapter 4 also offers insights on the selection of IT executives: selecting new IT executives with high IT expertise involves a high risk-high return option that requires careful management in terms of the power dispersion of the IT executive with the TMT to realize digital innovation. For low-risk, low-return strategies, it is recommended to promote long-tenured employees to the position of IT executive, as these senior executives produce lower but more consistent digital innovation outputs.

Chapter 2 underlines the importance of obtaining synergistic effects of awareness, motivation, and capability drivers and chapter 4 offers strategies to maximize the involvement of relevant TMT members to ensure synergy and drive digital transformation. As a result, chapters 2 and 4 adopt an internal focus. Chapter 3 views the organizational drivers of digital transformation in the industries firms are active in, thereby demonstrating that there is no one-size-fits-all strategy when it comes to preparing for digital transformation. Firms should be mindful of the environment and tailor their step-by-step tactics carefully. Specifically, chapter 3 shows that in more digitally intensive industries, firms should prioritize building capabilities (including flexibility) to swiftly sense and respond to digital opportunities because of the high dynamism and intense competition in these industries. However, firms in less digitally intensive industries should concentrate on fostering change commitment and complementary
resources. This is because these firms do not have the same dynamism and competitive tension and thus are more reluctant to (major) digital changes. Commitment allows firms to foster a sense of urgency while complementary assets enable them to adopt and implement digital technologies at a faster pace, eventually leading to more successful digital transformation attempts. Translating these findings to selecting and managing IT and other TMT members, it is suggested that firms in more intensive (transform) industries tend to prefer high-risk-high-return strategies, and benefit from choosing executives who have high digital knowledge and place them in teams with moderate power dispersion. In less digitally intensive (informate) industries, firms may seek a more stable strategy by selecting executives with a long tenure as technology leaders who realize a more consistent digital transformation process and value.

5.3. FUTURE RESEARCH DIRECTIONS AND CONCLUDING REMARKS

In this digital era, firms are continuously engaging in digital transformation to reap its benefits. Scholars and practitioners have shown that digital transformation is not a straightforward process and can likely easily result in failure when individual drivers are not accounted for. Importantly, they have documented digital transformation failures of (previously) high-profile companies, leading to huge financial losses and bankruptcy of firms (Davenport and Westerman, 2018). Given this complexity, it is important to understand what factors drive a successful digital transformation. This dissertation sets out this objective. I empirically study the intricacy of organizational, environmental, and managerial drivers. Using different unique data sets of companies in Europe and North America, this dissertation provides a more nuanced and comprehensive picture of digital transformation drivers. The findings noted in this dissertation transcend those from past research and enrich our understanding of digital transformation drivers. Importantly, this dissertation stresses the
interlinkages and potential synergies between organizational, environmental, and managerial drivers. Missing a single category may hamper digital transformation.

Each of the empirical studies (chapters 2-4) presents future research directions at the end of each respective chapter. Rather than repeating them, this section synthesizes the three chapters and proposes several important issues regarding digital transformation drivers that spur future research. This section departs from the specific future research directions shown in the empirical chapters, as it highlights more generic research directions based on a synthesis of these chapters.

First, previous IS research has highlighted the under-researched but highly relevant perspective of synergy and complementarity in studying organizational technological adoption, implementation, and innovation (Nevo and Wade, 2010; Tambe et al., 2012; Tanriverdi, 2006). However, synergy and complementarity have not been discussed in the digital transformation literature partly due to the limitation of current research methods (Park, Fiss, et al., 2020). Chapter 2 shows that complementarity exists and might be more beneficial to firms' digital transformation than do the components of complementarity. Chapter 3 sheds light on the potential (dis)synergetic effects of the digital readiness dimensions and the role of industry-level technological role in shaping complementarity. The complementarity perspective will open avenues for future research on digital transformation. Particularly, it is interesting to understand which factors (jointly or individually) stimulate or hinder the development of complementarity in digital transformation. Importantly, past research has shown that complementarity exists even among dissimilar technological and organizational resources (Aral et al., 2012; Mishra et al., 2022; Tambe et al., 2012). Future research should investigate the characteristics of organizational resources as well as environmental conditions constituting the development of complementarity. In addition, realizing digital transformation requires the fulfillment of various phases with varying complexity from digitization to
digitalization to digital transformation (Verhoef et al., 2021). Hence, it is worth examining the relationship between complementarity and different phases of digital transformation. Future research could, for instance, examine the development and maintenance of complementarity across the steps of digital transformation. Therefore, this dissertation stresses the importance of complementarity and encourages future research to depart from studying individual drivers in isolation to examine whether they complement other variables in driving digital transformation. Complementary views also widen the perspective of the roles of a specific driver in shaping other drivers and advance our understanding of digital transformation drivers.

Further, this dissertation has highlighted the non-linearity perspective of digital transformation drivers. Past research studying the driving force of digital transformation has mostly focused on the linear influences of drivers, ignoring the potential complexity these drivers may have on a firm's digital transformation. Chapter 3 of this dissertation shows that digital readiness is a non-linear configuration of its dimensions depending on the industry-level technological needs. Likewise, chapter 4 denotes a non-linear inverted-U shaped relationship of power dispersion as a managerial driver. By taking a non-linearity perspective, future research could push the boundaries of theorizing, as it may provide a more nuanced, context-specific view of digital transformation drivers. Future research could pursue this interesting stream to reconcile contradictory findings of digital transformation drivers (cf. Karimi & Walter, 2015; Nwankpa & Datta, 2017) or to examine complex constructs. For instance, while digital culture has been proposed to be important for digital transformation (see e.g., Vial, 2019), less is known about what digital culture looks like, and which organizational factors constitute digital culture. Furthermore, whether digital culture has linear or non-linear effects on digital transformation has not been examined. Similarly, recent studies show that new organizational forms, like digital platforms, provide both benefits and
challenges for firms attempting to digitally transform by participating in those platforms (Ceccagnoli et al., 2014; De Reuver et al., 2018). Accordingly, the adoption of digital platforms might be dynamic, and non-linearly related to firms’ digital transformation and subsequent performance. The non-linearity of digital transformation drivers, as confirmed in this dissertation, will provide a more nuanced perspective and likely more accurate perspective for future research. The use of state-of-the-art methodologies to study non-linearity via non-linearity testing (Haans et al., 2016) and configurational analysis (Fiss, 2011; Park, Fiss, et al., 2020) will empower future research, and enhance our understanding of digital transformation drivers.

Finally, by examining a comprehensive set of digital transformation drivers, my dissertation emphasizes the importance of multiple perspectives in building an integrated model of digital transformation. Future research should depart from the well-established theoretical perspective. Scholars should draw on relevant but less explored theories to understand digital transformation. Throughout the three empirical chapters, this dissertation has shown that under-researched perspectives of system and complementarity, industry-level technological roles, and power dispersion between the IT executive and the TMT prove useful in determining the organizational, environmental, and managerial drivers of digital transformation. As a suggestion for future research, the lens of the technological frame, in combination with other theories, would be useful in studying how firms make sense of digital disruption and undertake digital transformation (Davidson, 2006). Mishra & Agarwal (2010) show how the technological frame complements digital capabilities in driving a firm’s use of electronic procurement. Similar theoretical integration may expand and bring new insights to the digital transformation literature. Combining multiple perspectives and building an integrated model prove useful not only in studying digital transformation drivers but also in other aspects related to digital transformation. For instance, different theoretical perspectives
will enable future research to delineate a comprehensive picture of the influence of digital transformation on financial performance. In addition to theoretical integration, chapter 3 of my dissertation also stresses the use of multiple research methods. In this regard, there are guidelines in the literature on how to employ mixed methods appropriately and effectively (Venkatesh et al., 2013, 2016). The methodological combination will assist theoretical integration and allow future research to investigate the complex phenomenon of digital transformation systematically and meticulously.