Chapter 5
SMEs Talk—Startups Walk: How Startups Can Benefit from the Use of a Digital Maturity Model for SMEs as Part of Digital Transformation?

Patrick Klotz and Barbara Eisenbart

Abstract *Purpose*—While digital transformation has been widely implemented in large corporations, there is a big potential for startups and SMEs that are lagging behind in utilizing this opportunity. This chapter aims to raise awareness among startups and SMEs about digital transformation by developing a digital maturity model adopted, especially for international distributed work. The model serves as a framework for startups and SMEs to understand which dimensions influence and are important for digital transformation, and what specific questions are relevant for each of the dimensions.

Design/methodology/approach—The research followed the Design Science Research with explorative interviews of two CEOs and development of case studies of companies currently undergoing the digital transformation process to get a deeper understanding of the different dimensions and which dimensions really matter. The artifacts are the dimensions that have a direct impact on the successful implementation of digital transformation, including a sample report of the digital maturity to position a company's digital transformation against a baseline. Those dimensions were identified and chosen based on the review of 27 existing digital maturity models.

Findings—The perception, that digital transformation is all about technology, has been disproved. Seven dimensions identified were (a) Culture and Leadership, (b) Digital Technologies, (c) Organization and Processes, (d) Employees and Digital Skills, (e) Customers, (f) Products and Innovation, and (g) Digital Strategy. Once a digital strategy is defined, a company can then focus on either internal or external environment. Culture and leadership need to be defined top-down as a base for driving change. Digital technologies are enablers, not drivers.

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A. H. Verkuil (ed.), *Start-up Cultures in Times of Global Crises*, Sustainable Business Development, https://doi.org/10.1007/978-3-031-53942-8_5

Business implications—The use of a digital maturity model raises companies' awareness about the current digital transformation phase and helps to understand, kick-off and accelerate their digital transformation to realize the aspired situation. While SMEs need to carefully plan and transform all aspects of a running company to benefit from digital opportunities, startups can launch digitally right from the start.

Originality/value—Startups and internationally active SMEs can use the maturity model for a self-assessment as a first step to understand key dimensions to build a digital strategy and continuously work on improving maturity level as well as sustainability. Researchers in other countries can use the maturity model for classification and conduct a survey for comparative analysis among countries and different industries in different countries.

Keywords Digital transformation awareness · Digital maturity · Digital strategies

Introduction

There is no way around Digital Transformation—Digitalization is one of the hot topics of many governments, supporting their economic players to cope with the rapid developments and making sure they are staying or becoming competitive in the global market. Ironically, digitalization can be identified as an opportunity and threat at the same time. Players from other countries can now serve very remote markets more easily, which results in more competition in the local market. At the same time, a local company can now offer services on a global market, competing in areas where it would not be possible in an analogue way.

Successful entrepreneurs in Malaysia contribute to the improvement of living standards, jobs, and incomes, with the consequence of better education and health. Furthermore, sustainability dimensions become increasingly important for startups and SMEs for sustainable competitive advantage, innovative and sustainable business models as well as meeting regulation needs or sustainable development goals (Reis & Melão, 2023).

While digital transformation has been widely implemented in large corporations there is a big potential for startups and SMEs which are lagging behind in utilizing this opportunity. This chapter aims to raise awareness among companies about digital transformation by developing a digital maturity model adopted, especially for startups and SMEs with international distribution of work. The model serves as a framework to understand which dimensions influence and are important for digital transformation and what specific questions deepen the evaluation of dimension.

Theoretical Relevance

A sheer endless number of definitions and explanations on what digital transformation means seems to be available written by scientists, consultants, service providers, and other practitioners on the Internet. Even researchers do not come to a universally agreeable composition or a dominant confirmed understanding (Peter et al., 2020) of what defines the term.

Business Relevance

The fast-paced growth of digitally native companies such as UBER, AirBnB, Google, Facebook, Netflix, and others were popular in many use cases that showed how "easily" they won against incumbent analogue enterprises that missed out on the digital transformation. To top it all off, the recent pandemic proved that companies not ready for the digital world would miss out on opportunities, and numerous enterprises went bankrupt. No doubt both accelerated Digital Transformation in many aspects. The importance of digital transformation for startups and SMEs has become significant.

However, there is a difference in the approach between startups and established SMEs. While SMEs need to carefully plan and transform all aspects of the running company to benefit from the digital opportunities, Startups have the advantage of launching digitally right from the start being digital native. Still, it is equally important for a startup to understand the dimensions relevant for digital transformation, so they can be considered, defined, and grown over time, without the need for major and risky changes.

Among the lack of understanding as to what Digital Transformation really means, researchers identified several challenges, especially for SMEs in implementing and executing a real transformation. Those challenges have a great diversity and can be found across many of the dimensions that define Digital Transformation. Berghaus (2016) suggests that "Digital transformation seems to be intuitively managed rather than strategically planned." Peter (Peter et al., 2020) proposes that "Digital Transformation is addressed in a general […] manner which remains too abstract for businesses," while Vial (2019) finds "the increasing complexity of the environment within which firms operate" an addressable challenge.

Key Concepts of Digital Transformation

Different articles have done a systematic review of the literature on digital transformation, reflecting the ongoing importance of digital transformation (Table 5.1).

Often "digitization" and "digitalization" are used interchangeably, both in academic literature and in the numerous sources found on the Internet. Sometimes the same applies also for the terms "digitalization" and "digital transformation." The following are some of the more relevant and interesting quotes from these academic articles.

Digitization

We searched for definitions that clearly distinguish between the terms "digitization" and "digitalization." Schallmo and Williams "define digitization as digitally enabling analogue or physical artifacts for the purpose of implementing into said artifacts into business processes with the ultimate aim of acquiring newly formed knowledge and creating

Table 5.1 Overview of systematic literature review articles

Major topics	Major insights	Literature	Author and year
Implementation	Synthesized guidelines and practices on how to roll out digital transformation projects	Best practices for digital transformation based on a systematic literature review	Van Veldhoven and Vanthienen (2023)
Technological, business, and societal impacts	Major research avenues through visualization of literature node network	Digital Transformation: An Overview of the Current State of the Art of Research	Kraus et al. (2021)
Dimensions and categories	Comprehensive description of six dimensions with a new dimension: sustainability	Digital transformation: A meta-review and guidelines for future research	Reis and Melão (2023)
Implications for strategy and organizational change	Comprehensive list of research matrix on contextual conditions, mechanisms, and outcomes	A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change	Hanelt et al. (2021)

new value for the stakeholders" (Schallmo & Williams, 2018). For digitization, the *direction* was clearly to have something analogue such as paper being transformed into a digital counterpart. "The entry defines digitization as the material process of converting analogue streams of information into digital bits" (Brennen & Kreiss, 2016).

Digitalization

For the term "digitalization" it became obvious that it is based on the *outcome* of digitization. The digitized objects are being used to create, improve, and ideally automate a process. Again Schallmo and Williams provide a comprehensive definition—"we define digitalization as fundamental changes made to business operations and business models based on newly acquired knowledge gained via value-added digitization initiatives" (Schallmo & Williams, 2018).

To simplify it, this research thus understands digitization as the *process of transforming an analogue artifact into a digital one*, while digitalization can be defined as taking advantage of the *digitized artifacts to improve (business) processes* by leveraging digital technologies.

Digital Transformation

Finally, digital transformation can be understood as the next step in a digital journey, which must start with digitization and is followed by digitalization. However, "digital transformation is a complex issue that affects many or all segments within a company" (Hess et al., 2020). Also during the study, we could identify that digital transformation is not a one-time project but an *ongoing process* as described in a comprehensive definition by Teichert. "Digital transformation itself can be seen as an ongoing process of adoption to a significantly changing digital landscape in order to meet the digital expectations of customers, employees and partners" (Teichert, 2019).

We have summarized our own definitions of these three relevant terms in the following graphs, also displaying the idea of a continuous process that is building on the previous process step(s) (Fig. 5.1):

Digital (Transformation) Maturity Models

As there are dozens, if not hundreds of digital maturity models available by both academia and practitioners, a search for articles with a literature review on the topic was conducted. For the digital maturity models, the following three relevant documents were identified and used to find and analyze different digital maturity models: Digital Transformation Maturity: A Systematic Review of Literature (Teichert, 2019), Digital Maturity Models for Small and Medium-sized Enterprises: A Systematic Literature Review (Williams et al., 2019), How to Measure Digitalization? A Critical Evaluation of Digital Maturity Model (Thordsen et al., 2020).

Roughly 60 maturity models were analyzed, thereof only 27 were useable to identify specific dimensions. Interestingly, most of these models were created between 2015 and 2019, with only a few prior to that time range (Table 5.2).

Besides the differentiators' industry focus, company size and author (practitioners, academic, or hybrid) the level of maturity was an important factor as well as dimensions that were used to define the maturity level.

A total of 34 different dimensions could be identified and we initially categorized them roughly (e.g., technology, digital technology, IT technology, or a specific technology that was named, went into the same category). In a second step, we further summarized categories, which try to accomplish the same goal, or are easily identifiable as similar (e.g., digitalization/processes, Governance/Control, and ecosystem/collaboration). In the final step, we focused only on the dimensions that

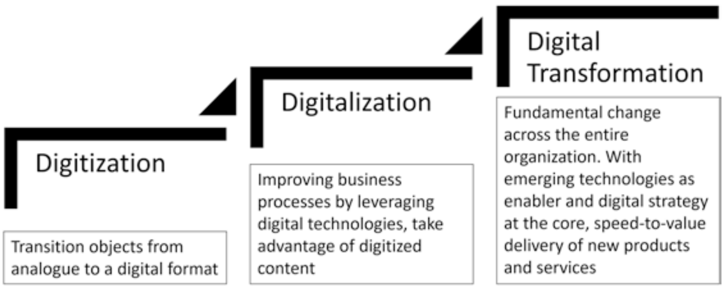

Fig. 5.1 Our own definitions of terms

Table 5.2 Overview of digital maturity models

#	Name of the digital maturity model	Author	Year	Reference
1	IMPULS Model	Lichtblau et al.	2015	Lichtblau et al. (2015)
2	360 Digital Maturity Assessment	Colli et al.	2018	Colli et al. (2018)
3	No specific name	Remane et al.	2017	Remane et al. (2017)
4	No specific name	Berghaus	2016	Berghaus (2016)
5	Industry 4.0 framework	Canetta et al.	2018	Canetta et al. (2018)
6	SIMMI 4.0	Leyh et al.	2017	Leyh et al. (2017)
7	DREAMY Model (Digital Readiness Assessment MaturitY)	De Carolis et al.	2017	De Carolis et al. (2017)
8	VTT's Digimaturity model	Leino et al.	2017	Leino et al. (2017)
9	Industry 4.0 Maturity Index	acatech STUDY	2017	Schuh et al. (2020)
10	No specific name	Valdez-de-Leon	2016	Valdez-de-Leon (2016)
11	No specific name	MIT/Deloitte	2017	Kane et al. (2017)
12	N/A (Qualitative research)	MIT/CapGemini	2011	Westerman et al. (2011)
13	Value-Centric Maturity Model	PWC	2017	Shahiduzzaman et al. (2017)
14	Digitizing Index	Katz et al.	2014	Katz et al. (2014)
15	Forrestor's digital maturity model 4.0	Forrester's	2014	Gill and VanBoskirk (2016)
16	Industry 4.0 Maturity Model	Schumacher et al.	2016	Schumacher et al. (2016)
17	e-Business Maturity Model	Depaoli et al.	2013	Depaoli and Za (2013)
18	SMEs Maturity Model Assessment of IR4.0	Hamidi et al.	2018	Hamidi et al. (2018)
19	No specific name	Anggrahini et al.	2018	Anggrahini et al. (2018)
20	Quick CheckUp's Industrie 4.0 maturity assessment	Häberer et al.	2017	Häberer et al. (2017)
21	Industry 4.0 Toolbox	Verband Deutscher Maschinen- und Anlagenbau	2015	Anderl et al. (2015)
22	Digital Quotient	McKinsey	2015	Tanguy et al. (2015)
23	No specific name	Salviotti et al.	2019	Salviotti et al. (2019)
24	No specific name	Deutsche Telekom	2018	Deutsche Telekom (2018)
25	Maturity Model of technology adoption for educational organizations (MMEO)	Ifenthaler et al.	2020	Ifenthaler and Egloffstein (2020)

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Table 5.2 (continued)

#	Name of the digital maturity model	Author	Year	Reference
26	Digitaler Reifegrad von Schweizer KMU	Lucerne University of Applied Sciences and Arts	2017	Wyss (2017)
27	Strategic Action Fields of Digital Transformation	University of Applied Sciences and Arts Northwestern Switzerland	2019	Peter et al. (2020)

Source: Own table based on the analysis of 60 digital maturity models

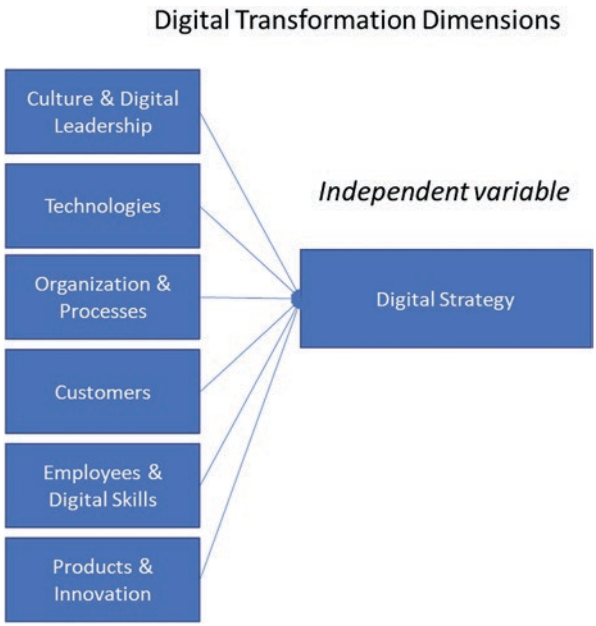

Fig. 5.2 Digital transformation dimensions. Source: Own

were mentioned most. It was possible to further merge some categories to simplify and get to dimensions that are tangible and mostly self-descriptive.

This analysis resulted in the following seven dimensions, with "digital strategy" at its core, that represents the one dimension, which is basically described and defined by the six others. All seven dimensions were represented in at least 40% of the available digital maturity models. Not surprisingly "Technology" was mentioned in almost every single model (except three). As identified in the literature, historically digitalization has always focused on technology. Furthermore, most service providers in the market offer some kind of technology under the umbrella of digitalization. It remains to be identified, if that is really the most important dimension, or other dimensions will play a much more important role to measure the level of digital transformation (Fig. 5.2).

The model consists of seven dimensions in total, where six of them directly influence the seventh: "digital strategy." The digital strategy can be defined and is influenced by the six dimensions on the left side. Depending on how these dimensions define the digital strategy, and how the strategy is then being executed, will define the success of the digital transformation of the company.

The research aimed to identify how these dimensions are defined and which questions would need to be asked to identify how advanced a company is in each of these dimensions. It might also lead to questions as to how relevant any of these dimensions are for a company. The focus on digital transformation might vary—success can be defined in different ways.

Research Gap

To understand where a company in terms of digital maturity stands (current and future), different digital maturity models were developed. These digital maturity models can serve as a foundation for startups and SMEs to understand, what digital transformation is about, what the respective dimensions mean, and how it is important for the success of the digital transformation of their own company.

It turns out that the challenge of not having an unambiguous definition of the term digital transformation also results in an equally large quantity of digital maturity models, by both practitioners and academia. They not only take different dimensions into consideration but also vary greatly with the year that they were produced, the industry scope or the size of the company itself.

The purpose of this study was to find and develop an updated maturity model specifically for startups and SMEs that are not in the manufacturing industry and which are neither government agencies nor government-linked agencies with a strong aim for internationalization, the reason for this being:

- Most of the analyzed digital maturity models are Industry 4.0 related and thus focus on the manufacturing industry.
- Digital maturity models of big consulting firms such as PwC and Deloitte focus on large enterprises, not on the startup or SME market.
- There are many more digital maturity models, and respective digital maturity assessments, provided on the Internet by practitioners with little to no scientific background, so the background is entirely unclear.

Methodology to Explore Digital Transformation

The research followed Vaishnavi's Design Science Research (DSR) model (Vaishnavi, 2007). While the approach is increasingly applied in the field of Information Systems, we choose this model as it offers a problem-solving process by creating artifact(s).

Research Design

The research followed the Design Science Research with explorative interviews ($n = 2$) of companies currently undergoing the digital transformation process to get a deeper understanding of the different dimensions and which dimensions really matter. Based on the interviews two case studies were developed incorporating additional company data. The artifacts are the dimensions that have a direct impact on the successful implementation of digital transformation, including a sample report of the digital maturity to position a company's digital transformation against a baseline.

Following the process of this model, questions per phase were identified and expected outcomes were defined (Table 5.3).

Table 5.3 Summary of design science research phases

Phase	Research question per phase	Operational view	Expected outcomes
Awareness of Problem	How can Digital Transformation be defined? How to measure digital maturity?	Identify concepts and requirements for the research aim	– Identify one or more definitions of Digital Transformation – Identify requirements of a digital maturity model of digital transformation, to measure the level of the digital status of a company based on literature
Suggestion	Which measures to choose to analyze the digital maturity of a company?	Choose an alternative for development of an artifact	– List potential artifacts in a table and why one specific has been chosen
Development	Which variables have an influence on the artifact that leads to success of digital transformation?	Develop your artifact based on documented requirements (see awareness)	– Design a digital maturity model, taking the most relevant dimensions into consideration – Create a sample report of the digital maturity and possible action to position a company's digital transformation against a baseline
Evaluation	How can a digital maturity model be used to identify gaps in a company's digital journey? Is the digital maturity model with the chosen dimensions suitable for startups and SMEs?	Evaluate and compare requirements of literature with feedback from experts Identify similarities and differences	– Evaluate the created model by gaining feedback from experts concerning the requirements from the awareness phase and artifact designed

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Table 5.3 (continued)

Phase	Research question per phase	Operational view	Expected outcomes
Discussion and Conclusion	In which areas can the model be applied? How important is the template or model for business? Which contribution do the results (from field data) provide for the literature? – What's the digital maturity level of Malaysian startups and SMEs?	Explain similarities and differences between theory and feedback on artifact (primary and secondary data collected) Find areas for generalization	– Identify own contribution (based on research gap): Final adapted own model – Identify potential improvements from the survey feedback

Source: Own contribution based on Vaishnavi (2007)

Table 5.4 Data collection and data analysis per research step

	Step 1a and 1b	Step 2
Data Collection	Literature review and mini case studies	1-to-1 interviews with CEOs of SMEs
Data Analysis	• Comparative analysis of two mini-cases, process approach—academic holistic approach instead of targeting to solve one single challenge only • Understanding of relevant/important dimensions in a digital maturity model	• Transcription, coding, and analysis of interviews • Comparative analysis, understanding how these dimensions are perceived • Case study development • Validation of developed dimensions

Source: Own contribution

Data Collection

The research followed a qualitative approach with interviews of two company leaders who had undertaken digital transformation with their ventures, and the development of case studies of the companies.

Table 5.4 provides an overview of the data collected and analyzed in the two steps.

Results

Qualitative Analysis

Based on the literature review, different dimensions of digital transformation were elaborated and validated during the interviews with the two CEOs of small and medium enterprises (SMEs) (Table 5.5).

Table 5.5 Quotes by interview partners on specific dimensions

Dimensions of digital transformation	Case study I: Golf networking	Case study II: Holiday experience	Dimension confirmed valid	Dimension confirmed important
Culture and leadership	"I'm cautiously supporting [digital], the reason being […] the major concern is we *lose control, control is everything*"	"Digital is fundamental, without digital there's no business. *Automation* allows us to differentiate from competition as they are still very *heavy labour* focused."	✓	★★
Digital technologies	"That is the purpose, whatever we do, it must *ease our flow of work*, catch-up my time, so we can focus our time in something else."	"The way we communicated [with customers] hasn't allowed to *store and use the data in an efficient* way."	✓	★
Organization and processes	"[Digital solutions] help them [employees] to *make better decisions*, less misunderstanding, because they are very *clear what's going on*."	"As the business grows and we automate more of the tasks, there will be more time available for the leaders to concentrate on specific revenue generating parts of the business, rather than being locked in administrative tasks."	✓	★
Employees and digital skills	"It's very important, we need to educate them [employees], let them know what our goal is, so they *understand why* they are doing this. Worst, if they don't understand what they should input and what are the information for, so they may enter the *wrong information and data into the system* or certain processes they do wrong."	"At some stage, of course we're going to *train employees on the digital things* we are doing, so they can carry out their functions and support the business."	✓	★
Customers	"That [an App] is effective, a place where *users can always go and look*, rather than they get lost in a series of WhatsApp messages. So yes, I guess it's very important."	"[Interacting with the customer in a digital way] is important to a) To demonstrate the professionalism of the business, b) Give a *feeling of belonging*, create brand loyalty, c) Provide a simple way to *access historical information,* and d) *Communication* being more *personalized*."	✓	★★

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Table 5.5 (continued)

Dimensions of digital transformation	Case study I: Golf networking	Case study II: Holiday experience	Dimension confirmed valid	Dimension confirmed important
Products and innovation	"What we do now with the App will *put us further ahead* [from the competition], we develop early to the culture and what we want—it's still in the process of adjusting, not finalized yet. Due to this digital transformation […] we can do things faster, at a larger scale with minimal efforts."	"It is very difficult to find products in the market that give you all the things, all the tools that you need to do the job the way you want to do it. Our own *new digital product is going to transform business*."	✓	★
Digital strategy	"No, [I do] not [have a digital strategy] yet, but I have a *business strategy*."	"The truth is no [we didn't put a formal digital strategy in place], the reason is 1) most of what I do is in my head and 2) in many respects over the last 35–40 years my businesses have fundamentally been driven by innovative systems, so it was always in *my mind* by doing this business, that I'll be using digital strategy to *differentiate* us."	✓	– The importance is not represented by the interviewee's answers

Legend: ★ Important; ★★ Very Important
Source: Own

The different approaches and primary targets for utilizing digital solutions were intriguing. One focused on enhancing *customer* engagement and communication, while the other prioritized streamlining internal processes through automation. It is noteworthy that both aspects contribute to a comprehensive digital transformation.

One interviewee stressed the importance of digital *leadership*, while the other expressed caution and concerns about control and system alignment. However, both acknowledged the necessity of embracing digitalization.

The holiday experience company, with a focus on enhancing customer interaction and improving their experience, actively incorporated feedback into their product development. They utilized new communication channels to foster better customer interaction and enhance their product. In contrast, the golf networking company, however, prioritized customer-to-customer interaction, allowing members to connect and engage directly. Consequently, feedback to the CEO occurred less frequently as their initial focus was on improving internal processes, efficiency, and automation. However, he anticipates increased interaction between the company and customers in future developments.

Both companies, currently small in size, prioritize direct communication due to employees performing multiple roles. However, there is a consensus that the *digital platform* is crucial for future growth. As they expand their workforce, they believe digital solutions will be essential for effective communication and management.

Table 5.6 summarizes the general sentiment and perception of the two interviewees on the dimensions as described. We added the conclusion as a summary of those sentiments as the validity of the dimensions of digital transformation.

In general, the questions for these interviews allowed a very good and direct discussion, with many insights and takeaways. We realized that a lot more explanations and awareness are needed to convince customers about the benefits of digital transformation outweighing the time and money for change. If *perceived benefits* are higher than investment for change, transformation will happen. For example, while the titles of the dimensions seem very clear, there were some challenges in

Table 5.6 Analysis of perception of dimensions

Dimension	Case study I: Golf networking	Case study II: Holiday experience	Conclusion and insights
Culture and leadership	Fundamentally important	Concern of losing control	A top-down leadership approach seems relevant for the entire digital transformation process. If a digital culture is not supported by the leader, the transformation process will never happen
Digital technologies	Improve customer/services focus	Improve internal processes	Digital technologies are important; however, it is for the customer not so important which technology (for example, Cloud, Artificial Intelligence, or even programming language) is used. Digital technologies seem to have more of a supportive character and not being the driver
Organization and processes	Similar/Same perception		Less relevant for small companies. However, important for growth, so it is better to have a good organizational structure before too many employees are hired. Process automation (Digitalization) can be considered as very important
Employees and digital skills	Outsource for expertise and flexibility	Outsource for ROI and control	Surprisingly, employees and digital skills does not seem to be the highest priority even though digital skills are important, and employees should be trained. Hiring external experts (outsourcing) is always an option

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Table 5.6 (continued)

Dimension	Case study I: Golf networking	Case study II: Holiday experience	Conclusion and insights
Customers	Personalize and interact, feedback for improvement	Reach out to customers via marketing only, not much customer feedback yet	The customer dimension is very important, especially if customer centricity is at the core of the companies' culture already Interaction and engagement are important to improve the product, however, not all industries/companies might have the same need for digital engagement with the customer
Products and innovation	Similar/Same perception		A customized, self-developed/-owned platform can be a competitive advantage, especially when competition is still mainly acting in an analogue way. However, the approach to innovation and developing new products seems to be a challenge
Digital strategy	Business Strategy, no IT alignment	In the mind only, not planned	Might not be available in many SMEs and analogue startups. Awareness is important Most underestimated dimension: Golf networking has a business strategy but no alignment to the IT strategy. Holiday experience has it in his mind

Source: Own findings based on interviews with two SME CEOs

understanding how/why they really influence, respectively, contribute to digital transformation and/or digital strategy. On another note, talking about digital leadership, digital skills, or digital technologies raised the questions by CEOs to clarify the core concept. What does it mean to be a digital leader? Or how do digital skills differentiate from the "normal" skills every employee needs to have already?

Case Studies

Case Study I: Golf Networking

The Entrepreneur

The owner of the startup is a seasoned businessman, who is passionate about connecting business owners and company decision makers via golf. The monthly games organized by him add a networking format to exchange business opportunities.

Digital Transformation

A golf networking app was developed that supports the management of members and events and provides exchange and engagement for its members. Digital transformation helps an "analogue" startup to go digital to improve efficiency, customer-centricity, and be ready for international growth. By identifying digital opportunities and finding a way to implement new features monthly according to the budget, the company digitized paper-based forms, digitalized their processes, and is even looking for some new digital business models to generate additional revenue streams.

Challenges and Objectives

The company was running on a lower digital maturity level. Some items were still in analogue form (e.g., sign-up forms) and some of the digitized items were handled in a very manual way (e.g., writing invoices). With the rapid growth of golf membership numbers, the management of those becomes more difficult and time consuming. In addition, communication and engagement among the members became more challenging, as there was only a WhatsApp group (too many messages about too many topics).

The digital transformation journey includes digitizing documents, automating, and improving processes in a digital exchange app. Furthermore, the app helps members to engage with each other and share more business opportunities in an easier way.

Digital Product

In exchange with the owner, detailed user journeys were developed, and subsequently a backlog of features and modules on how a future app could look like. The focus was on the administrative part, creating a useful members' management portal for the admin to easily add and manage members. This also included fully automated invoicing. The app is built in an agile way, using scrum to build features monthly according to the customers' budget.

After members' logins/profiles had been created, new features were added based on the backlog, giving the customer full control and flexibility on what should be developed next. Modules that facilitated the monthly events with simplified sign-up processes and golf flight arrangements helped to keep the members active and using the app.

Results

The administrative effort to manage new members has decreased massively. The processes that could be automated (such as invoicing) had the biggest impact on efficiency. Another important aspect is that the app offers scalability to the company, far beyond a small group or a regional distribution only. The app is appreciated by the members, having all the contacts of the other members and a focused sign-up to events in one place. Having the app in place allows the startup also to better market the company/association.

Case Study II: Holiday Experience

The Entrepreneur

A diverse pair of entrepreneurs (young lady, seasoned gentlemen) have had their SME for several years, not being a startup any longer. They have a very clear vision of how they want to support their customers' experience of the best-organized vacations of their lives.

Digital Transformation

An established holiday booking business transforms digitally through improving a holiday booking webpage, and later developing a multi-functional platform to increase customer-centricity. The journey started with fixing some generic issues on their current webpage, followed by process improvements and automation, and finally setting up a new digital business model to establish a two-sided marketplace to generate new revenues.

Challenges and Objectives

The company has developed a webpage that lists various apartments/houses for rental and displays some concierge services that can be booked. The page is static, does not allow for growth, and processes cannot be automated. The goal of digital transformation is to have a platform that can be expanded by different services, offers an administrative console for the owners to manage requests, automates processes and engagement with the customer, and is made future ready.

The vision is to add a marketplace for concierge services, that connects concierge providers (e.g., chefs, barbers, and babysitters) with the VIP guests—services can be booked easily via an app.

Digital Product

Current solutions were analyzed with the entrepreneur and designed user journeys, and a high-level overview was developed of which modules and features could/should be built. To make the platform feature ready, in a first stage the backend had to be changed to a different framework. Adding and managing dynamic content was at the center of that approach. In the next phase, the management of requests was improved, automated where possible to ensure the company could serve the customers' requests in a more structured way. After the improvement of internal processes by an internal administration console, the next step will be on the customer, making sure bookings and reservations can be requested in an easier way, all online via the platform, without the need of sending numerous e-mails back and forward, and without the risk any request gets lost or forgotten by the company.

Results

Higher efficiency in managing the booking processes and a simplified and automated approach in the entire planning phase helped the customer save a lot of time. The platform offers a higher customer centricity, while the dynamic and automated itineraries prevent any human errors. The platform is maximally expandable in any direction, specifically for further growth.

The next phase completes the vision of the customer to build a seamlessly integrated marketplace for concierge services. The marketplace will offer local providers (e.g., barbers, chefs, and babysitters) to offer and provide their services directly to the holiday makers, while the holiday makers will be able to seamlessly order any needed service directly via the app—a few clicks to order anything that makes their holidays perfect.

Comparison of Case Studies

The two case studies serve as a very good entry point in getting a holistic understanding of how company transforms digitally (Table 5.7).

An interesting observation is the focus of the described digital transformations. For the holiday organizers the target is clearly the customer. How to engage with current customers, provide them with a better service, making sure to retain them, and then of course how to gain customers on a global market. The digital solution is to be innovative in the premium accommodation market and thus a competitive

Table 5.7 Comparison of case studies

Description	Case study I: Golf networking	Case study II: Holiday experience
Startup/SME	Startup	SME (previous startup)
Industry	Sports/Golf	Holidays/Accommodation
Offering/product	Membership Business Networking over Golf	Total organization of VIP holidays including concierge services
Old execution	Interaction with customers via e-mail and WhatsApp	Manual booking of pre-selected villas
New digital product	Physical networking supported digitally with an app	E-commerce booking of pre-selected villas Platform for third-party products and services (concierge, drivers, cooks, babysitting)
Challenge and objectives	Improving internal organizational effort to make the business sustainable and scalable	Digital interaction with potential customers and customer retention
Digital transformation phases	Phase 1: Digitize member details into an app Phase 2: Automate invoicing process, member management, flight arrangements, and event management Phase 3: Develop member app to share profiles, business opportunities, 1-to-1 customer interactions	Phase 1: Digitalize e-commerce (booking of villas), concierge service manually Phase 2: Automate internal processes via a platform to reduce the number of Excel sheet Phase 3: Enhance e-commerce solution with multi-sided concierge service
Concept of digital transformation	*Digitization* Transition analogue objects to digital	*Digitalization* Improving business processes by leveraging digital technologies, taking advantage of digitized content
Focus	*Internal processes and organization*	*Customer engagement*
International scope	Based out of Malaysia—target is to regionalize in South-East Asia and then globally	Based out of Spain for UK customers—target to regionalize in Spain first and then around the Mediterranean Sea for global customers

Source: Own

advantage. For the Golf Networking startup, the focus is clearly on process efficiency, improving and automating internal processes. The entrepreneur stated that only with a running system handling daily repetitive tasks, he can grow his business further.

The case studies confirmed that seven dimensions are important for digital transformation and provided deeper understanding with quotes by the entrepreneurs.

From the case studies it became clear, that not every company has the same targets, and there is no one-fits-all approach. The Golf Networking business had a clear focus on *internal environment* improving and optimizing processes, while the Holiday Experience CEO focused on *external environment* optimizing the customer experience and an innovative digital product. Both companies have similar targets to grow and internationalize, simply the priorities are different to start with.

Discussion, Conclusion, and Further Research

In this section, the updated model of digital transformation will be discussed as well as contribution to knowledge, managerial implications, and limitations of research.

Adapted Model on Digital Transformation

Seven relevant dimensions of SMEs have been identified with dimension "digital strategy" as one of the driving factors. These dimensions include *(a) culture and leadership, (b) organization and processes, (c) employees and digital skills, (d) customers, and (e) products and innovation* which are supported by *(f) digital technologies* to define the *(g) digital strategy*.

The perception, that digital transformation is all about technology, has been disproved. However, the challenges of how the remaining dimensions can be tackled and how they can influence digital strategy were deepened.

Digital Technologies Contrary to literature review stressing digital technology as the main driver for digital transformation, the interviewees see it more as an enabler and not as a significant concern for them. Recognizing the importance of new digital technologies, they prefer that the IT provider handle the selection and implementation of the technical details.

Digital Strategy Findings from the literature review, that alignment between business and IT strategy is important (Kraus et al., 2021), have not been confirmed in the interviews. Both interviewees realized that they lack a digital strategy due to the fact that they started analogue, however, there is no indication that they want to change in the near future.

Employees and Digital Skills
The mechanism of digital skills development is supported by digitalization of the individual (Hanelt et al., 2021). The importance has been confirmed by the interviews. As there are challenges to train employees appropriately, there is always the possibility of hiring external experts (outsourcing) on a temporary basis, increasing flexibility and expertise.

The initial model of digital transformation was adapted to distinguish between the focus of the company on either the internal environment (optimizing internal processes) or on external environment (improving customer interaction and engagement). Dimensions that focus on *internal environment*, such as improvements, optimization, and automation to lower production cost, increase efficiency, and free resources from repetitive tasks include *organization/processes* and *employees/skills*.

Since the perception, that digital transformation is all about technology, has been disproved, "Technology" as a dimension was moved to the same level as all others. While it is definitely an important one, we see *technology* more as an *enabler*, gluing the other dimensions together or being kind of a lubricant, that makes sure the other dimensions are harmonizing. Overall, all those dimensions directly influence the main dimension "digital strategy" (Fig. 5.3).

The developed digital maturity model separates the dimensions among internal and external environments to help with prioritization. Some of the identified questions startups and SMEs have with digital transformation are: How/Where to start? Is there a sequence that makes sense? Which dimension is the most important? Or do you have to start several or even all of them in parallel?

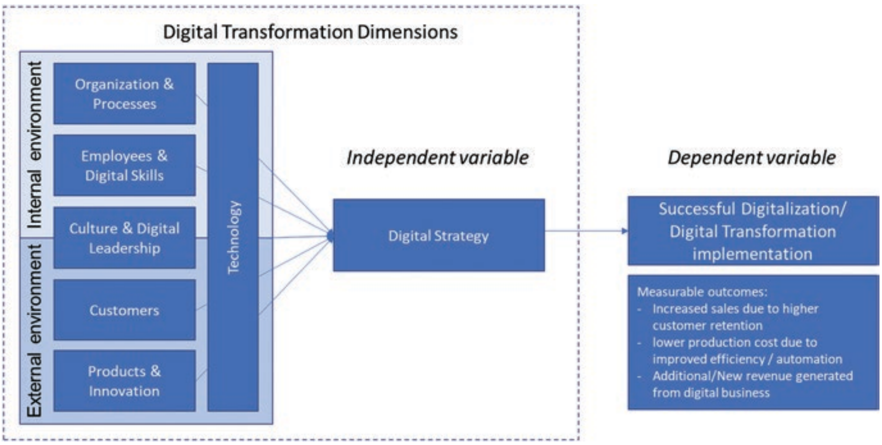

Fig. 5.3 Adapted digital maturity model from a research perspective. Source: Own, based on research findings

Internal Environment Versus External Environment

Focusing on the *external environment,* dimensions are *customer* and *product/innovation* to improve customer engagement, influence sales, generate new revenue streams, and ensure new customer acquisition, and more importantly, keep a customer.

Our contribution to knowledge is insight regarding a possible *sequence of implementing the different dimensions* of digital transformation linked to the focus of the company. An SME with limited resources cannot work on all dimensions in parallel, even though most of them are interrelated. An important base for digital transformation is defining the *digital strategy*. Going through all seven dimensions of the new digital maturity model, the companies specify their digital strategy.

With a defined digital strategy, a company can decide where to focus on either *internal environment* such as process automation, leadership, culture, and employees' skills first or *external environment* of customer centricity including innovation and new products/services. It must be understood that this decision relates only to the immediate next steps and first steps, respectively, in transforming the company. To make the digital transformation successful, all dimensions (internally or externally focused) must be handled after all.

The dimension of *culture and digital leadership* is so important for both approaches that it needs to be addressed after the digital strategy is defined. It should not be underestimated to define the understanding and an action plan to have a clear vision for this dimension (Fig. 5.4).

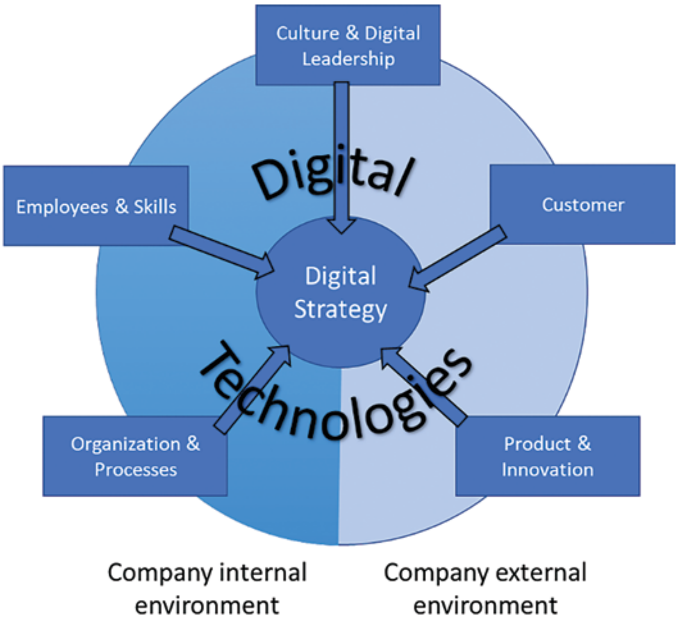

Fig. 5.4 New digital maturity model. Source: Own diagram, based on author (2022)

Managerial Implications

The findings help consulting companies to better understand the requirements as well as concerns of (potential) customers, it allows them to identify some gaps in the service offering, such as helping with awareness/understanding of what digital transformation is, explaining the dimensions involved, the impact, targets, and approaches. This might be done with specific workshops, training, and/or coaching sessions. Another area would be the support in creating and implementing a digital strategy. This would include the definition of clear KPIs and key success factors (KSF) for either a transformation project or the entire digital transformation process.

The digital maturity model created raises awareness about the current digital transformation phase, and helps companies to understand, kick-off and accelerate their digital transformation. Doing a *self-assessment* along all seven dimensions, a company realizes its current Digital Maturity Level. All dimensions and the maturity level are compared to all other participants' assessments, to give a better indication of where the company stands, respectively, to realize the current and aspired situation after doing a self-assessment along all seven dimensions and realizing their *digital maturity level* (Fig. 5.5).

Internationally active SMEs can use the maturity model for a self-assessment as a first step to understanding the key dimensions to build a digital strategy and continuously work on improving the maturity level. *Identified gaps* can be filled per every dimension and the understanding of interrelations and dependencies of these dimensions are better understood.

The results of the assessment and the newly gained understanding of the digital transformation dimensions can then be used to define a digital strategy. Ideally, all dimensions are clearly defined by formulating and outlining the vision and creating a high-level action plan.

With the definition of the digital strategy comes the decision of whether to focus first on internal or external environments, which leads to a clearer picture of which dimensions should be prioritized. Finally, the last step is the implementation based on the gaps identified and the priorities defined. Digital Transformation is an ongoing process, that needs testing, validation, and continuous improvement (Fig. 5.6).

The importance of digital transformation for startups and SMEs is significant, however, differences in the approach. While SMEs need to carefully plan and transform all aspects of the running company to benefit from digital opportunities, *Startups can launch digitally right* from the start. However, it is still important for digital native startups to understand the dimensions of digital transformation and follow the process, by starting to define the digital transformation.

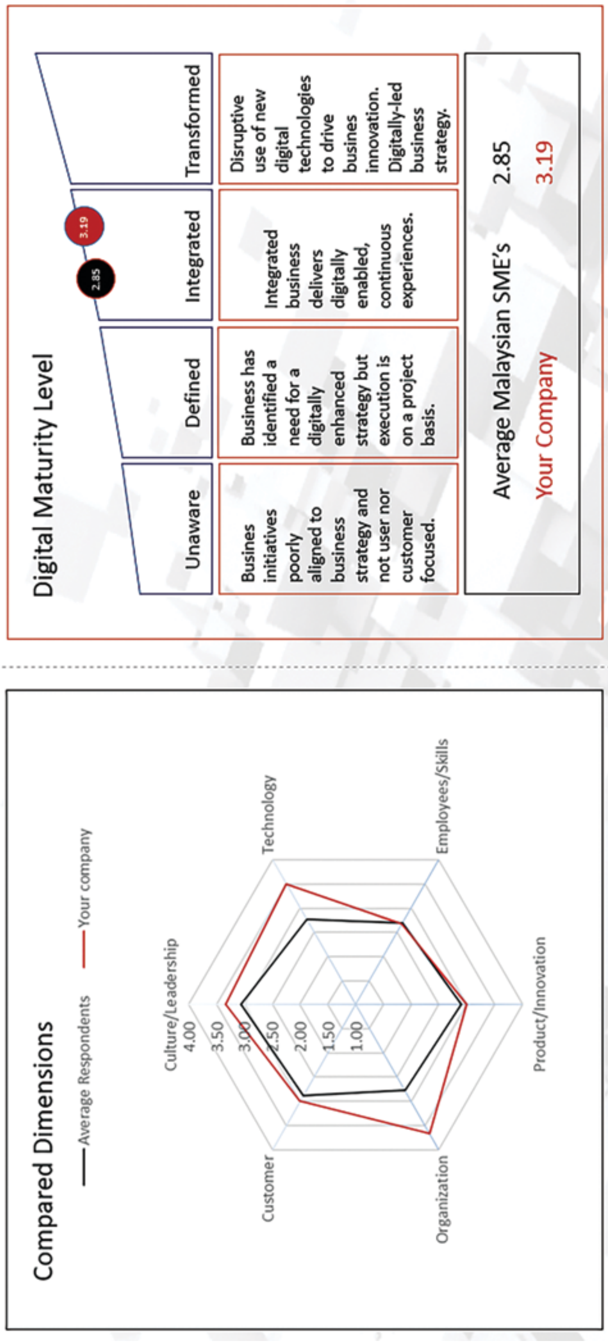

Fig. 5.5 Sample report/comparison of the company against a baseline, based on the author (2022)

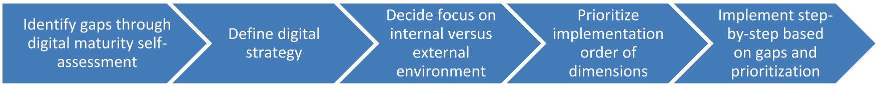

Fig. 5.6 Own digital transformation process approach. Source: Own

Limitations

As with every research, this study has a few limitations. We identified two main ones:

The first limitation is the small number of interviewees ($n = 2$). A larger number of interviews might be helpful to get more insights on the importance and prioritization of each dimension.

The second limitation is the fact that the two companies are at different stages of their business journey (existing company versus analogue startup) and from different industries. Advanced research could identify similarities and differences among different industries.

Future Research

Digital Transformation affects the entire company—all departments and all employees will be involved. Considering the dimensions, we see potential research in different areas:

Review the Importance of Dimensions
Some dimensions of digital transformation might need to be added, others become obsolete—this might also change over time. A weighing of the dimension can be done either on a company level or country level, as the maturity level between countries might vary to a great extent.

Deepen Research by Every Dimension
To have a clearer description of every dimension, further research would allow refinement and deep dives in a survey. As indicated, every single dimension is already complex by itself. Having a clear definition of its variables and sub-variables would provide measurements on a very granular level. This can help to get an even more detailed and insightful maturity level.

Further research could use a mixed-method approach utilizing qualitative research methodologies (Ishtiaq, 2019). A survey is a good method to understand general tendencies or identify some larger gaps, however, it will still leave many questions open, that would need a follow-up qualitatively. The survey can serve as an exchange with companies to review self-assessment and possible actions.

Comparison with Other Countries
The quantitative data explored the maturity level of Malaysian startups and SMEs. Researchers in other countries can use the maturity model and conduct a survey for comparative analysis among countries and different industries in different countries.

Implications for Startups

The importance of digital transformation for startups and SMEs is significant, however, differences in the approach. Newly founded startups can start as digital native companies with digital solutions from the beginning. On the other hand, existing companies of startups and SMEs must evaluate opportunities of the digital journey whether these include internal optimization or digital solutions for the customer. If a startup or SME cannot or does not aspire to transform digitally, there is a high probability that they will lose out and eventually run out of business.

There are two dimensions of sustainability: Securing survival of a startup, meaning a startup is sustainable long-term as well as improving the sustainable impact of, for example, sustainable development goals or sustainable measurements.

Appendix (Table 5.8)

Table 5.8 Comparison of literature quotes with quotes from SME CEOs interviews

Dimensions of digital transformation	Literature quote and source	Business quote and source	Comparison of quotes
Culture and leadership	"Adapting their leadership style enables managers to take advantage of any preexisting affinity or even enthusiasm towards digital innovation" (Berghaus, 2016). "Another leadership style suitable for organizational change is so-called servant leadership, which is based on considering the needs of the followers, that is the employees, and gaining their trust, so that they are open to change" (Berghaus, 2016). Corporate cultures shift with the transition from siloed operations to cross-functional teamwork. Shared goals and incentives that make cross-functional teaming effective also influence employee mindsets by exposing them to new ways of engaging each other. New mindsets and working styles, in turn, strengthen the company culture and boost its agility (Kane et al., 2017).	"Digital is fundamental, without digital there's no business. Automation allows us to differentiate from competition as they are still very heavy labour focused" (CEO, Holiday Experience). "I'm cautiously supporting [digital], the reason being […] the major concern is we lose control, control is everything" (CEO, Golf Networking).	Literature describes the shift in leadership and culture and how leaders must adapt and potentially change their style. Interviewees seem to understand the digital change, however, might struggle to make these adjustments, probably due to their vast non-digital leadership experience.

(continued)

Table 5.8 (continued)

Dimensions of digital transformation	Literature quote and source	Business quote and source	Comparison of quotes
Digital technologies	Maturity goes far beyond simply implementing new technology by aligning the company's strategy, workforce, culture, technology, and structure to meet the digital expectations of customers, employees, and partners (Kane et al., 2017). Organizations use digital technologies to alter the value creation paths they have previously relied upon to remain competitive (Vial, 2019).	"So, because through the conversion from manual to technology has been thought-provoking and it has thrown up some interesting anomalies, which has meant that we had to create technology to mimic what we have done manually. […] it helped refined offering and make it much more customer specific" (CEO, Holiday Experience). "The way we communicated [with customers] hasn't allowed to store and use the data in an efficient way" (CEO, Holiday Experience). "That is the purpose, whatever we do, it must ease our flow of work, catch-up my time, so we can focus our time in something else" (CEO, Golf Networking).	While literature provides a quite diverse perspective on digital technologies, there is a consent between the interviewees and the literature that emphasizes on the importance of digital technologies, however not as the driver but more as the 'lubricant' for a successful digital transformation.
Organization and processes	"This indicates that at the beginning of the transformation process, companies tend to experiment with digital innovation or react to external changes, while only at a later stage does a more systematic planning of the transformation process evolve" (Berghaus, 2016). The digital, paperless office will enable employees to collaborate independently of time and place, to access data and information, and the organization to create more transparency (Peter et al., 2020).	"As the business grows and we automate more of the tasks, there will be more time available for the leaders to concentrate on specific revenue generating parts of the business, rather than being locked in administrative tasks" (CEO, Holiday Experience). *Collaboration within the Organization:* "Because you have a technological solution that automates processes, then that can be shared amongst everybody. If you do it manually, people tend to keep things in their own little unit, because they have no platform to share it" (CEO, Holiday Experience). "[Digital solutions] help them [employees] to make better decisions, less misunderstanding, because they are very clear what's going on" (CEO, Golf Networking). Collaboration with partners: "Most definitely (the digital solution) will enhance the relationship with partners, to collaborate with a lot more people, than we currently do, we will be able to scale-up much more quickly. We can be more specific in terms of requirements and communication" (CEO, Holiday Experience).	Literature and opinions of interviewees are quite aligned and matching.

(continued)

Table 5.8 (continued)

Dimensions of digital transformation	Literature quote and source	Business quote and source	Comparison of quotes
Employees and digital skills	"a workforce with broad skill sets is a key success factor in reaching the goals" (Lichtblau et al., 2015). Only 26% of Skeptics have employees with "strong" digital marketing skills, compared to 66% of the overall sample and 100% of the most mature companies in our study. this is due not to scale, or even overall staff budget limitations (Gill & VanBoskirk, 2016). Skeptic's waste money hiring the wrong talent: people with market knowledge rather than expertise critical to digital maturity like media, content, customer insights or technology experience (Gill & VanBoskirk, 2016).	"At some stage, of course we're going to train employees on the digital things we are doing, so they can carry out their functions and support the business" (CEO, Holiday Experience). "It's a very important, we need to educate them [employees], let them know what is our goal, so they understand why they are doing this. Worst, if they don't understand what they should input and what are the information for, so they may enter the wrong information and data into the system or certain processes they do wrong" (CEO, Golf Networking). "If things are time-sensitive, need to be done in a rush, I tend to do it internally. But it depends also on the expertise, if we cannot acquire in time, there's a need for outsourcing" (CEO, Holiday Experience).	Literature and interviewees are aligned. Specifically in the understanding that digital skills and trainings are fundamentally important, however, that there is also a lack in doing so, respectively, a gap to where the education level should be.

(continued)

Table 5.8 (continued)

Dimensions of digital transformation	Literature quote and source	Business quote and source	Comparison of quotes
Customers	"To bring about collaboration and horizontal integration, companies should take the first steps toward system-integrated information sharing with external customers and suppliers" (Lichtblau et al., 2015). As digital platforms allow customers to approach the company's product line as a coherent whole, the company will likely need to reorganize in order to meet these customers' needs effectively (Kane et al., 2017).	*Interacting with customers in a digital way:* "[Interacting with the customer in a digital way] is important to a) To demonstrate the professionalism of the business; b) Give a feeling of belonging, create brand loyalty; c) Provide a simple way to access historical information; and d) Communication being more personalized" (CEO, Holiday Experience). "Information like Events, what's happening, broadcasting—fine. That is effective, a place where users can always go and look, rather than they get lost in a series of WhatsApp messages. So yes, I guess it's very important" (CEO, Golf Networking). *Customer feedback for future developments:* "Customers both in the sense of potential new revenue generators that buy services from us, they indicated the way we're going was taken very positively. But also shared with the industry, they are very keen to buy into that e.g. agents that are interested to offer the concierge services" (CEO, Holiday Experience). "The target groups are quite senior, so they are not very technical oriented, it take them a long time to learn—therefore there is also not much demand yet. But I think as we go towards the younger profiles which are only now coming in, […] if they are long enough in the system they may say it would be nice if we have this [feature]" (CEO, Golf Networking).	Literature and interviewees are aligned for this dimension. Customer-centricity is important, different approaches and targets seem possible when taking customer engagement into consideration.

(continued)

Table 5.8 (continued)

Dimensions of digital transformation	Literature quote and source	Business quote and source	Comparison of quotes
Products and innovation	"at the beginning of the transformation process, companies tend to experiment with digital innovation or react to external changes, while only at a later stage does a more systematic planning of the transformation process evolve" (Berghaus, 2016). In conjunction with agile methods (survey participants regard agility as a key benefit of process engineering), this should increase productivity and innovation (Peter et al., 2020).	"It is very difficult to find products in the market that give you all the things, all the tools that you need to do the job the way you want to do it. Our own new digital product is going to transform business" (CEO, Holiday Experience). "What we do now with the App will put us further ahead [from the competition], we develop early to the culture and what we want—it's still in the process of adjusting, not finalized yet. Due to this digital transformation […] we can do things faster, at a larger scale with minimal efforts" (CEO, Golf Networking).	Literature emphasizes on the importance of innovation and innovative products. For the Interviewees, innovation is more of a by-product, it happens or not, when they think about how to extend and improve their digital product.
Digital strategy	Our studies consistently find that strategy is the strongest differentiator of digitally maturing companies, which are more than four times as likely to have a clear and coherent digital strategy in place (Kane et al., 2017). Yet companies struggle to get their digital strategy right. Among the 18 practices in our DQ diagnostic, those related to strategy show the biggest variance between digital leaders and more average-performing companies (Tanguy et al., 2015). To ensure they capture the business value of digital transformation, companies should carefully devise a digital transformation strategy that coordinates the many independent threads of digital transformation and helps them navigate the complexity and ambiguity of identifying their own digital "sweet spots" (Hess et al., 2020).	"The truth is no [we didn't put a formal digital strategy in place], the reason is 1) most of what I do is in my head and 2) in many respects over the last 35–40 years my businesses have fundamentally been driven by innovative systems, so it was always in my mind by doing this business, that I'll be using digital strategy to differentiate us" (CEO, Holiday Experience). "No, not yet, but I have a business strategy" (CEO, Golf Networking). "From all the dimensions, Customer and Organization seems the most relevant, because of Client perception and Loyalty combined with company efficiency—Leadership/Culture, Employees and Technology are not specific enough" (CEO, Holiday Experience). "Leadership is the most important dimension. Only when you're thinking is right, your direction is right and you understand your business very well then you can execute the others [dimensions] properly " (CEO, Golf Networking).	Literature outlines how important to have a digital strategy in place is and surveys confirm that those companies have a digital strategy in place are more sustainable and successful. Literature confirms the interviewees' feedback, that they agree having a digital strategy would be important, but struggle to create one.

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