Digital Kaizen: An Approach to Digital Transformation

Duy Dang-Pham

School of Business & Management, RMIT University, Vietnam

duy.dangphamthien@rmit.edu.vn

Ai-Phuong Hoang

School of Business & Management, RMIT University, Vietnam

Diem-Trang Vo

School of Communication & Design, RMIT University, Vietnam

Karlheinz Kautz

Department of Information Systems & Business Analytics, RMIT University, Melbourne, Australia

Abstract

While digital transformation creates opportunities across all industries, many organisations and practitioners struggle to grasp what conducting digital transformation entails and seek directions for how digital transformation programs, especially large and complex ones, can be executed. In response, recent studies have offered such directions and models for guiding digital transformation and put forward suggestions for steps and phases of digital transformation, as well as drivers, enablers, and inhibitors. Many of these proposals are based on the dynamic capabilities framework as a theoretical foundation and invite more research to develop further and/or to refine existing models for digital transformation, especially investigating how dynamic capabilities contribute to digital transformation. In this case study, we explore Digital Kaizen, a systematic approach to conduct large-scale digital transformation developed and applied at our case organisation FPT Software. This approach integrates the Kaizen philosophy into digital transformation practices that lead to digital improvements and transformation of some of the company's human resource management processes and its business model. Our analysis and our reflections on our findings lead us to propose a novel Digital Kaizen process model for digital transformation informed by the dynamic capabilities framework.

Keywords: Digital transformation, digital transformation implementation, digital transformation approach, kaizen, digital kaizen, dynamic capabilities framework.

1   Introduction

Along with the development of new technologies such as cloud computing, big data analytics or artificial intelligence (AI), the ways businesses operate have been transformed significantly (Perkin and Abraham, 2017). These digital technologies have been integrated into all areas of a business, changing the way organisations operate and deliver values to its customers. In other words, businesses are embracing digital transformation to succeed in the digital age (Urbach and Röglinger, 2018).

The concept of digital transformation refers to the technology-induced changes necessary for digital business, in which organisations experience a fundamental and socio-technical transformation (Legner et al., 2017). The current wave of digitalisation is not only enabled by

the convergence of new information technology (IT) megatrends (e.g., social, mobile, big data, cloud computing), but also modifies an organisation's value creation logic, and in turn, creates new types of businesses (Legner et al., 2017). Therefore, the new concept of digital transformation refers to the manifold socio-technical phenomena and processes of using these technologies in broader individual, organisational and societal contexts (Legner et al., 2017). Nevertheless, despite the new opportunities that digital transformation has brought to organisations, it has created new pressures for organisations to develop adequate capabilities and capacities, to carry out such transformation (Horlach et al., 2016).

Many organisations and practitioners struggle to grasp what conducting digital transformation entails and seek directions for how digital transformation programs, especially large and complex ones, can be executed (Wessel et al., 2020). Recent studies have offered such directions and models for guiding digital transformation (see e.g., Chirumalla, 2021; Warner and Wäger, 2019) and put forward suggestions for steps and phases of digital transformation, as well as drivers, enablers, and inhibitors. Some of these are based on Teece's (2007) dynamic capabilities framework as a theoretical foundation and invite more research to develop further and/or to refine existing models for digital transformation, especially investigating how dynamic capabilities contribute to digital transformation (Steininger et al., 2022; Vial, 2019; Warner and Wäger, 2019). Lacking an understanding of digital transformation processes not only increases the risk of failing the transformation programs, resulting in high organisational and sometimes societal costs, but also limits knowledge of digital transformation strategies and how transformation efforts may differ across contexts e.g., large enterprises versus small and medium ones.

Our research heeds the calls for research to explore digital transformation processes and refine digital transformation strategies (Warner and Wäger, 2019) from the perspective of the dynamic capabilities framework as a consistent approach for investigating digital transformation (Ellström et al., 2022; Steininger et al., 2022).

Based on interviews with key informants, we explore Digital Kaizen, a systematic approach to conduct large-scale digital transformation developed and applied at FPT Software[1] , a large software development and IT outsourcing company that turned into a digital transformation service provider in Vietnam. This approach integrates the Kaizen philosophy, which has mainly been applied in manufacturing to optimise production lines, into digital transformation practices that lead to improvements and transformation of some of the company's human resource management processes, in regard to employee engagement, empowerment, and talent management, and of its business model. This research answers three research questions:

RQ1: What are the characteristics of the Digital Kaizen approach?

RQ2: What guidance can Digital Kaizen informed by the dynamic capabilities framework, provide for digital transformation?

RQ3: What are possible outcomes of applying Digital Kaizen?

Our paper is structured as follows. The next section reviews the relevant literature about digital transformation, enablers for digital transformation, the dynamic capabilities

---

[1] FPT Software has registered Digital Kaizen as a company's trademark.

framework, and the Kaizen philosophy. The research approach section describes our data collection and introduces the case setting at FPT Software including their Digital Kaizen approach. In the following section, we present our analysis and the findings, comprising the identified strategies, tactics, and enablers that in particular facilitated the successful execution of two notable digital transformation initiatives and the transformation of the business model at FPT Software. We then discuss and reflect on the relationship between the Kaizen framework and Digital Kaizen, and between the dynamic capabilities framework and Digital Kaizen. The latter reflections lead us to propose a novel Digital Kaizen process model for digital transformation informed by the dynamic capabilities framework. We conclude our paper with considerations and future research directions.

2 Literature review and theoretical background

2.1 Digital transformation

Previous studies on digital transformation concern two distinct but interrelated theoretical approaches. The first approach is in line with previous findings about IT-enabled transformation. From this perspective, digital transformation refers to the use of digital technologies to significantly improve the performance or reach of a company (Bekkhus, 2016), through facilitating the changes in organisational structures, processes, and culture (Bharadwaj et al., 2013; Matt et al., 2015). IT strategy is no longer restricted to the operational level, and it is integrated into the organisation's business strategy (Bharadwaj et al., 2013). The second approach is based on the premises that digital transformation should go beyond IT implementation and highlights the integration of digital technologies and structural modification to generate new paths for value creation (Hess et al., 2016). Wessel et al. (2020) argue that digital transformation activities should aim to redefine an organisation's value proposition rather than solely leveraging digital technology to reinforce the existing value proposition. While IT-enabled transformation indicates a firm's vision of developing digital business models, digital transformation represents the organisation's comprehensive utilisation of digital technologies to alter its value creation processes (Vial, 2019). We understand digital transformation is defined as the changes brought about by digital technologies, with regard to an organisation's business models, value proposition, processes, organisational identity and structures (Hess et al., 2016; Wessel et al., 2020).

Despite the prominence of digital transformation, the literature points to several challenges that prevent organisations from effectively executing such transformation. First, digital transformation is a complex concept (Hess et al., 2016; Wessel et al., 2020). Businesses are unsure about what digital transformation is and do not know how to embark on their transformation journey (von Leipzig et al., 2017; Wessel et al., 2020). Many enterprises are hesitant to commit resources to major digital transformation projects, especially when they are large in both scope and scale and contain uncertain outcomes (Kane et al., 2019). Hence, they might disregard solutions that are favourable to the firm's specific situation, which in turn leads to unintended negative consequences to its transformation activities (Hess et al., 2016).

Second, in some organisations, data is still utilised in organisational silos, thereby hindering strategic and digital transformation activities (Rogers, 2016). The lack of a team mentality and collaboration poses a challenge for digital transformation, as digital transformation

requires a unity of efforts (Maedche, 2016). Digital transformation is not about changing technology but about changing the way an organisation operates; new digital technologies should be leveraged to promote more creativity through e.g., information and computing capabilities that enable new forms of collaboration among networks of organisational actors (Vial, 2019).

Third, the advancement of technologies has led to a shift in the business landscape across industries (Meraviglia, 2018). While this generated opportunities for innovative start-ups to create value for customers, it also sparked a digital transformation competition among businesses (Rogers, 2016). Many companies are familiar with using technologies to improve their performance; however, as these technologies become more available and affordable, companies feel the pressure to rapidly transform themselves in an unprecedented manner or they will lose out eventually.

2.2 Enablers for successful digital transformation

Successful digital transformation depends on a number of strategic and operational enablers. Strategies, visions, roadmaps, and business models are viewed as the backbone of successful digital transformation (Mergel et al., 2019). A digital strategy requires from a company to deploy digital technologies to target unmet customer needs; that is, to review the current value propositions. Alternatively, it needs to come up with a new business model that generates additional revenue streams (Loonam et al., 2018).

Defining scope is the first, most critical step in any transformation project. Common scopes of digital transformation include creating customer value through software- and platform-enabled services or improving efficiency by digitalising logistics activities with intelligence and predictive maintenance (Correani et al., 2020). These projects often aim at making continuous improvements, while acknowledging that an end state would not be achievable (Mergel et al., 2019). This also means that organisations should avoid investing significant sums in research and implementation, and more efforts should be spent on minimising risk and motivating employees during this never-ending process (Mergel et al., 2019). A common tactic used is implementing small, low-risk pilots for specific business lines in a stepwise fashion (Henriette et al., 2016). As the benefits of digital transformation programs are generally qualitative in nature, it is difficult for organisational members to realise those benefits (Agrawal et al., 2019). The stepwise approach allows companies to present visible results to stakeholders more easily and help to inspire changes (Henriette et al., 2016).

Organisational culture is another enabler of digital transformation. A supportive organisational culture in which joint business and IT initiatives flourish is vital for successful digital transformation (Osmundsen et al., 2018). An open culture improves the organisation's willingness to accept, implement, and promote changes, which creates a conducive environment for digital transformation (Osmundsen et al., 2018). Cultural considerations such as a focused vision statement and clear communication strategy are also necessary for companies to manoeuvre through large-scale, rapid, and disruptive changes (Henriette et al., 2016).

The commitment and involvement of top management are required (Henriette et al., 2016; Rueckel et al., 2020). The lack of a sense of urgency is a barrier of digital transformation, as complacent organisational leaders would not support transformation initiatives (Agrawal et al., 2019). A shared digital vision among managers and executives is therefore essential.

Successful initiatives highlight the role of a Chief Digital Officer (CDO), who oversees digital transformation projects, and of strong support from the board of directors (Ivancic et al., 2019).

Transformation also requires the inclusion of staff from the entire organisation; employees must feel that they play an essential role in the implementation process (Ivancic et al., 2019). Organisations can organise regular workshops to share the transformation status and assess the attitude of managers toward the transformation (Chanias et al., 2019). Training should be also arranged for new employees to receive mentorship from current ones, which helps to flatten organisational hierarchies and makes it possible for entrepreneurial employees to identify problems early and improve organisational efficiency (Li et al., 2018).

Enabler	Description	References
Strategy and business model	The digital strategy must incorporate organisational goals and visions, including reformulating the value proposition of the business, reconfiguring value delivery models, adapting new business models, and developing new capabilities.	Agrawal et al. (2019); Henriette et al. (2016); Ivancic et al. (2019); Loonam et al. (2018); Osmundsen et al. (2018); Rueckel et al. (2020)
Change management	Change management is prioritised to deal with the potential adverse effects created by digital disruptions. Digital champions should be appointed to advocate the adoption of a digital mindset and of tools through engaging with the employees. Communication, including a clear and focused vision statement, is critical in this process.	Agrawal et al. (2019); Correani et al. (2020); Ivancic et al. (2019); Loonam et al. (2018); Osmundsen et al. (2018)
Organisational culture and participation	Digital transformation demands collective participation of all organisational members. It requires the endorsement and support from top management to present a clear vision and values. It also strives for a digital culture that involves greater mobility, collaboration and learning.	Agrawal et al. (2019); Henriette et al. (2016); Ivancic et al. (2019); Loonam et al. (2018); Osmundsen et al. (2018)
Data and IT infrastructures	Data and IT infrastructures lie at the core of digital transformation as both its prerequisites and outcomes. Outcomes include better data management and accessible data platforms for internal and external stakeholders. Data as a strategic asset of the company are synchronised, structured, and made accessible to provide insights to managers.	Correani et al. (2020); Gaffley and Pelser (2021); Ivancic et al. (2019); Loonam et al. (2018); Rueckel et al. (2020)
Human resource management	New professional roles, e.g., digital advisors and digital champions, may be created. Retaining digital talent and improving digital skills are vital for developing new workforce capabilities. New employees with digital skills and proactive mindsets are preferable.	Correani et al. (2020); Henriette et al. (2016); Ivancic et al. (2019); Rueckel et al. (2020)
Digital ecosystem	The development of digital transformation programs often responds to changing market needs, digital shifts in the industry, and changes in the competitive landscape and regulations. Customers are encouraged to participate in the implementing process. Companies may utilise their existing digital ecosystems and/or establish new strategic networks and partnerships and cooperate with the academic community for knowledge transfer.	Correani et al. (2020); Ivancic et al. (2019); Loonam et al. (2018); Osmundsen et al. (2018)

Table 1. Enablers of successful digital transformation

Data and technology infrastructures are important assets in this never-ending process (Correani et al., 2020; Gaffley and Pelser, 2021). Companies may need to accept that digital

transformation introduces new cyber security and privacy issues due to the adoption of new technologies and the increasing need for data collection. Thus, rather than fear, companies should be aware of and face these cyber risks (Agrawal et al., 2019). Top managements need to recognise data as an important asset for business, and business data (e.g., data on personnel, financial reports, marketing information and sales performance) should be synchronised and made accessible at a single source (Gaffley and Pelser, 2021).

Companies develop their human capital for digital transformation by retaining and improving employees' digital skills, as well as by fostering a culture for digital learning (Gaffley and Pelser, 2021). Employees need to have specific skills and capabilities to fully seize the opportunities created by digital technologies (Correani et al., 2020). The lack of digital skills and talents is considered one of the most significant barriers to digital transformation (Agrawal et al., 2019). Managers and leaders must therefore devise proper training programs to improve employees' digital capabilities and to foster a digital spirit (Correani et al., 2020; Ivancic et al., 2019).

Both the involvement of internal and external stakeholders is essential. For instance, new digital solutions should be designed according to an end-to-end customer journey so that the new products and services offer novel values (Loonam et al., 2018). Integration with digital ecosystems is necessary for successful digital transformation, such as companies should cooperate with the academic community to enable knowledge transfer (Ivancic et al., 2019; Osmundsen et al., 2018; Rueckel et al., 2020). Digital transformation not only involves digitising existing processes, forms, documents, and services, but also digitally leveraging the relationships with their stakeholders (Mergel et al., 2019). For instance, to maintain order in its business ecosystem, Alibaba constantly pushes new certification services forward to verify the credits and qualifications of both buyers and sellers using the large amount of transaction data accumulated on its platform (Li et al., 2018).

Table 1 summarises the identified enablers of digital transformation and their descriptions that we extracted from our review of the extant literature.

2.3 Dynamic capabilities and digital transformation

Scholars have investigated digital transformation through various theoretical lens. Among these, the dynamic capabilities framework (Teece, 2007) has been widely applied and considered as a consistent approach to study digital transformation (Ellström et al., 2022; Warner and Wäger, 2019). At the core of this framework is a hierarchy of capabilities, ranging from ordinary capabilities i.e., operational processes that are carried out by most companies, to mircofoundations i.e., less commonly employed routines that allow firms to integrate or reconfigure resources, and to dynamic capabilities at the top of the hierarchy (Teece, 2018). Dynamic capabilities are closely related to digital transformation since they enable firms to formulate strategies for refining existing and designing new business models in considerations of current and future contingencies, which are the key objectives of digital transformation programs (Warner and Wäger, 2019).

According to Teece (2007) what matters for organisations is corporate agility which is achieved through three dynamic capabilities, namely sensing, seizing, and transforming. Sensing capabilities focus on a firm's scanning of the 'local' and 'distant' environments to detect opportunities and threats and involves research and development activities and engagement with different stakeholders. Once opportunities are detected, seizing

capabilities allow firms to capture the values of those opportunities, mainly through informed decision-making, investments, and commercialisation strategies. The re-designing or creation of new business models or architectures, with updated technological competences, are key activities that reflect the seizing capabilities (Teece, 2007). Transforming capabilities concern the firm's redeployment and reconfiguration of resources to sustain profitability in response to the changing business environment.

The dynamic capabilities framework is used to study firms' change capacity and to inform strategies for effective digital transformation (Warner and Wäger, 2019). Prior studies developed and proposed process models focusing on dynamic capabilities, which describe the relationships between these capabilities, triggers and enablers of digital transformation, and identify the necessary mircofoundations or routines for developing the dynamic capabilities (see e.g., Chirumalla, 2021; Ellström et al., 2022; Warner and Wäger, 2019). For instance, data-driven sensing, flexible root cause discovery, agile cross-functional teams, continuous improvement strategy, and training support were determined to be mircofoundations for developing capabilities for digital transformation (Chirumalla, 2021). Similarly, Ellström et al. (2022) identified cross-industrial and inside-out digital sensing, determining enterprise boundaries i.e., what to do in-house and what to outsource, and decomposing digital transformation into specified projects as mircofoundations. The dynamic capabilities and the specific mircofoundations are linked to the enablers of digital transformation, some of which were identified in our review above, such as data infrastructure, executive support, and strategies (Chirumalla, 2021; Warner and Wäger, 2019).

2.4 The Kaizen philosophy

Kaizen is a Japanese business philosophy which refers to the "continuous improvement" approach led and supported by management. It involves the concept of change (kai) and to become good (zen) (Newitt, 1996; von Leipzig et al., 2017). Therefore, organisations adopting a Kaizen philosophy continuously identify and develop new or improved processes to achieve outcomes that contribute to organisational goals (Brunet and New 2003). The Kaizen philosophy and methodology focuses on three aspects: process, standards, and people (Masaaki, 1986; Suárez-Barraza and Lingham, 2008).

First, Kaizen emphasises the idea that processes need to be improved before good results can be obtained (Masaaki, 1986). Due to the rapid transition of business landscapes, organisations are in a constant state of flux (Perkin and Abraham, 2017). The philosophy emphasises the key idea that there is no end to the continuous improvement process that leverages good teamwork and flexibility in performing work (Wickens, 1990). In this sense, it promotes process-oriented thinking rather than result-oriented thinking (Wittenberg, 1994).

Second, standardisation is another essential feature of the Kaizen philosophy (Wittenberg, 1994). Kaizen focuses on establishing and maintaining standards, then making small and continuous improvements while following such standards. Standards refer to policies, guidelines, rules, and procedures (Masaaki, 1986). These standards are to be reviewed and revised whenever people are unable to adhere to them, so that their effectiveness is reinforced, and they remain the practical guidelines for the employees (Wittenberg, 1994).

Third, Kaizen is people-centric and involves everyone within an organisation. It introduces a force of making improvements that draws on a spirit of team cooperation (Malloch, 1997).

Kaizen assumes that positive changes in people's attitudes and efforts are more likely to produce improvements in the long run (Wittenberg, 1994). Similarly, researchers suggested group-oriented Kaizen as a mechanism to improve work methods, routines, and procedures (Masaaki, 1986). Kaizen not only starts with people's needs and focuses on their efforts, but also concerns the collaborations between employees during work processes.

While Kaizen is widely applicable as a management philosophy and methodology, previous studies discussed whether Kaizen could hinder innovation. While researchers suggested that innovation is implemented by abrupt changes, Kaizen refers to a gradual process to introduce improvements (Wittenberg, 1994). As a result, the philosophy is said to be better suited for a slowly growing economy, whereas the capability to come up with innovations is needed for a fast-growing economy (Wittenberg, 1994).

In practice, the Kaizen philosophy covers many management techniques including quality circles, total productive maintenance, just-in-time, and robotic process automation (Wittenberg, 1994). For example, Masaaki (1986) highlighted that Kaizen is an overarching concept for total quality management, which is a system of management where every employee continuously improves their standards of work in every aspect of a company's operation. Likewise, Mizuno (1988) emphasised that companywide quality control, a Japanese-rooted system for integrating quality technology in different departments to achieve customer satisfaction, is also based on the Kaizen approach. In sum, the philosophy has affected many organisations' productivity, and supported businesses to produce high-quality organisational outcomes (Macpherson et al., 2015; Newitt, 1996; Singh and Singh, 2009).

The literature review suggests that Kaizen and digital transformation share similar characteristics. First, Kaizen focuses on making continuous improvements, while digital transformation demands continual changes and innovative technology deployment (Newitt, 1996; von Leipzig et al., 2017; Vial, 2019). Second, Kaizen aims to influence organisations' productivity to achieve better customer satisfaction, and similarly, changes enabled by digital technologies focus on bringing about value creation processes that benefit both organisational activities and a company's stakeholders (Macpherson et al., 2015; Hess et al., 2016; Wessel et al., 2020). Third, both Kaizen and digital transformation draw on people and processes to encapsulate the changes (Masaaki, 1986; Suárez-Barraza and Lingham, 2008; Hess et al., 2016; Wessel et al., 2020). These similarities and connections between Kaizen and digital transformation support the conceptualisation of the Digital Kaizen concept as an approach to digital transformation.

3   Research approach

3.1   Research method and data collection

The objective of this research is to investigate Digital Kaizen as an approach for conducting digital transformation. Given the nature of our research inquiries and the uniqueness of the approach, as developed by FPT Software, we decided to follow a qualitative approach to explore the phenomenon (Creswell and Creswell, 2018). Specifically, we opted for the interpretive case study approach (Walsham, 1995), which involved conducting in-depth interviews with three key informants who would be reasonably expected to have the best knowledge about the research topic: (1) the Chief Executive Officer (CEO), (2) the Chief

Digital & Technology Officer (CD&TO) cum Executive Vice President, and (3) the Head of Digital Innovation (HDI). They were working in Ho Chi Minh City, Ha Noi, and Japan, respectively.

Interpretive case studies aim to understand both the context and processes related to the use of information systems, and how these two elements influence each other (Walsham, 1995). The research took place in a single organisation rather than several case organisations. Investigating a representative case introduces ideal types, as opposed to multiple cases, that are considered to be prototypical of a phenomenon (Kautz and Bjerknes, 2015). While the generalisability of the findings drawn from this approach may be limited, the interpretive case study provides a detailed account of empirical findings that contribute to the existing literature.

We conducted our first interview with the HDI, and then we were introduced to the CD&TO and CEO through the snowballing method. The open-ended interviews were conducted online via Skype and audio-recorded, each of which lasted one hour on average. After each interview, we reviewed the findings and revised the questions to follow up with the next informant. The HDI and CD&TO were interviewed twice, where the second interviews aimed to clarify some findings and probed for more information, which resulted in a total of five interviews. The interview data was coded openly and thematically analysed for similarities and patterns, as well as for disparities. The findings were sent back to the informants for feedback to ensure external validity (Dubé and Paré, 2003). Direct quotes are provided in this paper to ensure research rigor (Dubé and Paré, 2003).

Initially, we announced our research objective to investigate strategies for conducting large-scale digital innovation on LinkedIn for a month. Among the received acceptances from three different companies to participate in the research project, we selected to conduct this research with FPT Software for three reasons. First, it is an internationally recognised and established technology and digital transformation enterprise. Second, it offered the opportunity to investigate the Digital Kaizen methodology, which we considered as a potential for generating findings that could contribute to both theory and practice. Third, the company was highly committed to the project and promised access to key executive members for data collection.

Our qualitative data set contains a small set of five interviews with three key informants at FPT Software, who are executive members of the company. While this can be considered a limitation of our study, such an approach was feasible during the pandemic, when strict lockdowns that lasted for several months in Vietnam created challenges for data collection. To add interpretive rigor, we conducted additional desk research which involved examining documents, news articles, reports, and other materials concerning the company's Digital Kaizen approach. Moreover, we consider the five interviews with the key informants to be sufficient and adequate to answer our research questions pertaining to the characteristics of the unique Digital Kaizen approach and its potential in guiding digital transformation efforts due to the following reasons.

First, the key informants, whom we interviewed, are among the few staff at FPT Software who contributed to the creation of the Digital Kaizen approach and observed its implementation since its inception. Therefore, these informants hold the vision and in-depth knowledge about the characteristics of the approach and how it was intended to be used for

digital transformation. Second, our study does not investigate and analyse the impact of Digital Kaizen on elements at the micro level of the company such as the workforce or work processes at FPT Software, therefore input and insights of other stakeholders such as other employees were not within the scope of this research and were omitted. Third, our study is exploratory by nature and despite the process model for Digital Kaizen, which we propose, does not aim at achieving a generalisation of our findings. Thus, it was critical to focus on extracting insights from the relevant informants to understand the phenomenon rather than on achieving a large sample size.

3.2 Case setting

FPT Software is a part of FPT Corporation – a large technology and IT services group headquartered in Vietnam (FPT Software, 2020). FPT Software was established in 1999 with the mission to bring technological innovations to its international customers while being dedicated to the country's prosperity and developing skills of young Vietnamese employees. In 2020, FPT Software achieved nearly USD$1.2 billion in revenue and has become one of Vietnam's largest and fastest growing IT companies that is able to provide digital solutions to clients globally, ranging from the Asia-Pacific, Oceania, North America and to Europe. Currently, it has more than 100 customers across 45 countries with key companies in diverse sectors, ranging from automotive industry (e.g., Toyota) to the aviation industry (e.g., Airbus and Palantir). In the next 10 years, FPT Software sets the ambition to become one of the top 50 technology service providers in the world.

Kaizen Framework	Digital Kaizen
Step 1: Discover improvement potential	
• Maintain awareness, through experience and training, of the opportunities or challenges that can bring changes to improve processes the organisation's processes	• Cross-functional pain points are identified by conducting regular and mandatory workshops which are attended by department managers
Step 2: Analyse the current method of work	
• Understand the process inside the improvement area, use various analysis techniques	• Managers provide feedback about operational issues which are encountered during the daily work and collaboration
Step 3: Generate original ideas	
• Brainstorm the problems using creative and analytical thinking of each participant	• Managers discuss and come up with digital transformation solutions to address cross-functional pain points • A steering committee evaluates the proposed projects to determine their priority based on clear criteria
Steps 4 & 5: Develop and implement the plan	
• Decide who will do what, where, how, by when, and why • Coordinate the different implementation teams	• Flexible change management techniques are used to increase users' adoption of improvement solutions • Focus is on small and quick wins to raise employees' morale with the goal of implementation not only being immediate results but also nurturing change capability and digital maturity
Step 6: Evaluate the new method of work	
• Compare results with the conditions before the improvement initiatives and decide whether further improvements are necessary and possible	• Digital transformation projects are evaluated based on specific criteria which are linked to strategic objectives

• If successful, standardise the solution	• Successful digital transformation projects are refined, packaged, and sold to clients

Table 2. Mapping the Kaizen Framework onto the Digital Kaizen Approach

FPT Software created its own digital transformation methodology which they called 'Digital Kaizen' that involves conducting a series of small yet effective digital transformation initiatives within short time frames, where they mapped the six steps of the Kaizen Framework (Smalley and Kato, 2010), discover improvement potential, analyse the current method of work, generate ideas, develop and implement the improvement plan, and evaluate the new method of work to fit their objectives. Table 2 summarises the mapping of the Kaizen Framework onto the Digital Kaizen approach at FPT Software.

The company's digital transformation principle is simple: 'driving business and technological transformation through people engagement.' To achieve that, FPT Software identified the 'pain points' or cross-functional problems that are encountered by employees at the operational level in their daily work. By adopting Digital Kaizen, according to our informants the company's digital transformation delivers continuous improvements in a manner that maximises the adoption of digital technologies, optimises procedures, and minimises waste. The company's digital transformation principle is simple: 'driving business and technological transformation through people engagement.' To achieve that, FPT Software identified the 'pain points' or cross-functional problems that are encountered by employees at the operational level in their daily work. By adopting Digital Kaizen, the company's digital transformation delivers continuous improvements in a manner that maximises the adoption of digital technologies, optimises procedures, and minimises waste.

Out of five digital transformation initiatives that recently had been implemented in FPT Software, two, MyFPT and AkaLink, have been investigated in this research. These two examples highlight how the company enacts its digital transformation strategy by relating to the alignment between employees' needs and organisational goals, and how the focus on continuous improvements through delivering small digital transformation initiatives provided a spill over effect that nurtured and lead to a high level of digital maturity (Kane et al., 2019) of the company. This focus also contributed to the transformation of the company's business model from a software development and IT outsourcing firm to an IT consultancy.

4   Analysis and Findings

To manage its digital business transformation, FPT Software adapted the Kaizen philosophy and created its own approach which they named Digital Kaizen. Digital Kaizen prioritises making a series of small initiatives and quick wins that build towards long-term success rather than creating a 'big-bang' disruption. It aims to continuously tackle cross-functional issues that are aligned with their strategic business goals, through implementing digital technologies that improve business processes and people engagement. These small, when successful, transformations in turn lead to sustainable and scalable digital transformation solutions.

Cross-functional pain points are the starting point of the company's stepwise digital transformation strategy. They represent the issues that exist in the company's operations that

have direct impacts on the employees. To identify these, the company conducts regular and mandatory workshops throughout the four quarters of a year, in which managers from different departments participate and provide feedback about the operational issues encountered during the daily work interactions between departments.

> *"The process of generating cross-function pain points addresses the concerns of employees who are directly involved in daily business operations. Every few months, FPT Software organises a workshop that aims to understand these cross-functional pain points. After the annual core missions of the entire company are identified, managers of all departments, who are related to those missions, gather and perform brainstorming activity to produce a list of pain points. These pain points are then ranked and prioritised based on some metrics. Digital transformation projects are created to address the important pain points, and specific tasks are assigned to the relevant teams." – CD&TO*

These joint workshops aim to address two issues of digital transformation. First, while it may be easier for each department to recognise and address its own pain points, it is of greater importance to FPT Software to define the cross-functional pain points that affect multiple departments and hinder shared work processes. Second, the CD & TO appreciated that digital transformation is more effective when it is motivated by the common needs of different organisational functions, as compared to by the needs of each company's separate department (Sidhu, 2019).

> *"When it comes to identifying organisational problems, people often think that the problem is caused by other departments and not by themselves; department A may tend to attribute the pain point to department B and vice versa. As a result, nobody tackles the pain points since they think those pain points are not their responsibility. Solving these problems will improve the work engagement between departments and thus benefit the whole business process. As such, it is effective when cross-functional teams work together in the workshops to identify the pain points." – CD&TO*

Then, project proposals for digital transformation solutions are developed to address the pain points, and these proposals are evaluated by a steering committee to determine their priority. Among the evaluation criteria used to assess the solutions' priority, the key criteria are feasibility, urgency, and potential values. First, feasibility refers to the speed of the project's completion and the evaluation of return on investment (ROI) that is typically anticipated to be achieved within three or six months. Second, urgency is determined by the critical level of the pain points that the proposed projects aim to tackle. For example, a project that focuses on a new business process that is needed for complying with a new regulation has a higher priority than others. Third, a proposed project is deemed to have high potential value if it contributes to the key annual missions of FPT Software, which often aim at providing value to the human and technological resources of the company.

> *"The rule of thumb is that no project is allowed to take more than 6 months to complete. After six months, we should be able to evaluate the project's ROI. Not only the project must support the company's business strategy in the next three to five years, but ideally it should also yield enough revenue to sustain itself, or this revenue can be re-invested in other projects. Apart from solving the critical pain points, the project is considered as valuable when it benefits the personal development of the employees or increases technological capital, which then contribute to other digital transformation projects." – CEO*

After completion, successful digital transformation projects are refined and packaged together with the Digital Kaizen approach as digital transformation solutions, which as part of IT consultancy assignments are sold to FPT Software's clients afterwards. From its database of clients, FPT Software identifies and approaches clients, who may have the issues or pain points that can be addressed by such digital transformation solutions. As such FPT Software does not primarily sell off-the-shelf software packages anymore but provides bespoke digital transformation solutions that are tailored to their clients' business context and needs.

> *"When selling digital transformation solutions to our clients, we sell the methodology rather than the software package. While digital technologies are just tools, Digital Kaizen is a methodological framework that guides the whole transformation process. When working with clients, FPT Software serves as a consultant or advisor and not as a one-time seller. Through conducting workshops with the clients, which are similar to what we do in FPT Software, we identify clients' pain points and come up with the solutions based on their context and needs. This approach therefore encourages the clients to adopt the Digital Kaizen spirit and to embrace continuous improvements rather than sticking to one fixed solution." – CEO*

Two notable internal digital transformation projects that successfully addressed two of FPT Software's pain points were MyFPT and AkaLink. They were considered by the informants as key digital transformation solutions of FPT, which contributed significantly to the business-critical operations of the company in 2020. While MyFPT aimed to tackle pain points that were related to retention, AkaLink focused on solving problems related to both resource fulfilment and retention. As these projects were concerned with achieving human resources-related objectives, they illustrate the process from identifying pain points to developing digital transformation solutions that were aligned with FPT's strategic objectives. The following three subsections focus on the analysis of these two initiatives.

4.1 MyFPT: a mobile app for people engagement

From 2017 to 2018, employee engagement was one of the key challenges of FPT Software. Due to its fast-growing development, the number of employees increased significantly, which made it difficult for managers to provide personalised engagement with their employees and retain them. At that time, it was common for a manager to have about 200 employees who reported directly to him/ her. In addition, there was a lack of adequate processes and systems to evaluate the performance of these employees, thereby leading to poor performance review experiences and employees felt unacknowledged for their efforts.

As a result, this one-year period witnessed a high turnover rate of 30 percent, where approximately 1,500 of 5,000 new employees left the company. At the same time, the interviews with informants revealed that they considered the time spent on training new staffs was a possible waste. It took every new employee 14 days to understand the procedures and systems and get along with key supporters before they could perform their tasks. This time-consuming onboarding process was not a challenge of any particular department but a cross-functional problem for all involved departments. The ineffective employee engagement methods and lengthy onboarding process were identified as the cross-functional pain points between multiple departments and across organisational levels.

These identified pain points were addressed by developing and introducing an all-in-one mobile application called MyFPT, which transformed staff engagement and onboarding

process. The mobile app contains a wide range of functionalities of both an enterprise social network and an online marketplace. For example, with a database of frequently asked questions (FAQs), new employees have easy access to and the opportunity to familiarise themselves with the work procedures and systems in FPT Software. In addition, personalised feedback about performance from managers to employees can be sent via this mobile app, and the employees can send each other appreciations and congratulations on special occasions. The app also provides features to improve the employees' work experience at FPT Software. For example, they can give ratings and reviews for the meals served at the company's cafeteria, and a function is implemented on the app to suggest new or matching dishes based on each employee's unique dining patterns and needs. By interacting with the app, employees can earn and receive reward points, which the company calls 'company golds' and use these to buy lunches at work or other goods.

A series of engagement programs were promoted on the mobile app to increase the employees' adoption of the app. For example, FPT Software incorporated MyFPT into its social event "Run for Green", in which the company pledged to plant a tree for every 10-kilometer run by each employee as recorded on the app. Other work-related daily activities are also integrated into the app. For instance, the employees get extra points when they commute to work by company buses. The tangible benefits (e.g., bus tickets, redeemable points) are presented as an incentive for the employees' trial of the application, and the app's features (e.g., food reviews, feedback, appreciation) are used to maintain their engagement with the app in the long run. The HDI of FPT Software explained the approach to persuade employees to adopt MyFPT as part of this digital transformation project:

> *"While the Digital Kaizen as a framework instructs us on what and how to implement digital transformations, top management needs to be creative in designing every implementation step. On one hand, MyFPT is created to serve the essential needs of the employees to engage with the company; therefore, the initial adoption by some employees can be anticipated and is understandable. On the other hand, when the app as part of the digital transformation needs to be adopted at a larger scale, it needs to be flexibly changed to promote its adoption."* – HDI

After six months of implementing the MyFPT project, several achievements were recorded. First, new employees no longer had to spend too much time to get familiarized with the company's procedures and systems, as they could find the necessary information on MyFPT. As a result, the time required for the onboarding process was reduced from 14 days to five days, which amounted to a large saving in terms of monetary value. Second, the human resources department and top management were now able to engage better with the employees and retain new hires more effectively, which led to a significant decrease in the company's high turnover rate. Currently, 15,000 employees use MyFPT daily for various purposes, from booking transport and ordering food, to reviewing their evaluations and communicating with colleagues. The large number of active daily users indicates a high level of engagement between FPT Software and their employees. In total, 22 strategic pain points were resolved through the digitally transformed onboarding and engagement processes.

4.2   AkaLink: a digital platform for skill inventory management

During the 2018–2019 period, FPT Software faced an issue related to the management of the company's skill inventory. Traditionally, human resources management activities involve updating and assessing the current skill inventory, forecasting the availability for core skills

and sourcing talents to meet business needs in a timely manner. As the company was growing rapidly, there was a growing demand for increasing the speed of these activities and for continuous monitoring of the organisational skill inventory. These requirements were identified as the cross-functional pain points of multiple departments that needed to be addressed.

FPT Software developed AkaLink to improve the skill inventory management processes. AkaLink is an online digital platform that provides project management and enterprise social networking functionalities. Employees register and update their skills after every project, and their colleagues can endorse each other's skills. AkaLink also allows employees to volunteer for tasks in other departments, and the system recommends new projects to the employees which match their nominated skills and career development plans. As such, AkaLink empowers employees to make decisions on their career development. The platform also provides top management with more accurate and timely information about the employees' participation in projects, and an overview of the skills that are currently available in the company. This information in turn enables the top management to plan for training programs and hiring strategies more effectively. It was estimated that this digital transformation project had yielded a total revenue of about USD$700,000 in June 2020.

4.3 MyFPT and AkaLink as Digital Kaizen-driven digital transformation solutions

For both digital transformation solutions, the six steps of Digital Kaizen were executed as follows: in step 1 (discover improvement potential) top management set strategic objectives and department managers were organised in workshops to identify and discuss pain points as a foundation to generate relevant digital transformation solutions; in step 2 (analyse current method of work) lack of adequate employee engagement and an inefficient onboarding process were identified as particular cross-functional pain points. In step 3 (generate original ideas), potential digital transformation solutions which aimed at improving employee engagement and onboarding were prioritised based on their feasibility, urgency, potential values, and alignment with the organisation's strategic objectives. Subsequently in steps 4 and 5 (Develop and implement the improvement plan), change management techniques were employed to increase the employees' adoption of the digital transformation solutions; and in step 6 (evaluate the new method of work), the achievements of the new methods of work were recorded in terms of monetary gain, time saved, and number of addressed pain points. As an additional outcome, the employee engagement platform AkaLink has been advertised and successfully been sold to clients.

The two projects are instances of FPT Software's digital transformation solutions that resulted in not only monetary values but according to our informants, their evaluation showed that they also had spill over effects that impacted the whole organisation (see also subsection 3.2 'Case setting'). First, as employees engaged in these digital transformation projects, they further increased their readiness to adapt to the organisational changes related to using new technologies. Second, these projects addressed and resolved cross-functional pain points that directly impacted operational staff in their daily work, which in turn increased their job satisfaction. Third, as the pain points were successfully addressed in a short time frame of three to six months, the employees' morale increased and top

management gained trust from the employees, which again motivated their participation in other, subsequent digital transformation activities, as the CEO stated.

> *"It should be noted that digital transformation projects must benefit employees at the operational level first. Digital transformation projects should not be about creating new tasks for them but offer new solutions to increase their productivity and performance. This will make the employees find the digital transformations more relevant to them and feel willing to get involved in transformation activities."* – CEO

4.4 The enablers of digital transformation at FPT Software

FPT Software's initial motivation for digital transformation was to improve in-house business processes by addressing their cross-functional pain points with digital technologies. In light of the first enabler that we identified from the literature review (see table 1), strategy and business model, FPT Software's strategy for digital transformation was originally internally focused. The approach for planning and implementing the digital transformation at FPT Software was operationalised and involved regular assessments of the status quo, as shown in their conducting of the frequent, mandatory workshops to identify cross-functional pain points. Our informants at FPT Software emphasised the role of the strategic objectives as the guiding vision with which digital transformation efforts and solutions had to align.

However, FPT Software did not stop at internally addressing the pain points, they also commercialised and sold their digital transformation solutions to their clients. Their motivation for digital transformation is to both improve internal processes and to service the market at the same time. The challenge of having such a dual motivation is to ensure the relevance of the company's internal priorities to those of the clients, so that their commercialised digital transformation solutions will be appealing to and accepted by their clients. In our case, FPT Software leveraged the advantage of being a large enterprise with a long history of doing business with both local and global customers, which provided them with the knowledge of the common pain points of their clients (see also subsection 4.5 'The transformation of the company's business model').

With regard to the two enablers, organisational participation and human resource management, it can be seen that learning and collaboration are also the prevalent themes of the digital transformation at FPT Software. For FPT Software, the benefits of their initial digital transformation are not limited to the developed digital artifacts as digital transformation solutions, but more importantly the participating employees also improved their digital skills and mindset i.e., their digital readiness for future transformation solutions (see also subsection 4.3 'MyFPT and AkaLink as Digital Kaizen-driven digital transformation solutions). Interestingly, FPT Software realised the transformation of the employees' digital readiness as a spill over effect rather than what they had intended to achieve, suggesting that digital transformation may bring unexpected results to organisations. Top management support of digital transformation was not explicitly mentioned in our interviews. Nevertheless, it can be implied that a common vision for digital transformation was shared among managers and employees, as was evident through their active participation in the assessment of the company's status quo and the implemented change management techniques.

In terms of change management, FPT Software' approach for implementing digital transformation is a stepwise and iterative approach, following the Digital Kaizen

methodology that emphasises making small and quick wins during the transformation process to maintain employees' high morale. While the role of a digital champion is mentioned in several digital transformation studies, such role did not surface in our interviews with FPT Software. Instead, the successful digital transformation implementation at FPT Software relied more on their execution of employee engagement techniques, including the use of incentives to encourage the adoption of digital technologies.

As a software development and IT outsourcing company, it is unsurprising that FPT Software had the capabilities to develop the two applications in-house, which is part of their 'data and IT infrastructures' enabler of digital transformation. However, the interviewees claimed that FPT Software's successful digital transformation comes not only from their technological infrastructures but also their active assessment of the status quo that was carried out by conducting the workshops to identify operational pain points. With regard to digital ecosystems, we did not find evidence that, beyond FPT Software's regular business interactions with their large client base, the company engaged further with external stakeholders such as customers, business partners, or the academic community in their initial digital transformation projects.

4.5   The transformation of the company's business model

The application of the Digital Kaizen approach also transformed FPT Software's business model, from being a software development and IT outsourcing company to a digital transformation and change management service provider. According to the CD&TO and the HDI, this transformation of the business model was motivated both intrinsically and extrinsically.

> *"Between 2018 and 2019, FPT Software changed its strategic business direction to not only provide software outsourcing services, but also to become a global digital transformation services provider. In other words, FPT Software offers digital transformation services to multinational clients, to FPT Corporation and FPT Software itself."* – CD&TO

> *"There was a change of direction within the company. We started to rely on our core strengths such as our staff and large data sets to build and use our own digital solutions. Once we found the solutions effective, we used them as case studies and sell them to international corporates. After convincing these corporates to purchase our solutions, we then sell them to the local market."* – HDI

Externally, the HDI explained, that the IT outsourcing market had changed drastically between 2018 and 2019, where competition became more intense, and clients became more demanding with increasing needs for open-source solutions, more customisation, and complex integration of multiple data sources for software solutions. The IT outsourcing model of FPT Software at that time was deemed no longer sustainable in such market.

Internally, the adoption of the Digital Kaizen approach to continuously and rapidly enhance the workplace with digital innovations had resulted in FPT Software becoming, quoting the CEO, a giant 'test bed'. With the identity of a test bed in mind, the board of management realised the large scale of FPT Software – with more than 16,000 employees and multinational clients in key markets such as the Asia-Pacific, Japan, Oceania, North America and Europe, in particular Germany – as a strategic advantage, that most of the internal problems

addressed by the company's digital transformation solutions would be relevant to almost any other company.

> *"We are implementing the digital transformation solutions for the whole FPT Corporation and not just for FPT Software – an enterprise with more than 36,000 people, seven member companies, and offices in more than 30 countries. It is indeed a complex organisation. Therefore, we may have a lot of pain points that are also encountered by other companies." – CEO*

When the transformation of the business model happened, changes in terms of organisational structures and business objectives were also implemented. For instance, the HDI shared that:

> *"In the past, we would take jobs from any clients without a specific focus on any domains. From 2018, we created a unit to cater for manufacturing and logistics clients in Japan, the US, and Germany, due to the fast development in the manufacturing and logistics sectors in these countries. Then, when our clients in Germany asked us to transform their outdated banking systems to modern ones, we also created a dedicated team for this line of work." – HDI*

The business objectives of FPT Software now include developing long-term partnerships with their clients, not only through providing high-quality services, but also through building trust and confidence by projecting a professional image of a company with adequate governance, fast problem-solving capability, and employees with an excellent workplace, which all resulted according to the informants from the adoption of Digital Kaizen. Displaying such a professional image was particularly important as it signalled the company's resilience to their clients, in particular during the pandemic period.

5   Discussion

Our case analysis supports Wessel et al.'s (2020) argument that digital transformation redefines organisations' value propositions and leads to the creation of a new organisational identity. Throughout its digital transformation endeavours, FPT Software not only deployed digital technologies such as cloud computing and big data analytics but also experienced the constant shift of the company's business model, products, and processes (Wessel et al., 2020). FPT Software changed from a software development to a digital transformation consultancy company (FPT Software, 2019) and started offering digital transformation services as a value proposition to its customers. This change of organisational identity is mirrored in the company's transformed business strategy and organisational structure, with task forces in charge of digital transformation solutions, a committee responsible for evaluating digital transformation projects' priority, and mandatory workshops in place where managers in incubator teams identify cross-functional pain points and develop proposals for possible solutions.

5.1   The Kaizen framework and Digital Kaizen

The Digital Kaizen methodology was built on the principles of the original Kaizen philosophy for the context of implementing digital transformation. In line with the original version, this methodology emphasizes the three aspects: process, standards, and people (Masaaki, 1986; Suárez-Barraza and Lingham, 2008) (see also subsection 2). For instance, rather than making a big-bang disruption, incremental digital changes are conducted within the organisation. This approach encourages digital transformation to undergo a continuous

process with no ends. Furthermore, people are recognized as the main driver of digital transformation activity, and increased people engagement leads to improved organisational change management capability and higher digital maturity.

The Digital Kaizen approach adds a new perspective to the current Kaizen literature. While Kaizen has been applied widely in management practices of various industries (Wittenberg, 1994), Digital Kaizen was created at FPT Software specifically for digital transformation practices. The original Kaizen approach is primarily applied in production to reduce costs, minimise wastes, and to increase productivity, whereas Digital Kaizen aims at facilitating the effective and efficient implementation of digital innovations that transform people and business processes. The focus on solving cross-functional pain points and implementing digital innovations to achieve quick and small improvements in the organisation expands beyond eliminating waste and improving efficiency in the production line.

The application of Kaizen philosophy in the field of digital transformation signals the capability of Kaizen in creating innovations. In contrast to some prior studies that argued Kaizen is more suitable for a slowly growing economy (Wittenberg, 1994), our case study of FPT Software shows that organisations can practice Kaizen and generate innovations at the same time (Imai, 2007). With the help of digital technologies, organisational initiatives that aim to bring about new business models, products, and value creation processes can be created clients.

5.2   The dynamic capabilities based Digital Kaizen process model

We have so far focussed on Digital Kaizen's role for the development of digital transformation solutions and its impact on the transformation of the case company's business model. We also identified the enablers of digital transformation at the company and discussed the original Kaizen framework in relation to Digital Kaizen.

We established earlier (see subsection 2.3) that digital transformation has been investigated through the dynamic capabilities framework. We will now discuss and apply the framework in relation to the Digital Kaizen methodology based on our empirical data and its analysis which leads us to develop and propose a Digital Kaizen process model informed by the framework.

We find an alignment between Digital Kaizen and the dynamic capabilities framework and argue that Digital Kaizen encompasses mircofoundations, which are required for the development and exploitation of dynamic capabilities. Dynamic capabilities refer to an organisation's ability to integrate, build, and reconfigure internal and external competences to address the changing environments (Teece, 2007). Underpinning these capabilities are foundational capabilities, the mircofoundations, which enable the sensing, seizing, and transforming activities of a company (Teece, 2007). The activities of the Digital Kaizen approach as performed at FPT software (see section 4) can be considered as mircofoundations because (a) they contribute to the sensing, seizing, and transforming capabilities and (b) they are not ordinary processes that would be carried out by any firm (Teece, 2007).

 In the following three subsections we describe and discuss how the dynamic capabilities, i.e. sensing, seizing, and transforming, the steps of Digital Kaizen, and the activities and mircofoundations are related and mapped onto each other in the Digital Kaizen process

model and in subsection 5.3 we then discuss intended and possible target outcomes of as part of the process model. Figure 1 summarises the model.

5.2.1 Sensing and the Digital Kaizen process model

Sensing refers to the analytical methods, tools, and techniques that companies use to detect, identify, and filter opportunities for developing new products and services (Teece, 2007). The learning capacities of the individuals within a company, innovation models such as open innovation, and generative sensing capabilities that use technologies such as artificial intelligence or big data, are part of the routines that contribute to this dynamic capability (Chirumalla, 2021; Warner and Wäger, 2019). The processes related to R&D and working with suppliers and customers to gather market insights and select new technologies are the mircofoundations of the sensing capability (Teece, 2007). In terms of Digital Kaizen, the mircofoundations reside in the process in which managers identify cross-functional pain points via mandatory workshops. Digital Kaizen stresses the need for collaboration between cross-functional teams, forming a continuous digital improvement strategy, and pursuing a bottom-up evolutionary approach, in line with Chirumalla (2021). The sensing capability and its microfoundations relate to the 'Discover improvement potential' stage of the Digital Kaizen approach, which aim to understand the current business situation and discover improvement opportunities (see table 2).

5.2.2 Seizing and the Digital Kaizen process model

Seizing refers to the decision-making capability of a firm to invest in the identified opportunities and take actions (Teece, 2007). Seizing enables capturing the values of the identified opportunities by deciding the necessary changes that are needed by firms (Ellström et al., 2022). The mircofoundations of the seizing capability include the processes and structures to create or revise business models, and build commitment by demonstrating leadership, culture, and effective communication (Chirumalla, 2021; Teece, 2007). Being able to identify the cross-functional pain points is not enough to take actions. The Digital Kaizen process model provides further activities to address these identified problems, where managers come up with proposals for digital transformation solutions and based on a steering committee's rating criteria rank both the pain points and the proposed solutions to satisfy the company's strategic objectives. These are the mircofoundations of Digital Kaizen for seizing opportunities. The seizing capability and its microfoundations help to crystalise the discussed digital solutions and turn them into concrete action points, which are in line with the 'Analyse the current method of work' and 'Generate original ideas' stages of Digital Kaizen.

5.2.3 Transforming and the Digital Kaizen process model

Transforming capabilities sustain the profitability of a business in a turbulent and uncertain environment (Teece, 2007). Transforming entails the redeployment and reconfiguration of assets and routines, which require mircofoundations such as achieving decentralised structures and managing complementary assets, as well as knowledge management and corporate governance capacities (Chirumalla, 2021; Teece, 2007; Warner and Wäger, 2019). The implementation of the digital solutions paired with engagement programs to encourage employees to participate in the uptake of the solutions reconfigures practices and assets and introduces new work processes and transformative technologies such as MyFPT and AkaLink at FPT Software to the workplace. This ultimately leads to a new business model

which may include the commercialisation of these solutions as offerings and service packages to clients as was the case at FPT software. The transformation capability, which involves enacting changes and evaluating their outcomes, can be mapped to the 'Develop and implement the improvement plan' and 'Evaluate the new method of work' steps of Digital Kaizen.
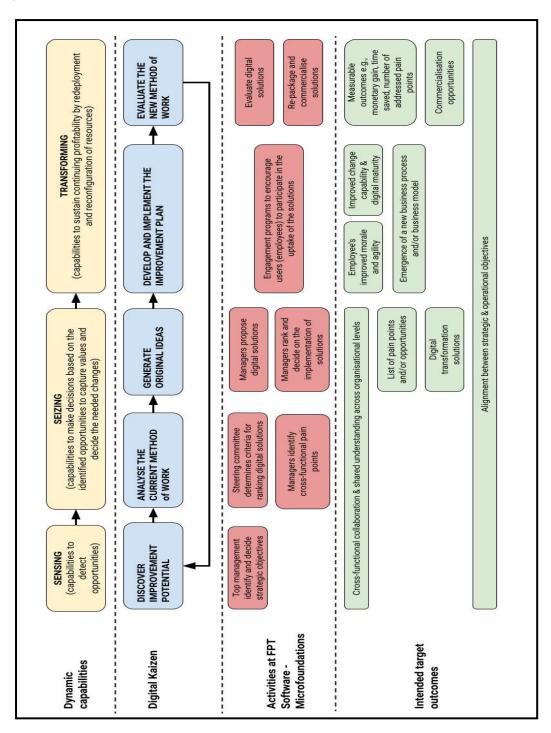

Figure 1. A Digital Kaizen process model informed by the dynamic capabilities framework

5.3   Intended target outcomes of the Digital Kaizen process model

With a focus on the Kaizen philosophy's aspects, process, standards, and people (see also subsection 2.4), the dynamic capabilities and their microfoundations intend to achieve some target outcomes that contribute to the set organisational goals.

The sensing and seizing capabilities and their microfoundations prompt cross-functional collaboration and a shared understanding between organisational stakeholders. Tangible outcomes of these capabilities are a list of pain points and/or opportunities, and the respective solutions. In Digital Kaizen, solving the 'right problems' is more crucial for digital transformation than 'solving these problems the right way'. As such, all managers are involved in the identification of functional pain points that are later systematically evaluated and prioritised according to their relevance and importance.

Other intended target outcomes are created and realised through the transforming capabilities. Adopting transformation solutions leads to changes in organisational processes. Thus, a new business process and/ or a new business model might emerge. As employees are involved in all activities, and benefit from the changes, employees' morale and agility are improved. At FPT Software, the issues were identified by members from all departments, which supported a more objective and possibly accurate identification process. The focus on the pain points that directly impact the employees' daily operations motivates employees to adopt digital solutions. The Digital Kaizen process model thus recommends and includes these activities and their micofoundations.

While focusing on small successes and having an agile mindset are recommended for successful digital transformation (see e.g., Henriette et al., 2016; Agrawal et al., 2019; Schaupensteiner et al., 2021), the complexity of large digital transformation agendas may lead to issues of "scope creep", especially when the transformation aims at addressing multiple objectives. The Digital Kaizen approach encourages organisations to address problems that are cross-functional (see also subsection 5.2.1) and obtains measurable outcomes, e.g., monetary gain and time saved.

The alignment between strategic and operational objectives is another important intended outcome. Implementing digital transformation by decomposing a large transformation initiative into smaller initiatives with quick-win solutions paves the way for meeting strategic objectives (Ellström et al., 2022). FPT Software transformed from a software development to a digital transformation consultancy and solution provider. In this context, the company successfully repackaged and commercialised their in-house digital transformation solutions. The commercialisation of internal solutions is part of the company's transforming capability, since the emerging solutions are re-packaged (i.e., redeployment and reconfiguration of resources) and sold to clients (i.e., to sustain profitability). The design and development of these solutions are based entirely on the organisation's internal problems, which reflects their sensing and seizing capabilities. FPT Software is not just reselling the digital transformation solutions i.e., software packages, but primarily the Digital Kaizen methodology and its success stories.

Prior research on dynamic capabilities and digital transformation recommended that organisations broaden their sensing capabilities by engaging with a wide range of internal and external stakeholders as well as by using digital infrastructures such as AI and big data technologies (Chirumalla, 2021; Warner and Wäger, 2019). That is, maintaining an awareness

of the business's entire ecosystem is critical for sensing opportunities and threats (Ellström et al., 2022; Teece, 2007). The commercialisation of internally generated digital transformation solutions as a possible outcome of digital transformation in the proposed model derived from the empirical data at FPT Software. It demonstrates that a company that uses sensing and subsequently other capabilities to gain awareness of its own situation, can actively influence its ecosystem through selling these solutions and the Digital Kaizen methodology. While we acknowledge that not all companies would want to sell their digital transformation solutions, this aspect contributes an interesting insight to the discussion of the impact of digital transformation on an organisation's business model from a dynamic capabilities perspective.

6 Future research

This case study presents Digital Kaizen as a new methodology and practical approach for conducting digital transformation. As the key informants were leaders and managers, the findings reflect the leadership team's beliefs and visions, rather than being based on a detailed account of how the approach impacted the activities at the micro level of the company. While we acknowledge this limitation as a further avenue for future research, the case analysis contributes insights into the philosophy, approach, and potential of Digital Kaizen as a process to guide digital transformation and build and exploit dynamic capabilities for digital transformation. We propose future research directions, which aim to advance theoretical and practical understanding of the process to implement digital transformation.

The concept of enablers might give the impression of a checklist of prerequisites that indicate organisational readiness for digital transformation. However, digital transformation is a dynamic process where the current state is constantly assessed, and new digital enhancements are continuously added. Thus, the enablers' importance will change as a company progresses through different stages of digital transformation. At FPT Software, we did not find evidence of external stakeholders' participation or explicit involvement in an ecosystem during the company's digital transformation process. This direct participation might take place at a later stage of the company's digital transformation process. Moreover, the enablers will probably also have different levels of importance according to the context of transformation e.g., the company's position in the supply/value chain or industry. Therefore, research in this area is necessary to understand the changing roles and importance of the enablers (as well as the inhibitors) of digital transformation. Future research should also investigate the conditions and capabilities that enable a company to focus on sensing its internal problems, rather than scouting the entire ecosystem to seize digital transformation opportunities.

Our research suggests the integration of the Kaizen philosophy into digital transformation practices. Future research may determine a more rigorous and comprehensive list of criteria and techniques for ranking and prioritising digital transformation solutions that are parts of a complex transformation program. It will also be helpful to focus on investigating the practices, such as the workshops, to unpack complex digital transformation programs into meaningful and manageable solutions that can be carried out in the Digital Kaizen way. More empirical studies adopting the dynamic capabilities framework and our proposed Digital Kaizen process model are also necessary. The viability of Digital Kaizen in different contexts

and workplace cultures, e.g., large versus small and medium enterprises should be considered. In this regard, action research to investigate empirically the Digital Kaizen approach will be valuable.

The nature of digital transformation, as organisational changes that involve both technology adoption and change management, opens opportunities for research that can combine theoretical frameworks in both fields to unpack digital transformation-related phenomena at the micro level of an organisation. The relevancy or fit of the technological solutions is one of the many aspects that should be considered (Goodhue, 1995), and a positive change experience or change history is another critical aspect that can contribute to the change management literature (Pettigrew et al., 2001).

7   Conclusion

The Digital Kaizen methodology addresses the identification and resolution of cross-functional pain points that are aligned with a company's strategic goals, through implementing incremental digital improvements that enhance business processes and people engagement, which in turn lead to sustainable and scalable digital transformation solutions. We put forward Digital Kaizen and the proposed Digital Kaizen process model that encompasses dynamic sensing, seizing, and transformation capabilities as a viable digital transformation approach that leverages digital technologies to re-define an organisation's value proposition and identity (Wessel et al., 2020). Our examination of the Digital Kaizen approach contributes to research on the relationship between dynamic capabilities and digital transformation as called for by e.g., Vial, (2019) and Warner and Wäger (2019). Its people-centric approach to conducting digital transformation identifies the employees as the main drivers of digital transformation, and people engagement as critical for developing and sustaining digital maturity.

Digital transformation programs are often large and complex, consisting of multiple related projects which depend on each other. Consequently, it is useful to have an approach that separates such large programs into smaller and more manageable pieces of work. In our study, the digital transformation program at FPT Software aimed at addressing several human resource-related issues, which were considered strategic objectives of the company. The workshops to identify the specific pain points and define digital transformation solutions, i.e., MyFPT and AkaLink, proved to be effective for achieving the intended decomposition of the large overall envisioned digital transformation program.

The case of FPT Software confirmed that successful digital transformation is strategically motivated and can be carried out in a stepwise manner that employs change management and communication techniques to engage with the employees, especially by striving for and demonstrating quick wins during the transformation process to gain their buy-in. Moreover, the study uncovered that the stepwise approach of Digital Kaizen contributes to a company's digital readiness for further transformation.

References

Agrawal, P., Narain, R., & Ullah, I. (2019). Analysis of barriers in implementation of digital transformation of supply chain using interpretive structural modelling approach. *Journal of Modelling in Management, 15*(1), 297-317.

Bekkhus, R. (2016). D*o KPIs used by CIOs decelerate digital business transformation? The case of ITIL.* Paper presented at the Digital Innovation, Technology, and Strategy Conference, Dublin, Ireland. *In the Proceedings of* DIGIT 2016. https://aisel.aisnet.org/digit2016/16

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2),471-482.

Brunet, A. P., & New, S. (2003). Kaizen in Japan: An empirical study. *International Journal of Operations & Production Management*, 23(12),1426-1446

Chanias, S., Myers, M. D., & Hess, T. (2019). Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. *The Journal of Strategic Information Systems, 28*(1), 17-33. doi:10.1016/j.jsis.2018.11.003

Chirumalla, K. (2021). Building digitally-enabled process innovation in the process industries: A dynamic capabilities approach. *Technovation* 105, 102256.

Correani, A., De Massis, A., Frattini, F., Petruzzelli, A. M., & Natalicchio, A. (2020). Implementing a digital strategy: Learning from the experience of three digital transformation projects. *California Management Review, 62*(4), 37-56. doi:10.1177/0008125620934864

Creswell, J. W. A, & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Fifth edition. ed.). Thousand Oaks, California: SAGE Publications, Inc.

Dubé, L., & Paré, G. (2003). Rigor in information systems positivist case research: current practices, trends, and recommendations. *MIS Quarterly*, 27(4), 597-636.

Ellström, D., Holtström, J., Berg, E., & Josefsson, C. (2022). Dynamic capabilities for digital transformation. *Journal of Strategy and Management,* 15, 272–286.

FPT Software (2019). Being Digital Transformation Consultant, FPT enhances global competitiveness FPT-Investor relations. Retrieved from https://www.fpt.com.vn/en/ir/featured-news/being-digital-transformation-consultant-fpt-enhances-global-competitiveness

FPT Software (2020). About FPT Software. Retrieved from https://www.fpt-software.com/about-fpt-software/

Gaffley, G., & Pelser, T. G. (2021). Developing a digital transformation model to enhance the strategy development process for leadership in the South African manufacturing sector. *South African Journal of Business Management, 52*(1). doi:10.4102/sajbm.v52i1.2357

Goodhue, D.L. (1995). Understanding User Evaluations of Information Systems. *Management Science,* 41, 1827–1844.

Henriette, E., Feki, M., & Boughzala, I. (2016). *Digital Transformation Challenges. In the Proceedings of MCIS 2016.* http://aisel.aisnet.org/mcis2016/33

Hess, T., Matt, C., Benlian, A., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive, 15*(2). https://aisel.aisnet.org/misqe/vol15/iss2/6

Horlach, B., Drews, P., & Schirmer, I. (2016). Bimodal IT: Business-IT alignment in the age of digital transformation. In V. Nissen, D. Stelzer, S. Straßburger & D. Fischer (eds). *Multikonferenz Wirtschaftsinformatik (MKWI)*, 1417-1428.

Imai, M., (2007). Gemba Kaizen. A Commonsense, Low-Cost Approach to Management in *Das Summa Summarum Des Management*. Springer, 7-15.

Ivancic, L., Vuksic, V. B., & Spremi, M. (2019). Mastering the Digital Transformation Process: Business Practices and Lessons Learned. *Technology Innovation Management Review, 9*.

Kane, G. C., Phillips, A. N., Copulsky, J. R., & Andrus, G. R. (2019). *The technology fallacy: How people are the real key to digital transformation*. Cambridge, Massachusetts: The MIT Press.

Kautz, K., & Bjerknes, G., (2015). Tales of IT Consultants: Understanding Psychological Contract Maintenance and Employment Termination. *Australasian Journal of Information Systems*, 19, 71-95.

Legner, C., Eymann, T., Hess, T., Matt, C., Böhmann, T., Drews, P., Mädche, A., Urbach, N., & Ahlemann, F., (2017). Digitalization: Opportunity and Challenge for the Business and Information Systems Engineering Community. *Business & Information Systems Engineering*, *59*(4), 301-308.

Li, L., Su, F., Zhang, W., & Mao, J.-Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. *Information Systems Journal*, *28*(6), 1129-1157. doi:10.1111/isj.12153

Loonam, J., Eaves, S., Kumar, V., & Parry, G. (2018). Towards digital transformation: Lessons learned from traditional organizations. *Strategic Change*, *27*(2), 101-109. doi:10.1002/jsc.2185

Macpherson, W. G., Lockhart, J. C., Kavan, H., & Iaquinto, A. L. (2015). Kaizen: A Japanese philosophy and system for business excellence. *Journal of Business Strategy*, *36*(5), 3-9. https://doi.org/10.1108/JBS-07-2014-0083

Maedche, A. (2016). Interview with Michael Nilles on "What Makes Leaders Successful in the Age of the Digital Transformation?". *Business & Information Systems Engineering*, *58*(4), 287-289. doi:10.1007/s12599-016-0437-1

Malloch, H. (1997). Strategic and HRM aspects of Kaizen: a case study. *New Technology, Work and Employment*, *12*(2), 108-122.

Masaaki, I. (1986). Kaizen: The key to Japan's competitive success. *New York, ltd: McGraw-Hill*.

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering, 57*(5), 339-343.

Meraviglia, L. (2018). Technology and counterfeiting in the fashion industry: Friends or foes? *Business Horizons, 61*(3), 467-475.

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly*, *36*(4). doi: 10.1016/j.giq.2019.06.002

Mizuno, S. (1988). *Company-wide total quality control*. Tokyo, Japan: Asian Productivity Organization.

Newitt, D. (1996). *Beyond BPR & TQM-Managing through processes: Is Kaizen enough?* Paper presented at the IEE Colloquium on Beyond TQM and Re-Engineering-Managing Through Process, 31.

Osmundsen, K., Iden, J., & Bygstad, B. (2018). Digital Transformation: Drivers, Success Factors, and Implications. *In the Proceedings of MCIS 2018.* https://aisel.aisnet.org/mcis2018/37

Perkin, N., & Abraham, P., (2017). *Building the Agile Business through Digital Transformation*. Kogan Page Publishers.

Pettigrew, A.M., Woodman, R.W., & Cameron, K.S. (2001). Studying Organizational Change and Development: Challenges for Future Research. *The Academy of Management Journal*, 44, 697–713.

Rogers, D. L., (2016). *The Digital Transformation Playbook : Rethink Your Business for the Digital Age*. New York: Columbia Business School Publishing.

Rueckel, D., Muehlburger, M., & Koch, S. (2020). An Updated Framework of Factors Enabling Digital Transformation. *Pacific Asia Journal of the Association for Information Systems*, 12, 1-26. doi:10.17705/1pais.12401

Schaupensteiner, N., González, S., & Borgmann, J. (2021). Impact of the Digital Transformation on the Transformation of the Workforce. In N. Urbach, M. Roeglinger, K. Kautz, R.A. Alias, C. Saunders & M. Wiener (eds.), *Digitalization Cases Vol. 2* (pp. 305-325). Cham, Switzerland: Springer.

Sidhu, S. (2019). Executive interview: Opportunities and challenges of digital transformation for Vietnam's businesses. Retrieved from https://vietnaminsider.vn/executive-interview-opportunities-and-challenges-of-digital-transformation-for-vietnams-businesses/

Singh, J., & Singh, H. (2009). Kaizen philosophy: a review of literature. *IUP Journal of Operations Management*, *8*(2), 51.

Smalley, A., & Kato, I. (2010). *Toyota Kaizen Methods: Six Steps to Improvement*. Portland: Portland: Productivity Press.

Steininger, D.M., Mikalef, P., Pateli, A., & Ortiz-De-Guinea, A. (2022). Dynamic Capabilities in Information Systems Research: A Critical Review, Synthesis of Current Knowledge, and Recommendations for Future Research. *Journal of the Association for Information Systems*, 23, 447–490.

Suárez-Barraza, M. F., & Lingham, T. (2008). Kaizen within Kaizen teams: continuous and process improvements in a Spanish municipality. *Asian Journal on Quality, 9*(1), 1-21.

Teece, D.J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal,* 28, 1319–1350.

Teece, D.J. (2018). Dynamic capabilities as (workable) management systems theory. *Journal of Management and Organization,* 24, 359–368.

Urbach, N., & Röglinger, M. (2018*). Introduction to Digitalization Cases. How Organizations Rethink Their Business for the Digital Age.* In N. Urbach & M. Röglinger (2018), *Digitalization Cases*. *How Organizations Rethink Their Business for the Digital Age* (pp. 1-14). Cham, Switzerland: Springer*.*

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems, 28*(2), 118-144.

von Leipzig, T., Gamp, M., Manz, D., Schöttle, K., Ohlhausen, P., Oosthuizen, G., Palm, D., & von Leipzig, K., (2017). Initialising Customer-Orientated Digital Transformation in Enterprises. *Procedia Manufacturing* (8), 517-524.

Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of Information Systems, 4*(2), 74-81.

Warner, K.S.R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning,* 52, 326–349.

Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Jensen, T. B., (2020). Unpacking the Difference between Digital Transformation and IT-Enabled Organizational Transformation. *Journal of Association of Information Systems, 22*(1), 102-129.

Wickens, P. D. (1990). Production management: Japanese and British approaches. *IEEE Proceedings A (Physical Science, Measurement and Instrumentation, Management and Education), 137*(1), 52-54.

Wittenberg, G. (1994). Kaizen-The many ways of getting better. *Assembly Automation, 14*(4), 12-17.

doi: https://doi.org/10.3127/ajis.v26i0.3851