Spearheading Digital Transformation
The Role of the Chief Digital Officer

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Spearheading Digital Transformation: The Role of the Chief Digital Officer

Short Paper

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Abstract

We explore the role of a Chief Digital Officer (CDO) as she successfully navigated the digital transformation of GEM, a global firm in the brand and events management industry, before and during the Covid-19 pandemic. Drawing on the principles of punctuated equilibrium theory, we conducted in-depth interviews with the CDO, senior management representatives and operational personnel, to investigate both the challenges and the successes of digital transformation at GEM. Our findings relate to the practicalities of digital transformation, as well as to the theoretical aspects of the punctuated equilibrium that we explored.

Keywords: Chief Digital Officer, Digital Leadership, Digital Technology, Digital Transformation, Case Study, Punctuated Equilibrium Theory

Introduction

Digital transformation (DT) is a defining component of contemporary research into the effects of digital technology on organisations. We have already seen a wealth of research into the nature of DT, and the way its impacts have been felt, across a wide range of industry sectors (Vial, 2019; Volberda et al., 2021; Kraus et al., 2022). Models of digital maturity and ecosystems have been proposed (Kane, 2017), while field studies of how DT is experienced and its impacts are felt add nuance to the scholarly knowledge base (Mettler, 2018). Friedrich et al. (2016) note that companies are seeking to identify the individual best-positioned to lead the way into the digital future and engage in DT. Increasingly, this person is identified as the Chief Digital Officer (CDO), although CDOs could be charged with a number of different responsibilities given that each organisation is unique and has different needs. The first CDOs were appointed twenty years ago, yet even today they are not that commonly encountered. Most CDOs transfer into this role from a different position, e.g. Chief Marketing Officer (CMO) or Chief Strategy Officer (CSO); few have worked as CDOs in multiple organisations. While a few scholars dismiss the CDO as a fad doomed to disappear (Wade, 2020) others are more optimistic and suggest that CDOs will provide long term value to the organisation (Singh et al., 2017). Academic research into DT has tended to focus more on models of organisational change and less on the people who lead that change. As a result there are few in-depth investigations of what CDOs actually do as they navigate their organisations' DT journeys (Davison et al., 2023). Consequently, there is a limited understanding of how CDOs both become familiar with the organisational circumstances and culture, and succeed in enacting change. We problematise (Alvesson and Sandberg, 2011)

this poor understanding as an opportunity for research, and thus set up the following research question: How can a CDO digitally transform a global firm? We seek to answer this question by investigating the role of the CDO in leading a DT initiative in GEM (a pseudonym), a global but Asia Pacific-focused and headquartered brand communication and events management company. Our problematisation involves the application of punctuated equilibrium theory (PET) (Gersick, 1991): we suggest that GEM's previously stable but non-digital state was punctuated by a combination of the CDO's DT initiatives and Covid-19, leading to an emerging new equilibrium. Following this introduction, we briefly review the relevant literature before explaining our methods, which involve a case study informed by interviews. The case material follows. We discuss the case in the light of PET and highlight our contributions to theory and practice, before concluding with future research directions.

Literature Review

Digital Transformation

Many scholars (e.g. Wessel et al., 2021) affirm that DT has evolved from the longer-established IT-based organisational transformation. The latter is associated with technology supporting the organisation's value proposition and strengthening its identity, whereas the former requires transformation of processes and change to the identity. Over the last twenty years, organisations in all industry sectors have been exploring how digital technologies can "renew and transform their business models" (Kohli and Melville, 2019). When DT takes place, business models are not only renewed with digital technologies but also intertwined with them (Wilmelius et al., 2021): business process cannot be separated from digital technology. Since 2019, DT has been strengthened further by the impact of the Covid-19 epidemic (Kraus et al., 2022), because many organisations have found that their traditional working habits have been interrupted and they have essentially been forced into a digital mode of operation.

Given the ongoing industry and research interests in digital technologies, it is not surprising that numerous definitions of DT have been suggested. These range from the simple "an organizational transformation that integrates digital technologies and business processes in a digital economy" (Liu et al., 2011, p.1728) to the more comprehensive "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial, 2019, p.121). We follow Wessel et al. (2021) and define DT as "activities that leverage digital technology in both defining an organisation's value proposition and leading to the emergence of a new organizational identity". Although digital technologies enable new forms of collaboration, they also generate dependencies among actors with disparate interests, resulting in a more complex business setting (Vial, 2019). DT is thus more than just integrating digital technologies and business processes. The associated change management is crucial to the success of DT and in consequence has been gaining more scholarly and practitioner attention (Volberda et al., 2021). Kraus et al. (2022) synthesised a framework of DT research for the areas of business and management, illustrating the significance of strategic responses for enhancing the success of the change process in organisations. To understand DT-related change management more deeply, research in digital leadership and digital culture are two significant areas to examine.

Digital Leadership

Fitzgerald et al. (2014) argue that leadership initiatives and financial support from top management have the potential to effect a positive outcome, where DT is concerned. Leadership initiatives additionally spur the remainder of the organisation to adopt and employ DT and thus adhere to an all-encompssing digital vision (Vial, 2019; Weritz et al., 2020). Executives not only need to endorse digital change but must also promulgate the implementation and of digital technology in order to enhance their employees' confidence in their leaders' digital fluency (Kane et al., 2015). One of the differences between organisations that might be considered 'digital leaders' or 'digital laggards' is their digital leadership orientation (Kane et al., 2015). Kane et al. (2017) confirmed that 14% of 3,500 globally-distributed business executives, managers, and analysts regarded digital leadership as a pivotal contributor to digital success. Effective digital leadership requires capabilities to drive DT (Westerman et al., 2011). Digital leaders can also construct IT-business relationships, which further stimulate technology-based change and illustrate how digital leadership beneficially impacts DT.

The key leadership role in the context of DT is the Chief Digital Officer (CDO). Although CDOs have been in office for twenty years now, not all organisations employ them, nor is there a single standard description

of what CDOs actually do. Nevertheless, Vial (2019, p.129) notes that "the creation of a chief digital officer (CDO) position signals the strategic nature of DT for the entire organization", while Davison et al. (2023) argue that CDOs "have the potential to contribute strong strategic leadership to DT". CDOs are particularly valued when they have digital leadership skills (Kessel and Graf-Vlachy, 2021). Many CDOs were formerly Chief Information Officers (CIO) who developed their business strategy portfolio (Singh and Hess, 2017). Friedrich et al. (2016) usefully contribute to this literature by identifying five CDO archetypes, each with a different set of responsibilities, viz.: progressive thinkers focus on the development of digital strategy; creative disrupters focus more on disruptive digital technologies; customer advocates are market-driven aiming to satisfy customers; innovative technologists look more like Chief Technology Officers (CTOs) who promote digital technologies to transform the value chain; and universalists try to do everything.

Digital Culture

According to the Boston Consulting Group (BCG) (2018), digital champions accept the legitimacy of three prerequisite requirements: investments in digital capabilities, recruitment of digital experts and development of a digital culture. These requirements appear appropriate given that an organisation without a digital culture is unlikely to witness the successful adoption of digital technology. Moreover, since a digital vision will flourish within a digital culture, organisations need to consider how they can build a culture that is founded on the use of digital technologies. Scholars (Soule et al., 2016; Kane et al., 2017) opine that the use of digital technology stimulates innovative and collaborative behaviour. This suggests that organisations should encourage, or even mandate, the use of digital technology to drive collaboration and innovation, in order to influence progress toward achieving the benefits associated with digital transformation. If digital technology is not implemented in order to foster collaboration and innovation, its positive impacts may be limited to operational silos. Organisations then will only reach the DT state of being fashionable yet not realising across-the-board DT. Therefore, senior executives responsible for DT should not limit themselves to the simple application of digital technology; instead, they need to find ways to apply it intensively to innovative and collaborative initiatives, as this can help ensure that the organisation will continually adapt to emerging technologies, developing new strategies and visions. Thus, we can see how digital culture affects the DT journey of an organisation. To this end, organisations also need a digital culture (Geissbauer et al., 2016).

Punctuated Equilibrium Theory

Punctuated Equilibrium Theory (PET) was developed in the discipline of paleobiology as an alternative to phyletic gradualism, explaining interruptions in the fossil record (Eldredge and Gould, 1972). In organisations, a stable state or equilibrium that may last for a considerable period of time is occasionally interrupted by a brief burst (or punctuation) of profound change (Wong and Davison, 2018). Gersick (1991) observed how these interruptions can lead to dramatic enhancements in organisational productivity. In the literature, the origins of the punctuating changes are often focused on a change agent who deliberately interrupts (or disrupts) the stable organisational state. The "action potential of a change agent" (Wong and Davison, 2018) can be powerful for organisations that hope to induce radical change. However, we recognise that while human-induced change that is mediated via a change agent dominates the literature, changes can also come from non-human sources, notably in the environment. An example of an environmental interruption that has the action potential to precipitate radical change is Covid-19.

PET has been applied in information systems research occasionally. For instance, Newman and Robey (1992) applied PET to explain how information system users and developers engage in steady relationships punctuated by revolutionary encounters that may lead to a new direction in the systems development project. Meanwhile Sabherwal et al. (2001) discovered that strategic alignment practices oscillate between periods of evolutionary and revolutionary development. Street and Meister (2004) used a PET-based theoretical model to examine how the management team of a small business organisation developed an IS-enabled solution to meet their growth needs. Wong and Davison (2018) employed PET to demonstrate how consultants (the change agents) instituted radical change in a global logistics firm, dramatically improving both internal knowledge sharing practice and customer satisfaction with the firm's services.

We selected PET as a guiding theory because we recognised the potential that a CDO could bring in the role of a change agent, radically disrupting the status quo and underlying organisational structures, in order to achieve an enhanced level of performance. We also recognised that the ongoing Covid-19 pandemic could

reasonably be considered to constitute an interruption to the equilibrium, albeit one that stems from the environment and is not subject to organisational control.

Context and Methodology

As we sought to answer our research question and test the potential value of PET, we identified a unique case for investigation: Global Events Management (GEM). GEM is a global business that hired a CDO in order to facilitate its DT journey. At the time of the research, we found that the CDO has not just survived but thrived, far exceeding the 2.5-year tenure typical for the role (Wade, 2020). Indeed, the CDO role is now firmly embedded at GEM with the DT process having completed its first phase, even as many more opportunities lie ahead. For instance, in late 2022 GEM's Chairman indicated his vision for the firm to become data-driven by 2025.

Having established our research question, viz.: "How can a CDO digitally transform a global firm?", we decided to adopt the case study method as this would allow us to explore the case organisation in appropriate depth. We developed an interview protocol (see Appendix) comprising twenty questions that drew both on the prior DT literature and on PET. In order to form an initial impression of the situation at GEM, which we report in this paper, we interviewed six people: the CDO, the Group President, the Chief Technology Officer (CTO), the Executive Director for China operations (EDC), and two members of the CDO's staff: the Digital Strategy Director and a Senior Product Manager. These interviewees were purposefully selected on the basis that they were familiar with the management of DT in GEM, albeit in different roles. The President and the EDC provided a general business strategic perspective. The CDO and CTO provided a technology management perspective. The two members of the CDO's staff provided a digital strategy execution perspective from the point of view of people who engage with regular employees. Each interview lasted approximately one hour and all interviews were completed in February 2023. The interview questions in the protocol were used selectively, since not all were appropriate for every interviewee. In addition to interview data, we also accessed some of GEM's internal reports such as a PowerPoint presentation developed by the CDO that outlined how specific digital technologies contribute to DT, and GEM's website with statements from the Chairman.

Case Study

Historical Background

GEM was founded in the late 20th century and today is a global leader in brand and event management, offering a wide range of services to its clients (typically brand leaders in many different industry sectors) related to events and their associated marketing and communications. GEM has over 2000 employees, with 44 operating locations in 35 countries and a strong Asia Pacific focus. Management personnel have an average tenure of 25 years. Before 2018, GEM was not technologically advanced: business processes had hardly changed in 50 years, with manual data entry and much duplication of work. This corresponds to the stable but dysfunctional equilibrium aspect of PET (Gersick, 1991). However, the market situation was becoming increasingly competitive and GEM found that it was being disrupted by younger, more agile firms. GEM was disadvantaged because it employed many older, low-wage, low-skill clerical staff. The CTO noted that pre-2018, GEM's corporate culture was characterised by tight cost controls and both a fear of and a reluctance to invest in new technology, even though such investments might help to secure the future viability of the firm. When systems were bought, they were not subject to any strategic requirement to be interoperable with other systems, with the result that GEM's systems were completely unintegrated.

Initial Digital Transformation Ideas and Actions

In 2016, the long-serving Chairman of GEM first considered the need for DT, influenced by declining profits and increasing competition. However, as GEM's Group President remarked "We had no clue how to go about doing it. We thought of it as a fixed cost infrastructure approach and started to search around for talents". Their initial forays were not successful: they hired several IT managers, all of whom failed to achieve any lasting impact. It was not until January 2018 that the current CDO was hired. The EDC commented that this appointment was so dramatic that it was "like a big punch" that would end up having a significant impact on the way GEM operated. Hiring the CDO was thus the first punctuation to GEM's stable equilibrium. The CDO met GEM's senior management, most of whom were sceptical about the new role, in March 2018. The new CDO was an industry veteran (a former Chief Strategy Officer at a digital

marketing firm) with a flair for innovation and technology-driven change, particularly consumer analytics. She leveraged her CSO background in her new position as CDO, taking on a portfolio that encompassed the progressive thinker and customer advocate archetypes (Friedrich et al., 2016). In late 2018, she also hired a new CTO who reported to her and handled the digital core technology issues. However, as she noted "GEM's reputation was so traditional that customers did not believe that GEM could offer the higher value services, such as digital solutions and data analytics", often associated with a digitally-transformed firm. This situation was compounded by the decentralised nature of GEM's business model, where business units had complete autonomy to act as they liked, while competitors (often fronted by ex-GEM managers) with a more technologically-savvy approach started to steal long-term customers. Thus, while she envisaged further punctuations to GEM's status quo, including the hiring of the CTO, she was hampered by internal resistance from senior managers.

A Two-Phase Approach to Digital Transformation: Culture Change and Buy In, then Roll Out

In her first few months after arrival, the new CDO experienced a steep learning curve. She had to familiarise herself with GEM's culture and business model by engaging in extensive conversations with managers and employees globally. She quickly appreciated how difficult it would be to introduce DT and thus transform the organisation given the fear of technology among older employees and managers, and the very traditional business approaches, including disconnected (legacy) information systems. As the Group President mentioned, the CDO "needed to get buy-in from the organisation and its various teams first". Indeed, the CDO's dynamic and energetic personality contrasted markedly with most employees who failed to understand or appreciate her presentations and communications. The Group President recalled, "she [the CDO] didn't understand why the employees didn't understand her. There were lots of complaints by people … no one really appreciated the forward thinking at that time or why we needed to embark on this journey". The EDC commented that the CDO is a passionate individual with many ideas that she wants to develop that will benefit GEM, but first she had to build trust and respect with employees which took considerable effort and persistence. From a PET perspective, it may seem impossible to punctuate the stable equilibrium if the people and culture that are part of that equilibrium are not ready to change. The lack of readiness for change is increasingly recognised as a key barrier to DT. The CDO noted how she "consistently told the same message over and over again, adjusting the terminology so as to help people to understand, helping them to pitch and win business and give both themselves and GEM a higher status in front of industry people and key clients". This consistent and persistent pressure was designed to coax people into accepting new cultural norms and new business processes, which were intertwined with digital technologies. Thus, although the DT did constitute a radical shift in the culture, it had to be introduced gently if it was to be accepted.

The CDO bolstered her position on the technology side by hiring a new CTO in December 2018, firing the previous IT manager and many other non-performing employees. Together with the CTO, she then took steps to fix some of the more pressing infrastructure-related technological problems: slow internet connectivity, ineffective Wi-Fi networks in offices, inoperable email services, and a weakly aligned ERP system. All of the basic infrastructural changes were implemented by the end of 2019, i.e. literally weeks before Covid-19 struck. She also started to undertake requirements analysis interviews with employees so as to ensure that new systems would meet their needs. These actions benefitted many employees who appreciated the changes, became more receptive to digital change and so helped to convert erstwhile opponents into friends.

Once the cultural environment was prepared, the CDO was in a position to roll out DT changes. All information systems were reorganised under a single technology stack and a common interface that was more simple for technologically-unsophisticated employees and managers to access and use. This enhanced internal communications and enabled cross-border team projects. New employees could be onboarded within one day (pre-DT it took up to two weeks). Financial reporting was automated, eliminating much manual work, improving accuracy and enabling employees to focus on higher-value work. New digital products were unveiled, notably a bespoke project management system that included a venue floor-mapping tool that allowed each exhibitor at an event managed by GEM to request different services for specific areas, e.g. tables, chairs, lighting, a process that was formerly paper-based and prone to error. Another digital innovation was a data analytics platform designed to help brand managers assess the brand experience of their audiences: it helps brand managers to make decisions regarding how they pitch for

customers, or identify new opportunities. In rolling out these digital applications, the CDO sometimes encountered strong resistance from both managers and employees, especially in remote locations. Occasionally she had to call on the Group President or the Chairman to help her eliminate the resistance.

The Unanticipated and Ironic Blessings of Covid-19

Despite its profoundly negative impact on the global economy, Covid-19 proved to be a blessing in disguise for GEM and the CDO. During 2019, the CDO and CTO were working to overhaul the basic IT infrastructure and a range of office applications via Microsoft 365, including video conferencing (MS Teams). They were also moving their ERP to the cloud (not SaaS but a cloud installation of their own ERP software license). They completed this realignment of technologies at the end of 2019, weeks before Covid-19 struck. The timing proved fortuitous: when Covid-19-inspired lockdowns took over, GEM found that its employees had to work at home, that international travel was almost impossible, and so that all work had to be completed online. With the new information systems in place, notably Microsoft 365, this was feasible. As we note above, the CDO had assiduously prepared the ground for DT, persuading employees and managers alike to accept the new cultural norms and process standards. But Covid-19 allowed no such preparation: organisations had to transform their processes instantaneously. Given the impetus of Covid-19, employees who might have resisted these changes fiercely had no choice but to accept them. GEM's Chairman had previously been very anti-video conferencing, but in 2020 he became one of its most ardent supporters. With his cost control mentality, he may also have been buoyed by the savings that video conferencing enabled: US$10 million of reduced travel costs in 2020 and 2021. In 2023, however, there is no sign of a return to the pre-Covid normal: Microsoft Teams has become the new norm for communication. From a PET perspective, Covid-19 thus constitutes an environmental punctuation to the equilibrium that cannot be ignored.

The CDO-CTO Partnership

During the CDO's five-year journey with GEM, the contributions made by the CTO cannot be underestimated. All the people we interviewed commented on how the CDO and CTO work together as an inseparable team, yet with very different responsibilities. The CTO reports to the CDO and is mostly responsible for internal technology matters, whereas the CDO is responsible for strategic planning, reporting to the Chairman and communicating with internal stakeholders and strategy. The CDO also serves as the public face of the DT process to the global client audience and to the public, attending international marketing events. The Group President observed that the CDO played the role of an ambassador to bring out the right message about DT to GEM employees. Looking ahead, the CDO-CTO partnership has fresh challenges: the Chairman has asked the CDO to transform her office from a cost centre to a profit centre. Scholars who apply PET often assume single sources of punctuations: a key change agent or a single activity that interrupts a stable equilibrium. At GEM, the situation is more complex. Not only are there both human- and environment-induced interruptions, but on the human side there are multiple agents and multiple activities.

Discussion

In this case study we have focused on how a CDO has been able to navigate the turbulent environment associated with DT in GEM, a global events and brand management firm. Theoretically, our investigation was motivated by PET, which suggests that significant improvements can be realised in situations where the underlying structures are transformed through the intervention of a change agent. Two primary change agents can be identified in this case: the CDO and Covid-19. The CDO undertook a series of actions to prepare GEM for DT before taking a number of specific actions, in particular hiring a new CTO, revamping digital infrastructures, and rolling out new digital technologies that were intertwined with and embedded in business processes. Two years after the CDO's appointment, the rapid emergence of Covid-19 unleashed unprecedented impacts on the global economy, with dramatic impacts for all organisations. Fortuitously, GEM was well-prepared for Covid-19, yet it still constitutes the second change agent.

Prior to the CDO's appointment, GEM was in poor shape, with outdated information systems, a declining customer base and inadequately skilled employees responsible for IT support. PET provides an overarching theoretical argument to explain how punctuating GEM's stable but dysfunctional status quo enabled radical transformations to both its organisational culture and its operational processes. Some of these changes were

initiated deliberately by the CDO, for instance changes to: technology (Soule et al., 2016; BCG, 2018), notably quick fixes to recurrent problems such as the Wi-Fi networks, email and ERP, as well as Microsoft 365 and videoconferencing; strategy (Vial, 2019), notably the development and implementation of a strategic plan for the digital transformation of GEM and the promotion of a supporting digital culture (BCG, 2018); and resources, notably the firing of incompetent or unproductive employees and the hiring of a new team to staff the CDO's office (BCG, 2018). In all these activities, the participation of both the CDO and CTO was critical and indeed we find that the CDO and CTO have a very strong relationship with complementary skills that proved essential to the success of the DT initiatives and indeed the renewed health of GEM. Through this transformation, GEM has been reinvented as a digital business and is now well on the way to its 2025 target of being a data-driven organisation.

In the specific context of GEM, but also considering the fate of CDOs more generally, the longer-term success of the CDO is notable. As Wade (2020) noted, CDOs' tenure rarely exceeds 2.5 years. However, the CDO at GEM has already reached the 5-year mark. As the CDO noted when she first visited regional offices, she could sense the caution with which she was regarded: some managers actively opposed her planned changes and others were reluctant to support her. The majority of internal stakeholders were understandably suspicious of her planned changes to their work lives. However, by listening to people at all levels, and indeed involving them in user requirements analysis, she was able to ensure that she was in a position to deliver technology-based outcomes that met their needs and indeed enhanced their quality of work life. These many activities were essential for the later success of her planned DT initiatives, and thus demonstrate how even radical change may require incremental preparation. Instead of launching DT directly, she persuaded her colleagues to accept changes to the culture and the way technology created value before punctuating the old technology equilibrium with significant changes to both processes and structures, creating a new environment that was ultimately appreciated by all stakeholders. However, this took considerable time, patience and perseverance, as well as the unflagging support of GEM's executive board, notably the Chairman and the Group President (Vial, 2019). As the EDC mentioned, "the Chairman's endorsement is very important. It supports them putting together various resources and then finding something good for our industry". For instance, although the CDO made some personnel changes in her first year, including hiring the CTO and firing incompetent staff, changes to the culture, technology and policy had to wait till her second year, and significant improvements were only realised early in her third year, which coincided with the outbreak of Covid-19.

In recent studies involving PET, the punctuations have had human origins: they existed because they were thought and spoken into existence (Eriksson and Ågerfalk, 2022) by key change agents such as, in this case, the CDO. In contrast, we identified a punctuation with an environmental origin: the Covid-19 pandemic and its associated consequences. As an interruption, Covid-19 proved to have no equal: the CDO had spent considerable time and energy to prepare GEM for DT, persuading employees and managers alike to accept the new reality that would happen when digital technologies were embedded into business processes. Covid-19 allowed no such preparation: it simply jumped into the foreground and demanded immediate attention. Organisations had no choice but to adapt, or die. GEM was fortunately well-prepared to change, because of the CDO's prior work and so a potentially difficult situation became much easier to handle. Nevertheless, Covid-19 provided an unrejectable impetus to change. This has clear parallels with the situation, 66 million years ago, that would eventually lead to the development of PET (Eldredge and Gould, 1972), namely the Chicxulub asteroid impact that precipitated the end of the realm of the terrestrial dinosaurs, as witnessed in the geologic and fossil records with iridium deposits and tektites (LaPalma et al., 2019). Naturally, the Chicxulub asteroid was far more dramatic as a punctuation to the equilibrium than Covid-19 has proved to be (75% of all plant and animal species vs. 0.1% of the human population), but the sources of the punctuations are arguably comparable: they are extra-human in origin, and thus far beyond the control of organisations. Recognising these origins is important theoretically because it enables us to extend PET by allowing for the inclusion of punctuating events that transcend human origins. Although Covid-19 is but one example, there are likely to be many others, not least as a function of climate change and the emergence of zoonotic diseases.

Just as there are many types of CDO (Friedrich et al., 2016) so there are many different ways in which DT may be experienced. Although it might seem desirable to identify a common pattern to DT, and indeed to CDOs, such universality is likely a chimera. The case of GEM and its CDO, which we have described in this paper, is likely to be unique. We do not suggest that the practical lessons gleaned here can be automatically generalised to other organisations, even in the same industry. The case is not representative of many others,

and nor should it be. However, do we not see this as a limitation of the research. Instead, we see this as being one of many stories about the success and failure of DT in organisations. A significant strength of the research relates to our application and extension of PET. Although PET was first developed as a theory to explain situations, researchers today increasingly use it to predict the impacts of change. Despite this potential, PET is seldom encountered in the literature. We encourage researchers to examine the predictive potential of PET and to consider how it could be further developed in future work.

Conclusion

In this case study exploration of GEM, a global firm in the branding and events management business, we have briefly charted the fortunes of the firm's CDO, an energetic, passionate and inspired lady who has overcome considerable resistance from employees and managers alike as she charted and navigated the digital transformation journey for the traditional firm. Her success is due to many factors. Some of these owe much to her personal persistence and ingenuity, top management support, a critical partnership with the firm's CTO, and her ability to listen to end-user requirements. A key factor entirely beyond her control was the unexpected blessing of Covid-19, which precipitated irresistible pressure for change, but also enabled many positives such as cost savings realised through the use of video conferencing technology. Although many CDOs leave their jobs prematurely (Wade, 2020), GEM's CDO has defied expectations and now commands considerable respect, as she helps GEM to reinvent itself as a data-driven firm, in line with its Chairman's aspirations. Despite the successful nature of her role, our study is limited by its small data set and limited scope. We provide evidence to support the application of PET in DT contexts characterised by longstanding status quos and the presence of a significant change agent who has the personal authority to make radical changes to underlying organisational structures. However, this study constitutes only the first of many steps. We need to expand our data set with a much wider range of sources: we will be interviewing more employees at GEM and aim to engage in cross-case analysis by exploring DT in a second organisation, idally one whose CDO does not belong to the 'progressive thinker' archetype. With that larger data set, we aim to undertake a grounded and thematic analysis (cf. Gioia et al., 2013) that will help us to inductively ground a new theory about DT and CDOs. We expect to chart the continued journey of GEM as it continues to encounter DT. We believe that this work will be valuable for practitioners, especially CDOs who are eager to learn from other CDOs' experiences, and for researchers who explore the role of the CDO in DT. Finally we recommend that researchers consider PET as a viable theoretical lens for explaining and predicting revolutionary technological change, and that they explore the role of the CDO in DT initiatives.

References

Alvesson, M. and Sandberg, J. (2011). Generating research questions through problematization, Academy of Management Review, 36(2), 247-271.

BCG (2018). *Digital Maturity is Paying Off*. Retrieved from http://image-src.bcg.com/Images/BCG-Digital-Maturity-Is-Paying-Off-June-2018_tcm9-195218.pdf

Berkman, R. (2013). The emergence of chief digital officers, *MIT Sloan Management Review*, https://sloanreview.mit.edu/article/social-business-helps-usher-in-new-executive-the-cdo/.

Davison, R.M., Wong, L.H.M. and Peng, J. (2023). The art of digital transformation as crafted by a chief digital officer, *International Journal of Information Management*, 69, 102617, 1-9.

Eldredge, N. and Gould, S.S.J. (1972). Punctuated equilibria: An alternative to phyletic gradualism, In Schopf, T.J.M. (Ed.), *Models in Paleobiology*. San Francisco: Freeman Cooper, 82-115.

Eriksson, O. and Ågerfalk, P.J. (2022). Speaking things into existence: Ontological foundations of identity representation and management, *Information Systems Journal* 32, 1, 33-60.

Fitzgerald, M., Kruschwitz, N., Bonnet, D. & Welch, M. (2014). Embracing digital technology: A new strategic imperative, *MIT Sloan Management Review* 55, 2, 1-12.

Friedrich, R., Pachmajer, M. and Curran, C. (2016). *The right CDO for your company's future: The five archetypes of a chief digital officer*, Retrieved from https://www.strategyand.pwc.com/gx/en/insights/2016/the-right-cdo-companys-future/the-right-cdo-for-your-companys-future.pdf

Geissbauer, R., Vedso, J. and Schrauf, S. (2016). *Industry 4.0: Building the Digital Enterprise*. Retrieved from https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf.

Gersick, C.J.G. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm, *Academy of Management Review* 16 (1), 10-36.

Gioia, D.A., Corley, K.G. & Hamilton, A.L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia Methodology, *Organizational Research Methods 16*(1), 15-31.
Kane, G. C., Palmer, D., Nguyen-Phillips, A., Kiron, D. & Buckley, N. (2015). Strategy, not technology, drives digital transformation, *MIT Sloan Management Review* 14, 1-25.
Kane, G. C., Palmer, D., Nguyen-Phillips, A., Kiron, D. & Buckley, N. (2017). Achieving digital maturity, *MIT Sloan Management Review* 59, 1, 1-29.
Kessel, L. and Graf-Vlachy, L. (2021). Chief digital officers: Review and research agenda, *Wirtschaftsinformatik Proceedings*, Track 19, paper 3.
Kohli, R. & Melville, N.P. (2019). Digital innovation: A review and synthesis, *Information Systems Journal* 29, 1, 200-223.
Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management*, *63*, 102466.
LaPalma, R.A., Smit, J., Burnham, D.A., Kuiper, K., Manning, P.L., Oleinik, A., Larson, P., Maurrasse, F.J., Vellekoop, J., Richards, M.A., Gurche, L. and Alvarez, W. (2019). A seismically induced onshore surge deposit at the KPg boundary, North Dakota, *Proceedings of the National Academy of Sciences* 116, 17, 8190-8199.
Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49, 10, 1728–1742.
Mettler, T. & Pinto, R. (2018). Evolutionary paths and influencing factors towards digital maturity: An analysis of the status quo in Swiss hospitals. *Technological Forecasting and Social Change*, 133, 104-117.
Newman, M. and D. Robey (1992). A social process model of user-analyst relationships, *MIS Quarterly* 16, 2, 249-266.
Sabherwal, R., Hirschheim, R., and Goles, T. (2001). The dynamics of alignment: Insights from a punctuated equilibrium model, *Organization Science*, 12, 2, 179-197.
Singh, A., and Hess, T. (2017). How chief digital officers promote the digital transformation of their companies, *MIS Quarterly Executive* 16, 1, 1-17.
Singh, A., Klarner, P., and Hess, T. (2020). How do chief digital officers pursue digital transformation activities? The role of organization design parameters, *Long Range Planning* 53, 3, 101890.
Soule, D. L., Puram, A., Westerman, G. F. & Bonnet, D. (2016). *Becoming a Digital Organization: The Journey to Digital Dexterity*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2697688.
Vial, G. (2019). Understanding digital transformation: A review and a research agenda, *Journal of Strategic Information Systems* 28, 2, 118–144.
Volberda, H.W., Khanagha, S., Baden-Fuller, C., Mihalache, O.R. and Birkinshaw, J. (2021). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines, and introducing new organizational forms, *Long Range Planning* 43, 5, 102110.
Wade, M. (2020). From dazzling to departed - Why chief digital officers are doomed to fail, https://www.weforum.org/agenda/2020/02/chief-digital-officer-cdo-skills-tenure-fail/
Weritz, P., Braojos, J. & Matute, J. (2020). Exploring the antecedents of digital transformation: Dynamic capabilities and digital culture aspects to achieve digital maturity, *Proceedings of the 26th Americas Conference on Information Systems*, 1-22.
Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J. and Jensen, T.B. (2021). Unpacking the difference between digital transformation and IT-enabled organizational transformation, *Journal of the AIS* 22, 1, 102-129.
Westerman, G., Calméjane, C., Bonnet, D., Ferraris, P. & McAfee, A. (2011). Digital transformation: A roadmap for billion-dollar organisations. *MIT Center for Digital Business and Cap Gemini Consulting* 1, 1-68.
Wilmelius, H., Mathiassen, L., Holmström, J. and Keil, M. (2021). A paradoxical perspective on technology renewal in digital transformation, *Information Systems Journal* 31, 1, 198-225.
Wong, L.H.M., and Davison, R.M. (2018). Knowledge sharing in a global logistics provider: An action research project, *Information & Management* 55, 5, 547-557.