Guardrails for the Future: How Digital Humanism Guides Responsible Technological Convergence

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Abstract
Through the lens of Digital Humanism and technological singularity, the study critically examines the role of dynamic capabilities (DCs) of Chief Digital Officers (CDOs) and their influence on triggering digitalisation and accelerating technological convergence through clients and employees. This is evaluated by employing a single case study approach of a multi-award-winning technology solution company, namely Kubenet, based in Scotland. Their partners are Cisco and Microsoft to guarantee global access to clients’ applications. They own the ‘next generation network’ which allows flexibility, safety, and resilience supported by ISO, ITIL and Cyber Essentials accreditations. The analysis of the Kubenet has allowed us to notice that CDOs assume a relevant role in disseminating the principle of digital humanism which even if the technologies are completely in the organizational settings, human skills still have a central role in the whole organizational life. Creativity and innovation cannot be replaced by technologies which denote an integration of digital humanism accompanied by technology singularity.
Keywords — digital humanism; technological singularity; Chief Digital Officers; dynamic capabilities, case study

Introduction

Businesses today are at the cusp of revolutionary paradigm shifts heralded by the exponential growth of digital technologies. Advances in DARQ technologies (artificial intelligence, Reality technologies, nanotechnology, biotech, quantum computing among others) (Brown & Drakeley, 2023) are hurtling towards a hypothetical point called “Technological Singularity” (Guliciuc, 2018) where change becomes irreversible and uncontrollable. Facing such profound transformations, business leaders are embracing fundamentally new approaches centred on interdisciplinary collaboration, ethical responsibility, and continuous adaptation.

Technological singularity, according to Guliciuc (2018) refers to a hypothetical future point in time when technological growth becomes uncontrollable and irreversible, resulting in unforeseeable changes to human civilization and this concept encompasses the idea of "Accelerated Change". The theory of technological singularity is closely related to the concept of "economic singularity," which predicts a jobless future as human labour becomes redundant due to the advancement of technology (Upchurch, 2018). The interplay of technological innovation and business model innovation has been found to enhance company performance, indicating that technological innovation contributes to business success by driving innovation in business models (Smajlović et al., 2019). Furthermore, the theory of technological singularity is associated with the radicalisation of the transhumanist discourse, foreseeing a radical evolutionary change through accelerated change in technology (Luga, 2016).

In the context of business innovation, the relationship between technological innovation and business model design must be emphasised. Technological innovation should be coupled with business model design to create and capture value, highlighting the increasing interdependence between technological innovation and the business ecosystem (Wei et al., 2014). Business model innovation, which involves designing new business models or modifying existing ones, plays a crucial role in the success of digital ventures in highly competitive environments (Wirtz, 2023). Moreover, business model innovation is considered more systemic in nature compared to product or process innovation, as it involves aligning the customer value proposition with how value is created and captured (Velu, 2015). As the promise of convergence between groundbreaking technologies unfolds, companies see both enormous opportunities and existential risks on the horizon. For instance, highlight that digital transformation has accelerated the speed of change, resulting in much more environmental volatility, complexity, and uncertainty. Traditionally rigid and siloed strategic planning has become obsolete in the face of extreme uncertainties from exponential technological change (Warner & Wäger, 2019; Iliopoulos et al., 2012). To develop robust strategy and steer innovation trajectories responsibly, firms are assembling interdisciplinary foresight teams.

Gausvik et al. (2015) describe teams referred to as "prediction units," consisting of a diverse group of experts including technologists, economists, social scientists, ethicists, policy experts, and other specialists. These teams engage in the identification of subtle indicators across various domains. They perform scenario planning to evaluate the potential impacts of singularities and rigorously analyse current strategies against potential disruptions that might arise from new technological advancements, as outlined by Diffendorfer et al.
The primary objective of these teams is to integrate the principles of digital humanism into the culture and strategic framework of organizations. Digital humanism entails putting human dignity, ethics, and wellbeing at the centre of technological progress (Scuotto et al., 2023). As exponential advances proliferate, this theory helps balance productivity gains enabled by technology with considerations of stakeholder inclusivity, trust, and welfare (Fors et al., 2019). Digital humanism provides guardrails steering innovations toward solving human problems holistically rather than potentially amplifying them through unintended consequences.

The “Prediction units” recommend leaders to take “singularity-informed” actions centred on resilience and adaptation such as setting up innovation outposts close to tech hubs, building in-house capabilities in key exponentials like AI (Chen et al., 2020; Sjödin et al., 2021; Weber et al., 2022), pursuing agile partnerships with startups, retraining talent to avoid skills obsolescence, and embracing flexible, platform business models. They audit existing operations and initiatives to align with digital humanism principles of equity, sustainability, and positive social impact. To drive this ethically centred “singularity” strategy, companies are appointing Chief Digital Officers (CDOs) with specialised skill sets. As orchestrators building organisational capacity to sense and respond to digital change, CDOs require both cutting-edge technical literacy as well as multidisciplinary perspective spanning business, society, sustainability, and ethics (Scuotto et al., 2022).

With hybrid backgrounds spanning technology, social sciences, and humanities, CDOs possess the acumen to separate digital hype from reality while evaluating emerging innovations for integration and impact through a multidimensional lens aligned with digital humanism. According to Rosas-Paredes et al. (2021) CDOs drive interdisciplinary knowledge-sharing and steer company-wide skilling programs to cultivate flexible, digitally-savvy and purpose-driven mindsets across the workforce (Brown, 2020; Georgieva, 2002). At the intersection of technology and leadership, CDOs also serve as chief evangelists advocating ethics and empathy by design in all digital transformation initiatives. With both business vision and social conscience, they anchor technological innovation firmly to humanistic principles - an invaluable guidance mechanism amidst singularity-level paradigm shifts. Their central mandate is upholding digital humanism as the cornerstone for business innovation as exponential technologies become more democratized and decentralised ahead.

This conference paper will explore the pivotal role of Digital Humanism in driving digital innovation, multidisciplinary, digital transformation and organizational creativity within a single case study of multi-award-winning technology solution company, namely Kubenet, based in Scotland. Their partners are Cisco and Microsoft in order to guarantee a global access to clients’ applications. They own the ‘next generation network’ which allows flexibility, safety, and resilience supported by ISO, ITiL and Cyber Essentials accreditations. They aim to get together talents and creative mind people which can generate new innovations and let the company grow and meets clients’ needs. They really invest in their employees to feel engaged, supported and determined by encouraging inclusion, diversity and creativity.

Through the lens of Digital Humanism and technological singularity, the study will critically assess the role of dynamic capabilities (DCs) of CDOs and their influence on triggering digitalisation and accelerating technological convergence through clients and employees. Additionally, the paper introduces the concept of digital humanism, emphasizing the relevance of human skills in the digital era and advocating for the encouragement of creative working activities through the utilization of technologies to foster innovations. This paper aims to add to current research and seeks to contribute to the literature by providing insights into the pivotal role of Digital Humanism in igniting unique
ideas and innovations within organizations, thereby advocating for the integration of human skills and digital technologies to drive digital transformation and thus accelerate technological singularity.

Theoretical Background

In today's rapidly evolving business landscape, organizations find themselves at a critical juncture marked by groundbreaking paradigm shifts primarily fuelled by the relentless progression of digital technologies. This era is distinguished by significant advancements in DARQ technologies—spanning artificial intelligence, augmented and virtual realities, nanotechnology, biotechnology, and quantum computing (Brown & Drakeley, 2023). These advancements are not merely incremental; they are propelling society towards the concept of “Technological Singularity” (Guliciuc, 2018), a theoretical future where the pace of technological innovation becomes so rapid and its impacts so profound, that it results in a new reality where change is both irreversible and beyond human control.

This period of "Accelerated Change" signifies more than just technological advancement; it heralds a paradigm where traditional concepts of labour, societal structures, and even human identity are fundamentally challenged. The theory of Technological Singularity suggests an intersection with economic singularity predictions, indicating a future where the automation and artificial intelligence render traditional human labor redundant, posing both challenges and questions about economic structures and employment (Upchurch, 2018). Additionally, it amplifies the discourse on transhumanism, which envisages a future of radical human enhancement and evolution through technology, potentially altering the very essence of human experience and capability (Luga, 2016).

Amidst these transformative prospects, the concept of Digital Humanism gains paramount importance. It posits a framework where technological development is pursued with a conscientious focus on human dignity, ethics, and well-being at its core (Scuotto et al., 2023). Digital Humanism champions a harmonious balance between the unprecedented efficiency and capabilities offered by advanced technologies and the imperative to ensure these technologies serve to enhance, rather than undermine, human values and societal equity. It acts as a philosophical and practical counterbalance to the potential dehumanizing risks of unchecked technological growth, emphasizing the need for innovations to be inclusive, trust-enhancing, and welfare-oriented (Fors et al., 2019).

In the realm of business innovation, the dialogue between technological innovation and business model design becomes increasingly significant. As companies venture into uncharted territories of digital transformation, the integration of advanced technologies with strategic business model innovation emerges as a vital pathway to creating and capturing value. This necessitates a departure from traditional linear models of innovation towards more dynamic, systemic approaches that align with the rapidly changing digital economy (Wei et al., 2014). Business model innovation is thus characterized by a holistic reconsideration of how organizations create, deliver, and capture value, ensuring alignment with evolving customer expectations and leveraging technological advancements to sustain competitive advantage (Velu, 2015).

In navigating these complex waters, organizations are increasingly leaning on interdisciplinary teams, or "prediction units", which bring together a diverse array of experts from technological, economic, social, ethical, and policy backgrounds. These teams are tasked with the foresight and strategic analysis required to navigate the uncertainties of technological singularities, employing scenario planning and robust analytical frameworks to evaluate potential impacts and guide strategic decision-making (Gausvik et al., 2015;
Diffendorfer et al., 2023). Their goal is to embed the principles of digital humanism into the fabric of organizational culture and strategic planning, ensuring that as companies adapt and innovate in response to technological advancements, they do so with a steadfast commitment to human-centred values.

Chief Digital Officers (CDOs) play a pivotal role in this landscape, embodying the bridge between technological expertise and humanistic principles. Their unique position enables them to discern between fleeting digital trends and substantive innovations, guiding organizations to leverage digital advancements in ways that are ethically grounded, socially responsible, and aligned with long-term human welfare (Scuotto et al., 2022). CDOs foster an organizational culture that values interdisciplinary collaboration, continuous learning, and adaptability, ensuring that the workforce is equipped to navigate the complexities of the digital era with agility, ethical integrity, and a purpose-driven approach (Rosas-Paredes et al., 2021; Brown, 2020; Georgieva, 2002).

In summary, as we stand on the brink of potentially transformative changes brought about by digital technologies, the principles of digital humanism offer a critical framework for navigating these changes. By ensuring that technological advancements are anchored in human values and ethics, businesses can not only navigate the uncertainties of the digital age but also contribute to a future where technology enhances human welfare, societal equity, and global sustainability.

Research Framework
This paper focuses into the seminal role of Digital Humanism in catalysing digital innovation, fostering multidisciplinary, and driving both digital transformation and organizational creativity.

At the heart of this research is the analysis of the dynamic capabilities (DCs) of Chief Digital Officers (CDOs) within the context of Kubenet. The paper scrutinizes how these capabilities—ranging from strategic foresight and technological acumen to leadership and ethical governance—play a critical role in propelling digitalization efforts and accelerating the convergence of cutting-edge technologies. By examining the intersection of Digital Humanism and technological singularity, the study aims to shed light on the instrumental role CDOs play in leveraging human skills and digital technologies. This synergy not only enhances organizational creativity and innovation but also steers the digital transformation journey, nudging it towards achieving a state of technological singularity.

Furthermore, this investigation will highlight the integral role of Digital Humanism in promoting a work environment that values and utilizes human skills alongside digital technologies. This approach not only champions the cause of fostering innovative working practices but also emphasizes the importance of creativity in the digital age. By doing so, the paper seeks to contribute novel insights to existing research, articulating the profound impact of Digital Humanism in sparking unique ideas and pioneering innovations within organizations. Through the analysis of a company case study Kubenet's operational ethos and strategic initiatives, this study aims to offer a nuanced understanding of how the integration of human skills with digital technologies can serve as a powerful catalyst for digital transformation, ultimately accelerating the journey towards technological singularity.

In essence, the lens of digital humanism acts as a driving force behind the seamless integration of digital innovation and human-centric values. By doing so, it aspires to enrich the discourse on digital transformation and technological advancement, offering a blueprint for organizations striving to navigate the complexities of the digital era while remaining steadfast in their commitment to humanistic principles.
Digital Business Transformation at Kubenet: Embedding Digital Humanism Through KTP

The Knowledge Transfer Partnership (KTP) between the University of the West of Scotland and Kubenet, a technology solutions provider, has been a resounding success in driving digital business transformation within the organisation. The KTP associate, positioned as the Digital & Operations Transformation Leader, has played a pivotal role in not only implementing new technologies and systems, but also in fostering a digital-first culture that embraces the principles of digital humanism.

This case study examines how the KTP has enabled Kubenet to navigate the complex landscape of digital transformation, with a particular focus on the CDO's (Chief Digital Officer) role in championing the integration of human creativity and innovation alongside technological advancements. The analysis highlights how Kubenet has been able to strike a balance between technological sophistication and the preservation of human agency, ultimately creating a thriving digital ecosystem that empowers its employees and enhances the customer experience.

The KTP project has resulted in a range of tangible outcomes, including the development of a robust managed service framework, the implementation of a bespoke learning management system (KubeAcademy), and the enhancement of internal communication, and reporting capabilities. However, the true significance of the partnership lies in its ability to foster a culture of digital humanism, where technology is leveraged to augment and empower human skills, rather than replace them.

By examining Kubenet's journey through the lens of digital business transformation, this case study offers valuable insights for organisations seeking to navigate the complexities of the digital age while maintaining a steadfast commitment to the human element of their operations.

The Digital Transformation Challenge at Kubenet, a technology solutions provider serving the SME sector, recognised the need to undergo a comprehensive digital transformation in order to scale its operations, enhance its managed service offerings, and maintain a competitive edge in a rapidly evolving industry. The decision to embark on this journey was driven by a desire to improve operational efficiency, increase business resilience and agility, and support the company's ambitious growth plans.

The key objectives of the KTP project were twofold:

1. To embed management skills, knowledge, and experience in support of rapid business growth and geographical expansion, with a particular focus on scaling up Kubenet's managed service offering.
2. To drive organisational and cultural change in support of future business needs, with a specific emphasis on the growth of the company's managed services division.

At the outset of the project, it became clear that the successful delivery of a robust managed service framework would be a critical foundation for Kubenet's continued success. This realisation led to a strategic shift in the project's focus, as the CDO (KTP associate) recognised the need to prioritise the development of a comprehensive managed service blueprint and supporting framework over other initially planned activities.

The CDO's role was instrumental in navigating this change, as they were able to present a well-reasoned case for the revised priorities to the project's leadership team. This agility and strategic thinking demonstrated the CDO's ability to adapt to the evolving needs of the business, while maintaining a clear focus on the overarching objectives of the KTP.

At the heart of the Kubenet KTP project was the principle of digital humanism, which the CDO championed throughout the transformation process. This approach recognised that
while technological advancements are critical to driving business success, the human element remains central to unlocking the full potential of digital transformation. The CDO's key responsibilities in Kubenet’s case included:

1. Fostering a digital-first culture: The CDO worked closely with the leadership team to embed a digital-first mindset across the organisation. This involved the development of comprehensive onboarding and internal communication platforms operating from the cloud, ensuring that all employees were equipped with the knowledge and skills necessary to thrive in the new digital environment.

2. Empowering employees through technology: Rather than viewing technology as a replacement for human skills, the CDO's approach focused on leveraging digital tools and systems to augment and empower Kubenet's workforce. This was evidenced by the creation of the KubeAcademy learning cloud management system, which served as a centralised hub for both internal and external knowledge sharing, fostering continuous learning and development.

3. Prioritising the customer experience: The CDO recognised that digital transformation was not just about internal efficiency, but also about enhancing the customer experience. This led to the development of a robust managed service framework, which incorporated customer-centric features such as streamlined onboarding, enhanced reporting capabilities, and a dedicated learning pathway for strategic partners.

4. Championing creativity productivity and innovation: The CDO understood that true digital transformation goes beyond the implementation of technology; it requires a cultural shift that nurtures creativity and innovation. By encouraging cross-functional collaboration and supporting the exploration of new ideas, the CDO helped to create an environment where employees felt empowered to contribute to the company's digital evolution.

5. Aligning technology with business strategy: The CDO played a key role in ensuring that Kubenet's technology roadmap was closely aligned with the organisation's overarching business strategy. This involved the development of series of comprehensive technology strategy workshops, which brought together the academic and industry partners (KTP) to identify the most impactful technological solutions to support the company's growth objectives.

The CDO's focus on digital humanism was a central driver of the KTP's success, as it enabled Kubenet to harness the power of technology while preserving the critical role of human skills, creativity, and innovation. This approach was instrumental in fostering a culture of continuous learning, adaptability, and customer-centricity – all of which were crucial to the company's ability to thrive in a rapidly evolving market.

Outcomes and Impact of the KTP The Kubenet KTP project has delivered a range of tangible outcomes that have significantly enhanced the company's digital capabilities and positioned it for long-term success. Some of the key achievements include:

1. Managed Service Framework: The development of a comprehensive managed service framework has been a game-changer for Kubenet, providing a standardised approach to onboarding new clients and delivering high-quality managed services. This framework has not only improved operational efficiency but has also been recognised with a national industry award for the "Best SME Managed Service Customer Solution".

2. KubeAcademy: The creation of the KubeAcademy cloud learning management system has been a critical component of the KTP project, serving as a centralised
hub for both internal and external knowledge sharing. This platform has enabled Kubenet to retain and disseminate critical information, while also providing tailored learning pathways for employees and strategic partners.

3. Enhanced Reporting and Business Insights: The implementation of advanced reporting and analytics tools, including the use of Microsoft Power BI, has significantly improved Kubenet's ability to generate meaningful business insights. This has enabled the company to make more informed decisions, enhance its customer service, and drive continuous improvement across the organisation.

4. Organisational and Cultural Transformation: The KTP project has been instrumental in driving organisational and cultural change at Kubenet. The development of the onboarding and internal communication platforms, combined with the focus on digital humanism, has fostered a more engaged, adaptable, and customer-centric workforce.

5. Industry Recognition: The success of the KTP project has been recognised through two prestigious national industry awards: "Reseller of the Year" and "Best SME Managed Service Customer Solution" and also was nominated for an award a best knowledge Transfer Partnership of the Year by CEED. These accolades serve as a testament to Kubenet's commitment to digital transformation and the pivotal role of the CDO in driving this change.

Conclusion:
The Kubenet KTP project is a great example of how digital business transformation can be achieved through the lens of digital humanism. The pivotal role of the CDO, as the Digital & Operations Transformation Leader, has been instrumental in driving this transformation, championing the integration of human skills and technological capabilities to create a thriving digital ecosystem.

By prioritising the development of a robust managed service framework, enhancing internal communication, and reporting capabilities, and fostering a culture of continuous learning and innovation, Kubenet has positioned itself for long-term success in a rapidly evolving market. The company's recognition through national industry awards is a testament to the transformative impact of the KTP project.

Beyond the tangible outcomes, the Kubenet case study offers valuable insights for organisations seeking to navigate the complexities of digital transformation. It demonstrates that true digital success lies not in the replacement of human skills, but in the strategic integration of technology and human creativity – a principle that should be at the heart of every digital business transformation journey.

Human-centred digital transformation, as exemplified by the Kubenet KTP project, is the key to unlocking the full potential of the digital age. By embracing the principles of digital humanism, organisations can empower their workforce, enhance the customer experience, and drive sustained growth and innovation – a model that should inspire and guide businesses across all sectors.
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**References**


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Theofilos Tzanidis. With over 15 years of experience in digital communications, Theo Tzanidis is a Senior Lecturer in Digital & 3DWeb Communications at University of the West of Scotland (UWS), where he develops and implements innovative strategies for engaging with current, future, and prospective stakeholders and partners. He also leads the cross-faculty digital development team, designing and delivering cutting-edge digital platforms for teaching and learning in higher education. Theo is passionate about exploring and applying emerging technologies in the digital business transformation sector, such as reality technologies, AI for business, metaverse, Web3, and 3DWeb. He is currently involved in several digital transformation projects, aiming to cultivate new business competencies and opportunities in these domains. He is also a contributor to the World Economic Forum Agenda on metaverse for business and digital transformation themes, and a senior virtual/mixed reality and metaverse specialist at Eharo Ltd, an alternative investment management company specialised in Web3, AI, and related technologies.

Veronica Scuotto (PhD, FHEA, MBA, BA-Honour) is currently an associate professor in the Department of Economics, Management, Institutions at the University of Naples Federico II (Italy) after working at the University of Turin, at the University of the West of Scotland (UK), and at the Pôle Universitaire Léonard de Vinci in Paris (France). She obtained the Italian National Qualification as full professor in 2020. She is awarded highly cited researcher by Clarivate (2023). She has been invited as a guest speaker to GWM Knowledge Camp; World Young Forum; and PDW at the AoM Conference, among others. In 2018, she organised a conference on ‘Cognitive Perspective in Entrepreneurship Research’ jointly with IPAG University in Paris. She teaches entrepreneurship and loves encouraging young student entrepreneurs to develop new, creative business ideas. Veronica has also combined this interest with her research focus on small to medium enterprises, knowledge management and digital technologies. Her research interests are focused on SMEs, entrepreneurship, knowledge management and digital technologies which have resulted in the publication of several articles featured in peer-to-peer journals, such as the Journal of Product Innovation Management (4*), Journal of World Business (4*), Journal of Organizational Behaviour (4*), Journal of Business Research (3*), Production Planning & Control (3*), Technological Forecasting and Social Change (3*), International Marketing Review 3*), and IEEE Transactions on Engineering Management (3*), among others. She has authored four books. Veronica is the managing editor for the Journal of Intellectual Capital and an editorial board member of the Journal of Knowledge Management. Veronica is also a member of the International Council for Small Business and is a mentor for the Techstars Smart Mobility Accelerator in Turin, Italy.
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