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from experts. The findings assess the repercussions for IT strategy and changes in business processes impacted by the use of new technologies and illustrate how people skill requirements have evolved, both within the IT organisation and in other company departments.

Chapter 3

Few digital technologies have captured the world's imagination as much as the cluster of immersive experiences usually labelled virtual reality, augmented reality, and extended reality. A certain mythology has grown up around these technologies, their purpose, application, benefits, and risks. This chapter addresses these elements, offering insights into real-world applications and some thoughts about how the technologies could evolve. A limiting factor when writing about immersive technologies is the lack of comprehensive research into real-life applications and their long-term effects. In addition, there is a tendency for potential users and commentators to become overly optimistic about the latest developments in this niche. This research adopts an interpretivist qualitative approach, based on a review of existing literature and web sources, and the author's personal experiences as an industry professional. What is clear is that these technologies are not a passing fad and are likely to shape the human experience in social, economic, and technological terms in future years.

Chapter 4

Artificial intelligence techniques are at the centre of a major shift in business today. They have a very broad array of applications within businesses, including that of optimisation for risk reduction in civil engineering projects. This is an active area of research, which has started to see real-world applications over the last few decades. It is still hindered by the extreme complexity of civil engineering problems and the computing power necessary to tackle these, but the economic and other benefits of these emerging technologies are too important to ignore. With that in mind, this chapter reviews the current state of research and real-world practice of optimisation techniques and artificial intelligence in risk reduction in this field. It also examines related promising techniques and their future potential.

Chapter 5

Nagapattinam is one of the main places for the catching and export of fish in Tamil Nadu State, in the south of India. In the local markets, fisherwomen buy fish, which are then sold in the streets as well as door-to-door. These "street selling fisherwomen" face various difficulties, including means of transport, carrying heavy fish baskets, and challenges in fish selling during sickness. To overcome these problems, a project was set up with support from the Tamil Nadu State Council for Science and Technology to

develop a mobile app with native (Tamil) language to simplify the different processes involved in fish selling. Special features, like adding fish detail using images, voice-based searches on market conditions, and location tracking for the delivery of fish, are helping the fisherwomen to reduce the complexity of the selling process. This chapter provides detail on this project, examines the benefits, and discusses the difficulties encountered in the adoption of the mobile app, which is enabling fisherwomen to boost their revenues and improve their quality of life.

The purpose of this chapter is to illustrate the application of advanced data analytics in the domain of strategic procurement and its effects on processes, people, and on the procurement business model itself. Advanced data analytics are generally accepted as being one of the key enablers for organisations to build their capabilities to adapt quickly and navigate through volatile business circumstances successfully. Strategic procurement is in a pivotal position in a network of external suppliers and internal stakeholders, and thus ideally positioned to benefit from the introduction of advanced data analytics. However, to date, the application of these technologies has been limited, and clear evidence of benefits delivery is yet to be demonstrated. This chapter draws upon research results from a detailed case study in the aviation industry to assess the benefits of advanced data analytics in the strategic procurement function and puts forward a maturity model of relevance to both researchers and procurement professionals.

The COVID-19 pandemic has brought to the fore a number of issues regarding digital technologies, including a heightened focus on cybersecurity and data privacy. This chapter examines two aspects of this phenomenon. First, as businesses explore creative approaches to operate in the "new normal," the security implications of the deployment of new technologies are often not considered, especially in small businesses, which often possess limited IT knowledge and resources. Second, issues relating to security and data privacy in monitoring the pandemic are examined, and different privacy-preserving data-sharing techniques, including federated learning, secure multiparty computation, and blockchain-based techniques, are assessed. A new privacy-preserving data-sharing framework, which addresses current limitations of these techniques, is then put forward and discussed. The chapter concludes that although the worst of the pandemic may soon be over, issues regarding cybersecurity will be with us for far longer and require vigilant management and the development of creative solutions.

The Internet of Things (IoT) is formed by a set of physical objects with embedded sensors, connected using

the perspective of features influencing adoption. The features are examined using the unified theory of acceptance and use of technology (UTAUT) framework. Primary research was conducted through a study on the use of a WOSM platform called Brightidea to promote crowdsourced innovation. The work included investigation of features that influenced adoption and usage of the platform. Additionally, the potential for domain-crossing innovation was explored through data analysis of ideas on the platform. The study was built on data collected from a survey of employees of Kerpoc (a pseudonym), a large company in the oil and gas (O&G) sector, and interviews with Kerpoc staff. The chapter concludes that although the business value of the platform may have been below expectations, its social media-like features were positively viewed by users and facilitated discipline crossing.

The aim of this chapter is to establish that the principles used by neural networks can be applied to business process management. The similarity between artificial neurons and business processes, and hence between neural networks and process landscapes, will be demonstrated. This novel approach leads to an emphasis on process interactions and their effect on actions as a major governing factor in controlling process outputs. Stigmergic interaction in biological systems is explored in the context of business processes, and its potential to understand process interaction is investigated. In order to verify the use of stigmergy in business environments, a pilot study is described in which shop floor business processes in a retailing environment are observed and described using a stigmergic framework. Establishing the viability of using stigmergic interaction to control process actions and outputs is the first step towards designing neural process networks.

Digital technology is reshaping businesses across much of the world, but as companies introduce digital technologies into their business activities, they are facing new sets of responsibilities. While many businesses have enthusiastically embraced the economic benefits of these digital technologies, the social and environmental impacts of these developments have received much less attention. With this in mind, this chapter reviews how the leading information technology companies publicly address their social and environmental responsibilities. The chapter includes an outline of digital technologies and their potential social dimensions and environmental impacts, a brief review of the emerging academic and professional literature to provide some reference and context for the review, details of the method of enquiry and frame of reference adopted by the authors, a review of how the leading information technology companies publicly reported on their social and environmental digital responsibilities, and some general reflections on these social and environmental responsibilities.

Mobility is a central element of the new networked world, and customers expect highly integrated features in their vehicles and want to be able to use services or features at any time in a highly integrated manner. As a result, the entire automotive industry is facing a major change process, both technological as well as in its own core business processes and functions. This chapter examines the impact of this transition on the conduct and sustainability of IT projects in the German automotive industry. Information distilled from in-depth interviews with industry practitioners reveals how project management methods, tools, and culture have to evolve, as value chains in the industry are re-evaluated and re-defined. The chapter puts forward a framework for the interaction of project management methods and digital technologies to achieve sustainable project processes and outcomes. It is hoped this may act as a building block for future research in this field to advance the transitioning of the industry and its inherent IT projects to a more sustainable future.

Chapter 15

Chatbots (sometimes just called "bots") are the subject of much corporate and public interest today. Many enterprises are looking to get started with chatbot development initiatives to improve communication efficiency as well as reduce operating costs. Current research indicates constantly growing interest in this area and forecasts that 70% of office employees will interact with chatbots daily in 2022. This chapter reports on the challenges inherent in chatbot integration projects and identifies key operational factors for successful chatbot projects, as well as highlighting issues of strategic significance. Different technology adoption and project management models are explored, analysed, and applied in the context of chatbot implementation, and based on an in-depth case study, a model is put forward to aid the manageability of chatbot implementation in other similar environments.

Chapter 16

Disruptive technology, or disruptive innovation, is undeniably one of the most significant concepts to emerge from management theory in the last three decades. Both its theoretical and practical impact has been far reaching. Notwithstanding this stellar impact, it seems unlikely that a small hyper-conservative, risk-averse SME with limited management training in concepts that have little immediate return on investment would choose to embark upon a radical change of direction sparked by new technology and innovation. Using an interpretivist, inductive, approach based on interview material and personal observation, this chapter examines the realities of business strategy, how disruption is perceived, management decisions made, technologies introduced, and change management enacted in this family-run business. The chapter concludes that change perception and change management are related to efficiency and threat responses rather than disruption to business models or technology availability.

Chapter 17

Cloud computing offers clients flexible and cost-effective resources. Nevertheless, past incidents indicate that the cloud may misbehave by exposing or tampering with clients' data. Therefore, it is vital for clients to protect the confidentiality and integrity of their outsourced data. To address these issues, researchers proposed cryptographic protocols called "proof of storage" that let a client efficiently verify the integrity or availability of its data stored in a remote cloud server. However, in these schemes, the client either has to be online to perform the verification itself or has to delegate the verification to a fully trusted auditor. In this chapter, a new scheme is proposed that lets the client distribute its data replicas among multiple cloud servers to achieve high availability without the need for the client to be online for the verification and without a trusted auditor's involvement. The new scheme is mainly based on blockchain smart contracts. It illustrates how a combination of cloud computing and blockchain technology can resolve real-world problems.

Chapter 18

Predictive maintenance (PdM) is a key application of data analytics in semiconductor manufacturing. The optimization of equipment performance has been found to deliver significant revenue benefits, especially in the wafer fabrication process. This chapter addresses two main research objectives: first, to investigate the particular challenges and opportunities of implementing PdM for wafer fabrication equipment and, second, to identify the implications of PdM on key performance indicators in the wafer fabrication process. The research methodology is based on a detailed case study of a wafer fabrication facility and expert interviews. The findings indicate the potential benefits of PdM beyond improving equipment maintenance operations, and the chapter concludes that the quality of analytics models for PdM in wafer fabrication is critical, but this depends on challenging data preparation processes, per machine type. Without valid predictions, decision-making ability and benefits delivery will be limited.

Chapter 19

Digital transformation is now impacting businesses in both the developed and developing worlds, and this chapter examines this phenomenon in the small business sector in Nigeria. Adopting an interpretivist philosophy, the methodology combines a survey of small business enterprises (SBEs) with in-depth case studies of three Nigerian companies. Ten critical influencing factors are identified, and a model (Engage-Deploy-Exploit-Transform – EDET) is developed and applied to the case studies to assess the status of digital transformation. The influencing factors provide a checklist for SBEs embarking on digital transformation projects, and the model can be used to assess progress and identify new opportunities for digital transformation at the business process level. The authors believe this to be a useful contribution to the growing literature in this field that can be used by both researchers and practitioners in similar developing-world contexts.