# Managing Technology for Business Value

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By

Stephen McLaughlin

# Dedication

This book is dedicated to my wife, Mia, and family (both close and extended), who have always been supportive, and constructively critical of my ideas and work.

# Table of Contents

## Acknowledgement

# About the Author

Dr Stephen McLaughlin has spent the last 15 years working in academia. He has been involved in the design and delivery of courses for undergraduate, postgraduate and executive education. Stephen's main area of research and teaching has been around how technology can be used to improve business value.

Prior to working in academia, Stephen had spent over 20 years working in management positions in both the public and private sectors. His last role prior to moving into academia was with IBM, where he worked on the optimisation of the core fulfilment and supply chain processes across EMEA.

As an academic, Stephen's research interests centre on enabling organizations to improve performance based on a better understanding of how to align their technology and business strategy. From a more pragmatic, action-orientated perspective Stephen has also led research for IBM in the areas of identifying knowledge and innovation barriers within complex organizations, and developing frameworks for assessing service innovation capability. Another key area of interest for Stephen is understanding and assessing the business value of technology in a knowledge economy.

Stephen has published on the subjects of information management, knowledge transfer, service science, and service innovation in numerous academic and professional journals, such as the *Journal of Knowledge Management*, the *Journal of Business Strategy*, the *International Journal of Knowledge Management*, and the *European Management Journal* to name but a few.

Stephen lives in Kilkenny, Ireland, with his wife and two sons.

# Preface

This book is the culmination of over twenty years working with technology. As a young engineer I was fascinated with how technology could improve the way we work and communicate. Granted, at that time the internet was but a twinkle in Tim Berners-Lee's eye. However, even in the mid-1980s organizations were playing around with networking in order to connect computers and printers. In the mid-1980s life was much simpler, even if the technology was not. Then, as industry, government and academia started to wake up to the many potential benefits that technology could bring, we started to see an increasing, and blooming, variety of specialists working to increase the practical applications of computer technology. Technology was driving new areas of academic enquiry and professionalism, which in turn were increasing the rate of technology development. People and organizations were finding more uses for technology, and finding a way to connect and communicate with other users was becoming a key focus for all.

As I progressed through my career, I realised that whilst technology was complex in nature, it was not the main problem when it came to integrating it into an organization. The bottom line, based on my experience at the time, was that the technology usually worked, and it is people that tend to mess things up. Now I know I'm generalising here, but for me the real challenge in adopting technology is getting people to work with it, and in a way that benefits both the individual and the organization.

This revelation made me think quite differently about how we as individuals and organizations view technology. Do we engage with new technology or hold back? When is the right time to start using new technologies, and how do we assess the impact that new technologies will have on the way we live and work? This last point is of particular interest to me as many times I have seen organizations race to adopt new technology without any consideration as to how that technology would change the way they do business. One organization I know (a Fortune 500 company) raced to embrace internet technologies and implemented a plan to move most of its workforce into home offices and out of their main offices. This certainly helped to reduce the cost of renting and managing office space in many locations around the world. However, what the organization failed to realise, was that once employees spent more time away from the office their sense of loyalty and

commitment to the organization waned, which in turn started to impact employee retention. In many ways, the adoption of any technology that changes the way we interact with each other will have consequences.

Overall, the last ten years have seen significant, and disruptive changes across all spheres of life – changes that have largely been driven by advances in technology. Technology is influencing how we communicate with each other on a 24/7 basis, which has resulted in finding ourselves living in an "always-on" or "always connected" society. Yet, we don't really spend any time thinking about how the technology is changing the way we connect as human beings. This is a big issue as it is fundamental to every form of engagement – including how we use technology to connect in our professional as well as personal lives.

Technology is a Pandora's box that has opened the door to multiple opportunities. Not all approaches to how we use technology will result in a good experience – I'm sure we can all recount a time when we had to contact a call centre and ended up on the line much longer than anticipated. But conversely, technology has also provided game-changing improvements in areas such as surgery, communications, and online education to name but a few. However, and here's the point, in those areas where we see the greatest improvements, there has been a deliberate focus on how the technology has been aligned to the way people work, communicate, and collaborate. Adopting technology for the sake of just getting the latest technology is a risky proposition. Technology needs to be aligned to the organization in a way that is appropriate to, and supportive of the overall strategic objectives of the organization.

In essence, this book hopes to help the reader to better understand how to ensure the technology is providing real value for the organization. This I believe is the real challenge for organizations today – not what technology to implement, but why it should be implemented. It is the aim of this book to give the reader the skills to help them address this challenge.

Stephen McLaughlin (2019)

# Chapter 1: Introduction

## 1.1 Introduction

Technology is changing the way organizations interact with the environment around them. Customers, suppliers, strategic partners, and internal users are re-shaping the way data and information are created and accessed, and how services and products are developed, delivered and consumed. There is no doubt that information (and knowledge) is the new currency for organizations looking to successfully compete in today's competitive marketplaces. Technology is driving both the supply and demand for data, and because of this, organizations now realise the increasingly important role technology has in terms of their ability to compete and succeed in today's world. No longer can technology simply be considered a cost to the organization. Organizations must consider how technology can help develop competitive advantage – be it through the innovative application of technology, supporting customer-centric business processes, speeding up new product development, or improving market awareness and meeting customer expectation through improved business analytics/intelligence. Technology is at the heart of just about all our core business processes. Therefore, a failure to understand how technology can influence operational capability can result in business processes, and capabilities becoming inflexible and unresponsive. In a time of extreme competitiveness, many organizations may not survive if they cannot effectively employ technology to react quickly enough to new market challenges.

This raises another issue for the modern organization. The application of technology is no longer the sole responsibility of the IT function, but is a core management capability; just like HR, Strategy, Operations, Finance, Project/Programme Management and Marketing. There will always be a requirement for specialists within each of these areas. However, anyone in a leadership position, where they are expected to make business decisions, must have a sound understanding of each of these business functions. This is vital if the decisions being made are to have a strong focus on developing "business value" for the overall organization. Having a CEO who doesn't understand what a P&L statement is, or the need for demand planning and forecasting is unthinkable – Why then is it acceptable for the CEO not to

understand the importance of data quality, cyber-security, or the potential impact of technology on organizational culture and customer retention?

Due to the rate of change of technology there will continue to be a need for technology specialists. However, we must ensure that core business decisions are not abdicated to the CIO due to a lack of technological understanding by other business leaders. The application of technology may have an impact on work practices and structures, information and knowledge creation and sharing, information security (brand reputation), product/service delivery quality, skills requirements and training for end users (including customers!). Therefore, the impact needs to be considered across the organization; the decision should not just be based on the attributes of the technology alone. Hence, this is a conversation that needs to be had at all levels of decision-making across the organization. However, in order to join the conversation individuals across the organization need to understand and speak the same language. This book will start to develop that capability for managers and professionals who are interested in better understanding the value of technology for their respective organizations. The focus of the book is centred on ensuring that **business value through technology enabled leadership** is at the heart of any technology implementations.

As such the chapters are grouped under five broad headings:

- **Developing a Customer-centric Perspective:** Understanding how technology can be used to develop sustainable customer relationships and, therefore, more value for both the business and customer.
- **Technology Alignment to Business Needs:** Ensuring the technology supports the ongoing needs of the organization.
- **Managing the Cultural Impact of Technology:** Understanding and managing the impact technology has on how employees and customers continue to interact with the organization.
- **Creating an Information-driven Organization:** Enabling the organization to better understand the competitive market through data access, analysis, and information driven decision-making.
- **Securing Information Assets:** Ensuring organizations understand the threats and possible opportunities technology is creating around access to business-critical data.

A sound understanding of each of these topic areas is vital for all decision-makers involved in using technology to develop their business offerings and/or capabilities.

## 1.2 Target audience

This book is aimed at students and business practitioners who want to understand the broader implications of technology on organizational strategy, structure, and operations. The reader does not need any prior IT or technical expertise. This book will focus on the way that technology and business interface, and the implications of running IT as a separate entity within the organization. This book is not simply directed at those working in "IT Service Industries" but at anyone interested in understanding how to better integrate technology into the fabric of their respective organizations in a way that allows them to develop responsive and flexible customer-orientated business processes. Each chapter assumes no prior knowledge of the topics discussed.

## 1.3 The aim of this book

This book is aimed at those wishing to better understand how technology is changing the way organizations operate and perform. Recent advances in technology (high speed internet, cloud computing, mobile technologies, and the access to and processing of large data sets) have changed the way technology is viewed in terms of its role in developing responsive and competitive organizations. Technology is no longer simply seen as a commodity or utility, but as an effective mechanism for building competitive capability and, therefore, competitive advantage. This book provides the opportunity for the reader to gain an understanding of the changing role of technology within a fast-moving service orientated business environment. The concepts covered in this book are delivered from a broad perspective that in turn is influenced by the need to develop customer-centric solutions. The book will look at the problems that today's organizations have in driving real "value" through the ways in which they engage with, and utilise, technology. The book is not designed to turn the reader into an IT Manager, or CIO-designate, but to help them understand how technology is introducing a level of complexity to organizations that if not fully understood can seriously impact their ability to compete on an

ongoing basis. Failure to understand the implications that technology brings in terms of business process, transformational change, security, work practices, governance, and competitive positioning may mean the difference between success and failure for the organization as a whole.

It is important to note that this is not a technical book. There are many excellent books available to tell you how to connect systems, write code, build databases, process data, etc., whereas this book is not about the "how to", but more about the "why". As you read through the different chapters it will become clear that this book will not provide you with a prescriptive list of what to do to create the ultimate, technology savvy company. However, what it will do is provide you with a number of options and points for consideration when aligning technology to the needs of your organization. The purpose of this book, after all, is to help you improve your decision-making ability, and become a more effective leader within your respective technology enabled environments.

## 1.4 How to use this book

This book has been written to help postgraduate students and professionals to better understand the complex relationship that technology has with organizational performance. Whilst it is expected that this book will be used to support a postgraduate course, each chapter has been developed as a stand-alone introduction to specific topics relating to technology and its influence and interaction within the organizational context. To that end the reader can dip in and out of the book without the need to sequentially work their way from the first to the last chapter.

## 1.5 The structure of the book

This book takes the concept of technology driven business value and breaks it down into five key areas (Figure 1.1). Each area will then be addressed across the different chapters within the book. As you'll see from the diagram in Figure 1.1, different chapters will touch on the different areas at different times. This is deliberate on my part as I want to get across the multi-disciplined aspect of how technology impacts across all aspects of an organization. The structure of this book is designed to develop a business-

centric view of technology for all key decision-makers, and show how technology can be used to deliver business value across the organization.

As stated before, the objective of this book is not to develop a specialist view of technology for any one area of the organization (marketing, finance, operations, etc.) but to give the reader a more holistic view of technology's role in organizational performance, and how the reader can start to contribute proactively in making technology an agent for successful, competitive change within their respective organizations.
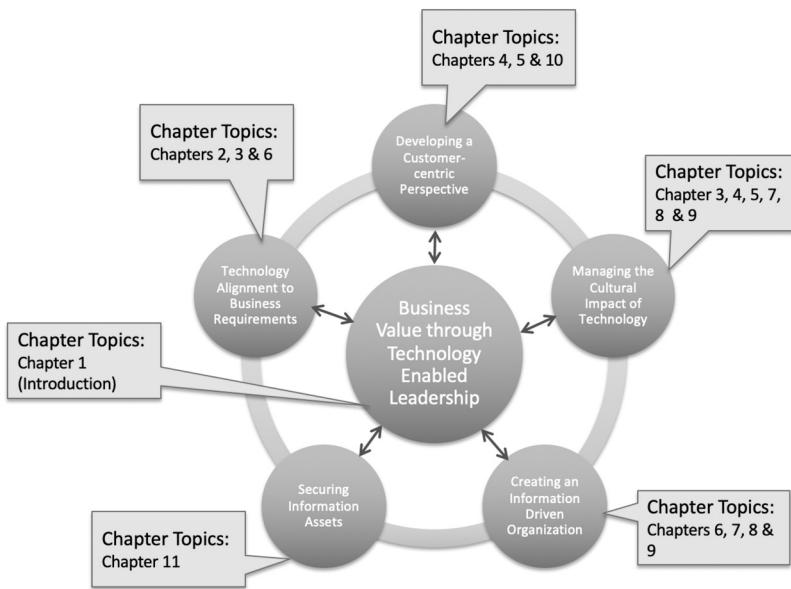
Figure 1.1: Book and Chapter Structure

The chapters identified in the figure above are explained in more detail in the **Chapter Breakdown** section as follows:

## 1.6 Chapter breakdown

The book contains 11 chapters and a short overview of each chapter is provided below:

1. **Introduction:**
   This gives an overview of the book. The intent is to develop an integrated view of technology with the organization. The role that technology plays is vital to organizational survival and, therefore, critical decisions concerning the adoption, sourcing, and purpose of technology-based solutions need to be assessed in terms of their impact on current and future organizational performance.

2. **IT and Business Strategy Alignment:**
   One of the key challenges facing senior management is the alignment of the IT strategy and the over-arching business strategy. This challenge is being aggravated by the increasing costs associated to IT enterprise-wide projects, the increasing time to delivery due to the complexity of the projects, and the increasing rate of change that organizations are experiencing within their respective competitive markets. The traditional relationship needs to be re-defined to one where both strategies are developed in unison. This chapter will look at three strategic options, and the impact of technology on Porter's five forces model.

3. **From IT to Digital: Assessing the Organizational Impact:**
   Traditionally, the provision, access to, and management of technology have been the remit of the IT function. However, with the advent of mobile technologies, social media, and cloud computing the demand for control in terms of the access and deployment of these technologies is moving from the IT function to other functions such as marketing, finance, operations, supply chain, etc. Coupled to this is the growing focus on data (both internally and externally generated) that are subtly shifting the focus away from technology and onto the nature of the data, or information itself. In effect, the working relation between technology and the various components of the organization is changing. The concept of "Digital" is much more than the notion of transformational technologies. It is about the shifting relationships, sense of ownership, and empowerment that come with the digital agenda. This chapter will look at the changing

relationship and role the IT function will need to provide to support a digital agenda, and what environmental factors will shape this agenda.

4.  **Building a Digital Business Strategy:**
    What is involved in developing a digital strategy and how does it differ from the more traditional IT strategy? In many ways, the digital strategy should address the issues of IT-Business strategy alignment. However, this new paradigm brings with it new ways of looking at how technology needs to be managed, and who now needs to be part of the development process. This chapter will identify how to look at the core components of what is meant by "digital" and how to assess their importance against the overall business strategy. The chapter will also look at methods for assessing the readiness of an organization for digital enablement, and what this will mean in terms of the impact that any proposed transformational changes will bring.

5.  **From a Process-centric to Capability-centric organization:**
    As technology is playing more and more of an influential role in all aspects of an organization's ability to plan, design, implement, and manage core processes and operations, understanding and developing IT based capabilities are becoming more vital. These IT influenced and influencing capabilities cannot be ignored. The potential to shape the organization's ability to respond in a timely and flexible manner can give the organization a competitive edge. Because of this the IT function can no longer be seen as simply a support function as there now exists a real and tangible opportunity to affect the way in which the organization senses and responds to changes in market forces and conditions. If organizations are to realise the potential of their digital resources then they need to develop capabilities around these resources. Organizations, by taking a capability-view, can better assess those resources that are critical to their key strategic objectives. What this chapter will do is demonstrate how to identify core capabilities, measure their impact and then put in place a development plan to improve capability performance.

6.  **IT Governance and Risk Management:**
    Organizations find themselves in the challenging situation where they have to keep the technology relevant and in line with the

business need whilst maintaining a high level of service through regular periods of transformational change. Ensuring the decisions impacted by technology are made in an informed and objective manner, and for the overall benefit of the organization, is vitally important. Those who have responsibility to make decisions relating to changing the technology alignment and profile of the organization need to be clearly identified. Many individuals will have opinions and views as to what needs to change, and how change needs to be implemented. However, the organization must ensure decisions are handled in a structured, accountable, transparent, and informed manner. As part of the decision-making process, key individuals must also be aware of, and able to assess, the potential of any risks inherent in changing the technology profile of the organization. Risk can never be fully removed from any change initiative, but through assessing certain risks options can be identified to reduce the probability of their potential impact. Because of this, structures and controls need to be put in place to ensure the right people are engaged, informed, and active in making the key decisions relating to how technology is employed throughout the organization. What this chapter will do is explain the reasons for IT governance, and how it links to the strategic purpose of the organization; what the structure of a governance framework would look like; and also, how to identify and assess potential risks.

7. **Using Technology to Support Knowledge Transfer and Innovation:**
   Knowledge manifests itself in different ways depending on where and when it is created within the organization. How an organization supports the creation and dissemination of knowledge will also differ depending on how that knowledge is intended to be accessed and shared. Tacit-to-tacit knowledge transfer very much supports the sharing of ideas and the innovation process, whereas the explicit to explicit process supports the manipulation and access of quality-controlled data. Technology will support these knowledge transfer activities in different ways. Therefore, organizations need to understand the types of knowledge transfer that are required, and the different ways of supporting them with technology. The type of knowledge being created and shared will also have an impact on an organization's ability to innovate. This chapter will look at the

links between information, knowledge, and innovation and the role technology plays in their successful formation and management.

8. **Information Systems: Shaping the Organization:**
This chapter looks at the impact that technology based transformational change can have on an organization's culture, politics, and structures. Does the changing technology landscape align with current culture? How can an organization assess the potential impact before making the investment? Also, how do individuals within the organization see the information they create and access: who do they see as "owning" this information and what does this mean to the organization as a whole when it comes to sharing and accessing this information? The chapter will also show how, through growing access to third party data sources, organizations are shifting their focus from the technology itself to what the technology can do by way of information creation, access, and analysis. This chapter will also look at what exactly an information-driven organization is versus a technology-driven organization. It will then highlight the implications of choosing one type over the other, and where both types can co-exist within one organization.

9. **Using Technology to Enhance the Customer Experience:**
As organizations use technology to interact with their customers the "user" experience becomes important. So much so that in many cases the quality of the user interface can impact the customer's decision to repeat the interaction process, irrespective of the quality of the product or service being accessed. Because of the importance that the customer experience can have on repeat business, getting the interface right becomes very important. Success at this point is not just dependent on the quality of your technical people, but on the manner in which end users (internal and external) are integrated into the development process. This chapter will look at the basic underlying principles and methods (and barriers) for building end-user feedback into systems development.

10. **Using Information Systems to re-think Business Processes:**
This chapter is about how technology can be used to improve business process development. Some advocates of process redesign take a mechanistic approach, viewing it more as a

technical task rather than as a socio-technical one. A focus on information technology as a key aspect of process design, while important, can be overemphasised. The central theme of this chapter is to highlight the need to extend the mutual interaction between information systems and process redesign, to include the interaction of people. To this end, the effective use of information systems to redesign processes depends on understanding and managing a range of socio-technical interactions, and not just on viewing the redesign from a purely technical perspective. Many process innovators believe that such projects must be conducted from the top down, but this opinion can be challenged. The detailed understanding of process design and customers often resides with those employees operating in customer-facing positions, and who are likely to resist attempts by others to redefine their jobs.

11. **Securing Your Information in a World of Open Access:**
   One of, if not *the* most important asset for any organization is its data. Whether it is customer data, financial data, performance data, or data relating to intellectual property – this is a core resource for the knowledge-based organization. Where these data reside, who manages them, who has access to them, and how unique they are, are important questions for the organization. Recent advances in technology have seen the physical and virtual barriers to data being eroded. Employees and customers demand more transparent access to information, which needs to be managed. This ever-increasing complexity is requiring organizations, in many cases, to make the choice between speed of access, and information security. This chapter will look at how to protect the integrity, confidentiality, and availability of data, and at basic security practices for ensuring the organization's information remains secure, but accessible to the right individuals.

## 1.7 Intended learning outcomes

As you work through this book it is hoped that you will develop a sound understanding of how technology is shaping the way we interact with others, both internal and external to our organizational boundaries. The scope of this book is wide. However, the concepts are all inter-related, and through developing a high level and broad view of the subject a deeper

understanding can be attained. Overall, the intended learning outcomes for those reading this book are to enable them to…

- Define an organization's capability in terms of its current and future technology requirements.
- Identify the core components of a digital business strategy.
- Identify how organizations can stay in step with the rate of change within the technology sector.
- Identify common themes in technology development (notably digital technologies) and how these are changing the dynamics of internal and external relationships.
- Identify how emergent technologies can benefit an organization's end-to-end performance in terms of driving innovation, co-creation of value, and knowledge creation.
- Identify within an organization where, and what type of knowledge transfer is needed based on operational imperatives, and how technology can impact the transfer.
- Develop an awareness and understanding of the project and programme management techniques used to develop technology driven processes in support of core business objectives.
- Develop an appreciation of the different methodologies associated with the design and implementation of IT and Information Systems.

As we progress through each of the chapters a more refined and chapter-specific set of learning outcomes will be highlighted.

## 1.8 Reflecting on the content

Within each chapter there are a number of "Time Outs". These are reflection points designed to help the reader consider how some of the discussed concepts relate to realistic scenarios. These Time Outs are designed to get the reader thinking by posing a number of questions. There are no "right" or "wrong" answers to these scenarios, and the reader is encouraged to find an appropriate answer to the questions asked.

There are also multi-choice questions, true & false questions, and a case study at the end of each chapter to help consolidate the main learning points.

# Chapter 2: IS Strategy and Business Strategy Alignment

**Learning Objectives**

By the end of this chapter you will be able to:
- Describe and explain the strategic role of information systems (IS).
- Explain what an information management strategy is and its core components.
- Describe the main difference between IS, IM, IT, and KM strategies.
- Explain how IS can support the competitive positioning of an organization.
- Explain how IS can help build competitive advantage for an organization.
- Explain how IS and business strategies can become misaligned and the potential impact this may have on competitive positioning.
- Describe how IS can contribute to building business value.
- Identify who is responsible for the development and implementation of IS strategy within the organization.

## 2.1 Introduction

Technology is pervasive across all aspects of today's modern organization. We use it to power our business processes, communications, product design and development, manufacturing, logistics, sales, marketing, financial and payment systems. As such, technology has become an integral part of how we run our organizations. As we grow to depend more and more on technology our needs become more complex. Gone are the days when technology purely fulfilled a support function for the business. Now technology is being used to build more interactive and intuitive ways of connecting with customers and internal users. It can help speed up and remove error from customer transactions, and scale with minimum ease from hundreds to thousands to millions of transactions instantaneously – with little or no need for an additional resource to meet demand. Technology can also help demand planning and forecasting in order to maintain an