QUT pwc CHAIR IN DIGITAL ECONOMY

DIGITAL BUSINESS

TOWARDS A VALUE-CENTRIC MATURITY MODEL

PART A

KJR™

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FOREWORD

The business environment is rapidly changing and technology is shaping the way organisations can transform, gain and retain competitive advantage. Digital technologies are enabling new ways of producing goods and offering services; identifying better ways to engage customers, employees and supply chains; improving operational efficiency and fostering innovation. However, not all businesses are performing equally – some are embracing the opportunity, some are emerging, while still others are struggling to cope with the changes. What are the key attributes of a successful digital business and what are the necessary steps to achieve success? Is technology, or perhaps leadership, strategy or culture the starting point? These questions have not been investigated in a systematic manner, especially in the context of verifying and testing them with a combination of academic and practical rigour.

This study provides a solution in the context. Following it will likely not only improve your digital capability, but also help generate higher returns on your investment and allow you to thrive in the digital economy.

The Digital Maturity Model proposed in this report consists of six digital capability indicators and seven digital impact indicators. The maturity model has been developed through extensive literature review, industry and expert panel consultation with academics and businesses. The model will help organisations run a successful digital transformation to cope with emerging challenges. The model will also help assess organisations' progress in implementing these technologies, and assist management in identifying new pathways for improvement and compare the progress with others.

We hope your organisation will benefit from this maturity model.

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EMERGENCE OF
DIGITAL BUSINESS MATURITY MODEL

As the technological landscape is rapidly changing, organisations must also transform or become victims of 'digital Darwinism'[1]. This has led to the emergence of the concept of a 'digital maturity model' that seeks to guide organisations in digital transformation.

Digital transformation is defined as the process whereby a business becomes increasingly digital over time by leveraging digital technologies to provide new revenue and value-producing opportunities. This involves a complete integration of technology into all aspects of a business to improve performance[2].

A 'digital maturity model' can therefore be defined as the extent to which a digital transformation process is explicitly defined, managed, measured and continuously improved. The maturity level can be assessed in terms of measurable target values that can be achieved in incremental steps.

Since the early 1990s, a large number of maturity models have evolved.[3] However, most maturity models are domain-specific, considering one or more functional or managerial attributes.

There is a lack of research on organisational overviews of digital maturity models. The gap in knowledge exists at both theoretical and empirical fronts, particularly in evaluating and validating developed 'digital business maturity models'. This study fills the gaps in the context.

1 G. and M. Kleinemeier, Shaping the Digital Enterprise. 2017, Springer

2 Marshall, K., What is digital transformation? 2017, Dennis Publishing Ltd: London.

3 Wendler, R., The maturity of maturity model research: A systematic mapping study. Information and software technology, 2012. 54(12): p. 1317-1339

6.

HOW DOES
A MATURITY MODEL WORK?

Maturity models are based on the assumption of predictable patterns of evolution. Models usually include a sequence of levels (or stages) that together form an anticipated path from an initial state to optimal maturity. Maturity is assessed across several dimensions that together form the object of measurement.

Accordingly, characteristics for each stage and the logical relationships between successive stages need to be explicated. In practice, the maturity levels indicate an organisation's current (or desired) capabilities and show improvement measures. The intention is to diagnose and eliminate deficient capabilities.

HOW ARE
MATURITY MODELS USED BY BUSINESS?

Maturity models are used by managers in three key ways:

DESCRIPTIVE USE

- To assess the ‘as-is’ state of particular organisational capabilities
- As a diagnostic tool
- To report maturity levels to internal and external stakeholders

PRESCRIPTIVE USE

- To identify desired maturity level and receive guidance on how to improve from current maturity level
- To follow specific and detailed courses of action

COMPARATIVE USE

- To compare performance of the organisation through internal or external benchmarking

INTRODUCING...

The following section will provide the Digital Maturity Model developed in this study.

The methodological process and literature involving the development of the model are presented in the comprehensive report (**Part B**).

DIGITAL MATURITY

Organisations reach the highest level of maturity when they have both a strong digital foundation (digital capability indicators) and a good understanding of how to leverage this foundation for a strategic business advantage (digital impact indicators).

A DIGITAL MATURITY MODEL TO UNLOCK INNOVATION

VALUE PROPOSITION

- Allows identification of digital maturity stage across different dimensions.
- Model findings can be used to identify and direct digital maturity activities.
- Facilitates informed decisions about prioritising areas for development.
- Can be applied over time – and supports as a longitudinal study, the measurement of actual progress in digital transformation.
- Allows benchmarking of organisation compared to competitors.

Digital maturity is not a static concept.

As such, an organisation will need to assess maturity over time. For example, a change in the technological landscape could mean that a transformative organisation takes a step back to being purposeful quickly.

STAGES OF
DIGITAL MATURITY

The Digital Maturity Model proposed in this report consists of four stages. They are: Initiate, Competent, Purposeful and Transformative. The key attributes of businesses related to each of these maturity stages are given in Figure 1.

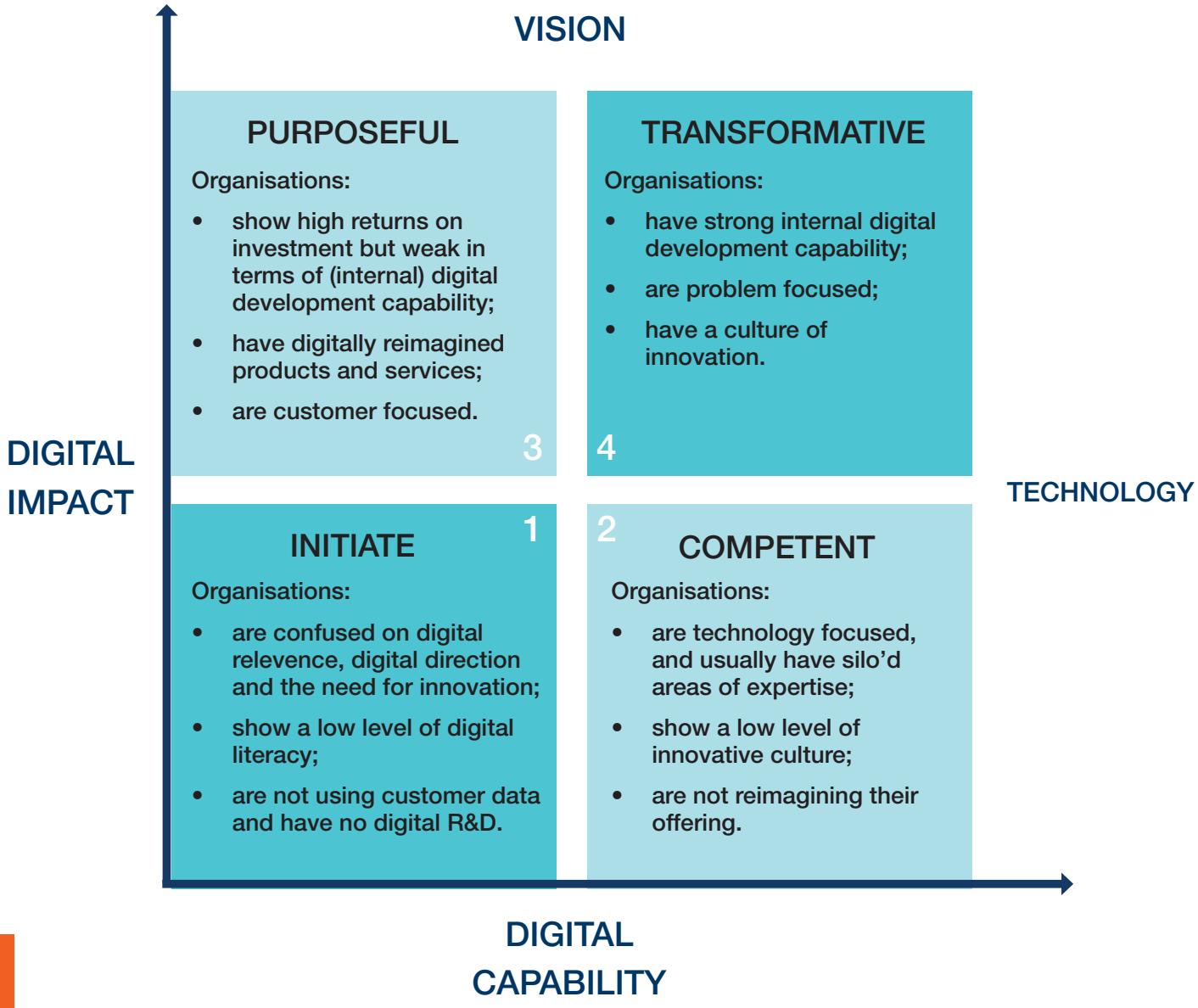


Figure 1. Stages of Digital Maturity and Key Attributes of Businesses in Each Maturity Levels

INDICATOR DEFINITIONS

Digital technologies are electronic tools, systems, devices and resources that generate, store or process data.

Our maturity model measures digital maturity across two axes; ‘digital capabilities’ and ‘digital impacts’.

(Figure 2, Pg 13)

DIGITAL
CAPABILITIES

The Digital Capability Indicators measure the strength of the organisation's digital foundation. This starts with physical technology infrastructure, but encompasses the aspects of the organisation that allow it to derive value from technology. This includes strategy, talent and skills, risk management and customer experience.

There is a prevailing view that organisations need only to focus on implementing the latest technology trend (e.g., mobile app, cloud, IoT etc) in order to "become digital". Instead, they should be concerned with developing a culture and practice of continually evaluating and adopting the most relevant technology and integrating it thoroughly into the business in order to exploit opportunities in the market.

Digital Capability Indicators:

- Strategy
- Digital Infrastructure and Platforms
- Risk Management
- Talent and Skills
- Customer Experience Design
- Business Ecosystem Design

DIGITAL
IMPACTS

The Digital Impacts Indicators measure how digital technologies are leveraged to respond to consumer demand and changes in the environment through improved product and service offerings.

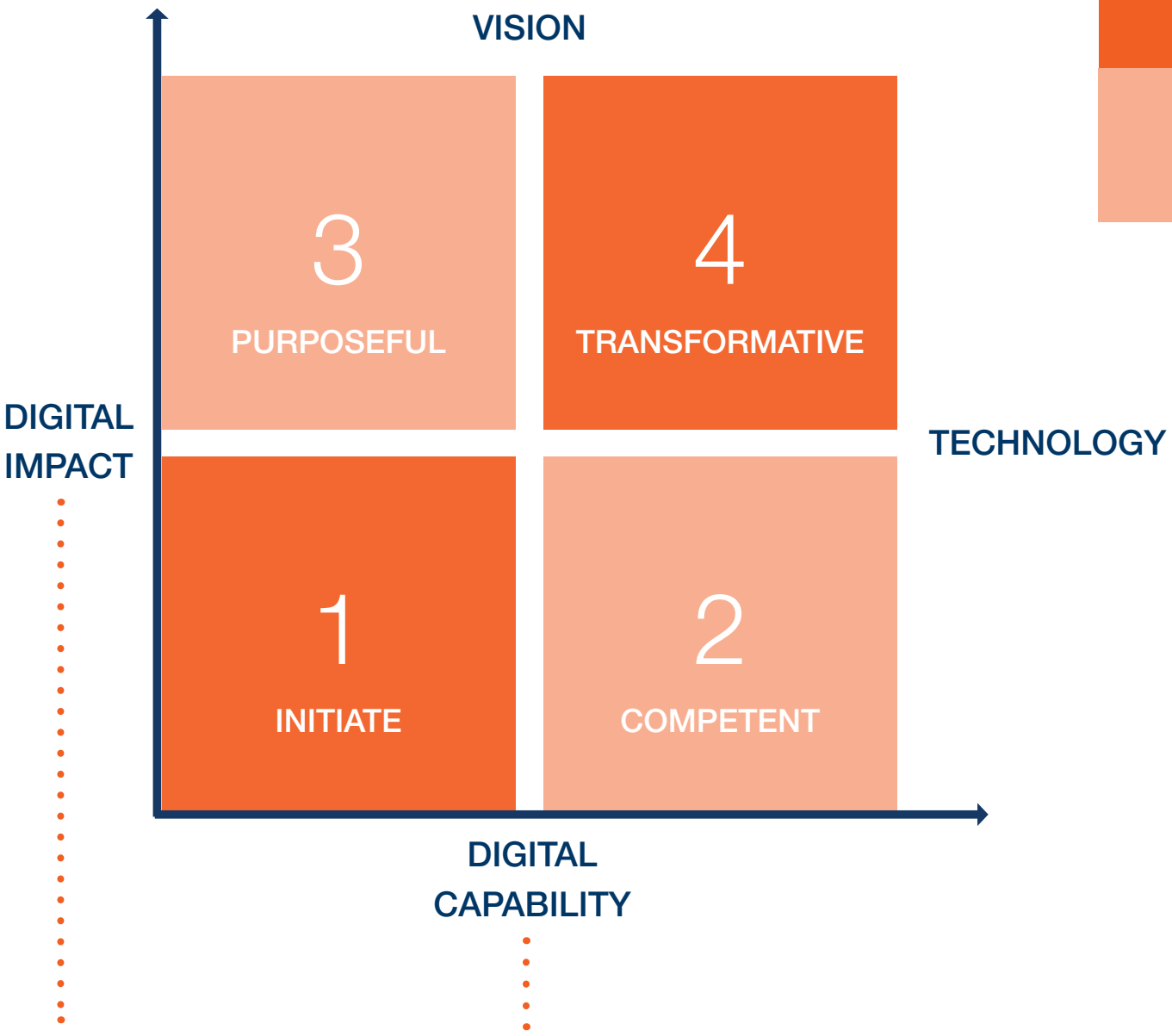
In other words, these indicators measure how well the organisation understands the consumer (and the business processes of the consumers' lives) and positions itself to the consumer through brand, experience and technology.

The systems and processes that drive consumers' everyday lives are so complex that digital business which are able to use technology to improve the customer experience and re-imagine their own role in this complex context can expect to make a transformative impact in the market.

Digital Impact Indicators:

- Vision
- Leadership
- Governance
- Innovation Culture
- Value Alignment
- Business Agility
- Revenue Resilience

Figure two presents the 'digital capability' and 'digital impact' indicators with corresponding axes they belong to.



1. Vision
2. Leadership
3. Governance
4. Innovation Culture
5. Value Alignment
6. Business Agility
7. Revenue Resilience

1. Strategy
2. Digital Infrastructure and Platforms
3. Risk Management
4. Talent and Skills
5. Customer Experience design
6. Business Ecosystem Design

Figure 2. Digtial Maturity indicators

DIGITAL CAPABILITY
INDICATORS

STRATEGY

Strategy is the tool which an organisation uses to map the pathway it will take to pursue its goals, taking into account the threats and opportunities it sees in the environment and its resources/capability constraints[4].

For a successful digital transformation, organisations need to have a clear digital strategy that provides a strong vision[5]. Research shows that the most successful digital organisations tend to have digital strategies that focus on transforming the business as a whole, as opposed to transforming operations[6].

DIGITAL INFRASTRUCTURE AND PLATFORMS

Technology and Data refers to the underlying technological assets of an organisation and how these are integrated into business processes. In the digital transformation literature, technology infrastructure is considered to be the foundation from which digital transformation can occur. [7] [8]

Digitally mature organisations should also be able to respond quickly and effectively to new technologies[9]. They may have processes in place to discover, assess, select and fund the adoption of new technologies in the business.

RISK MANAGEMENT

While digitally mature organisations should have a proactive culture that tolerates risk-taking behaviours, they must be equally proactive when it comes to digital risk management[10]. This is because innovation activities are necessarily unpredictable in nature.

While there are some tensions between risk management and digital innovation, the literature suggests that accurate application of risk management theory combined with strong interaction between leadership and management will effectively address these tensions.[11] A good risk management enables an organisation to innovate faster and with greater confidence.

4 Nandakumar, M., A. Ghobadian, and N. O'Regan, Business-level strategy and performance: The moderating effects of environment and structure. Management Decision, 2010. 48(6): p. 907-939.
5 Kane, G.C., et al., Strategy, not technology, drives digital transformation. MIT Sloan Management Review and Deloitte University Press, 2015. 14.
6 *Ibidem.*
7 Faeste, L., T. Gumsheimer, and M. Scherer, How to jump-start a digital transformation, in BCG Perspectives. 2015.
8 Berman, S.J., Digital transformation: opportunities to create new business models. Strategy & Leadership, 2012. 40(2): p. 16-24.
9 Fitzgerald, M., et al., Embracing digital technology: A new strategic imperative. MIT sloan management review, 2014. 55(2).
10 Oswald, G. and M. Kleinemeier, Shaping the Digital Enterprise. 2017, DE: Springer Verlag.
11 Borgelt, K. and I. Falk, The leadership/management conundrum: innovation or risk management? Leadership & Organization Development Journal, 2007. 28(2): p. 122-136.

TALENT AND SKILLS

Organisations should be proactive when it comes to attracting and retaining the digital talent needed to realise the business strategy and ensure all employees are equipped with appropriate digital skills. Effective knowledge management is needed to use data in a strategic way, transforming it into meaningful information[12] [13].

CUSTOMER EXPERIENCE DESIGN

Customer experience refers to the entirety of all interactions between an organisation and customer over the duration of their relationship[14]. Technological advances and the more widespread dissemination of data and information have given rise to a more empowered global consumer. It is critical that digital organisations understand the customer experience in order to design solutions which satisfy customer expectations through a myriad of touch points, channels and media.

BUSINESS ECOSYSTEM DESIGN

Digital technology affords organisations with the opportunity to improve engagement and collaboration with partners and suppliers for mutual benefit.[15] Ideally, all elements of the organisation's supply chain should be digitally enabled, effectively integrating digital across the entire enterprise[16]. In particular, organisations should take advantage of sharing APIs (Application Programming Interface) to improve the success of digital initiatives.

12 Kaivo-oja et al. The effects of the internet of Things and big data to organizations and their knowledge management practices. in International Conference on Knowledge Management in Organizations. 2015. Springer.

13 Khatibian, N., T. Hasan gholoi pour, and H. Abedi Jafari, Measurement of knowledge management maturity level within organizations. Business Strategy Series, 2010. 11(1): p. 54-70

14 Richardson, A., Understanding customer experience, in Harvard Business Review. 2010, Harvard Business School: Cambridge

15 Oswald, G. and M.e. Kleinemeier, Shaping the Digital Enterprise. 2017, DE: Springer Verlag.

16 Berman, S.J., Digital transformation: opportunities to create new business models. Strategy & Leadership, 2012. 40(2): p. 16-24.

DIGITAL IMPACT
INDICATORS

VISION

Vision is the ultimate reference point of long-term success of an organisation. It reflects either visionary or more pragmatic goal of the organisation and reflects its future state. A digitally mature organisation should have a clearly articulated vision, design strategies and course of action to achieve their desired goal.

LEADERSHIP

The leaders of a digital organisation should have a strong ability to identify and realise opportunities for business growth and value creation through the use of digital technologies[17]. In realising opportunities, they should be leading transformation and innovation activities in the organisation by creating a proactive culture (where employees are encouraged to express their knowledge for the company's benefit), inspiring team collaboration, allowing risk taking and promoting a mindset of curiosity (i.e. failure as a prerequisite for success).

GOVERNANCE

Transformational governance is the framework that an organisation develops for establishing accountability, roles and decision-making authority for the organisation's digital strategy (that will transform the business)[18]. Governance should be focused on building the organisational capabilities (the organisation is able and efficient) and dynamic (the organisation is agile and responsive to change).

INNOVATION CULTURE

Organisational culture is the set of shared assumptions that determines how an organisation perceives, thinks about, and reacts to, its environment. In digital organisations, it is necessary to create an innovative culture whereby the organisation can continually improve its offering to customers. For this to occur, risk taking should become a cultural norm within the organisation[19]. This allows for greater innovation capacity as companies that are too risk averse often fail to take full advantage of opportunities that may transform the business.

17 Oswald, G. and M.e. Kleinemeier, Shaping the Digital Enterprise. 2017, DE: Springer Verlag.
18 Gimpel, H. and M. Röglinger, Digital Transformation: Changes and Chances–Insights based on an Empirical Study. 2015, Fraunhofer Institute for Applied Information Technology FIT.
19 Kane, G.C., et al., Strategy, not technology, drives digital transformation. MIT Sloan Management Review and Deloitte University Press, 2015. 14.
20 Marchand, D.A. and M. Wade, Digital Business Transformation: Where is your company on the journey? Perspectives for Managers, 2014(187): p. 1-4.

VALUE ALIGNMENT

Digital affords businesses with the opportunity to collaborate and co-create value with stakeholders (including customers and suppliers). To enable co-creation, managers should make use of digital tools to promote values and behaviours that are associated with information integrity, transparency, trust and sharing[20]. Managers should also realise the value of collaboration within the business and there should be an effort to break down silos.

BUSINESS AGILITY

To be successful in the digital world, firms must also be responsive to changes in technology and adapt their business model accordingly to derive a competitive advantage. Digitally mature organisations may respond to environmental changes by frequently updating their processes (for example, by streamlining product cycles, they reserve the ability to add features later into new versions of products). [21]

REVENUE RESILIENCE

In the age of digitisation, organisations may find that traditional revenue streams are under threat from technological disruption. Organisations need to have an awareness of how current revenue streams may be under threat from technological disruption and plan accordingly. It is no longer sufficient for organisations to simply focus on optimising current operations and strive for efficiency gains. Revenue resilience is about creating new business models to diversify revenue sources so when an organisation is disrupted it doesn't fold. [22] [23]

21 Fitzgerald, M., et al., Embracing digital technology: A new strategic imperative. MIT sloan management review, 2014. 55(2).

22 Gilbert, C., M. Eyring, and R.N. Foster, Two routes to resilience. Harvard Business Review, 2012. 90(12): p. 65-73.

23 Kim, S.K. and S. Min, Business model innovation performance: When does adding a new business model benefit an incumbent? Strategic Entrepreneurship Journal, 2015. 9(1): p. 34-57.

THE DIGITAL MATURITY SCORECARD

To begin the digital transformation journey, it is essential for an organisation to understand its starting point. We have created a questionnaire to assist organisations in understanding their level of digital maturity.

The following tables can be used to self-assess the maturity. Higher scores in each of the digital capabilities indicate a higher position on the X axis of the digital maturity matrix. Higher scores for digital impacts indicate a higher position on the Y axis of the digital maturity matrix.

The higher the cumulative score, the more ‘digitally mature’ an organisation is. In the questionnaire, each of the questions carries equal weight.

CAPABILITY INDICATORS QUESTIONS

Answer each question, using a scale 1 to 5
1 = Strongly disagree
3 = Neutral
5 = Strongly Agree

INDICATOR	QUESTION	SCORE
STRATEGY	My organisation has a clear, coherent and actionable strategy that shows the path and steps of digital transformation.	
	Digital strategy in my organisation focuses on transforming the whole business (end-to-end) rather than transforming one or more operations or silos.	
	Digital business strategy in my organisation includes digitisation of products and services and the information around them.	
TALENT AND SKILLS	Employees have skills and competencies to facilitate digitisation or are able to access these skills from partners or suppliers as needed.	
	We find it easy to attract high quality technical staff to our organisation because of our reputation as a leader in digital technologies and ways of working.	
	My organisation continuously invests in developing digital skills of employees.	
	Employees are able to quickly identify the core of a business or customer problem, and self-organise to address the solution timely manner.	
DIGITAL INFRASTRUCTURE AND PLATFORMS	My organisation funds and resources digital transformation adequately.	
	Digital investment considers an organisation-wide approach (people and culture), rather than investing only in technology and/or developers.	
	My organisation is able to effectively integrate new technologies with older ‘legacy technologies’.	
	My organisation has the technological infrastructure and corresponding solutions in place to support real-time customer insights.	
	My organisation has systems, applications and tools in place that enable more efficient business processes.	

INDICATOR	QUESTION	SCORE
	My organisation has the technological infrastructure and corresponding solutions in place to support real-time business decision making.	
	My organisation uses automated and integrated tools to support marketing and sales activities.	
	My organisation has established an appropriate business intelligence system to help employees make timely decisions.	
	My organisation has the process in place to understand and learn from a failure.	
	My organisation is data focused and uses data for environmental sensing/machine learning/predictive analysis.	
RISK MANAGEMENT	My organisation has services, systems, applications and tools in place in order to appropriately protect the organisation from cyber-attacks and other security risks.	
	My organisation actively and regularly assesses technical, business and social risk factors when it comes to technology investment.	
	My organisation considers the scalability of digital infrastructure to meet the demand driven by marketing, promotions or legislation requirements.	
	My organisation has embedded a proactive risk management approach within the culture and processes of the organisation.	
	The degree of risk mitigation in a project is varied according to the assessed risk level of the project.	
BUSINESS ECOSYSTEM DESIGN	My organisation has technology foundation in place that enables us to benefit from business networks and optimise collaboration with our suppliers.	
	We connect with our partners digitally. For example, we use modern business system integration platforms, such as API-enabled cloud-based services, to enable efficient business interactions that otherwise would not be possible.	
	My organisation uses technology to deliver more efficient business outcomes, for example by using process automation and hardware virtualisation, cutting out the intermediaries or using data to become more accurate and predictive.	

INDICATOR	QUESTION	SCORE
CUSTOMER EXPERIENCE DESIGN	User Experience research is conducted by my organisation to better understand customer pain points as part of designing better products and services.	
	My organisation has the ability to design and deliver a tailored product to fulfil customers' needs.	
	My organisation provides customers with a fully integrated experience in all areas of interaction including technology and brand.	
	My organisation continuously improves its digital and physical experiences to deliver genuine value to the customer.	
	My customers can effectively communicate with my organisation to address complaints and help resolve issues.	

IMPACT INDICATORS QUESTIONS

Answer each question, using a scale 1 to 5
1 = Strongly disagree
3 = Neutral
5 = Strongly Agree

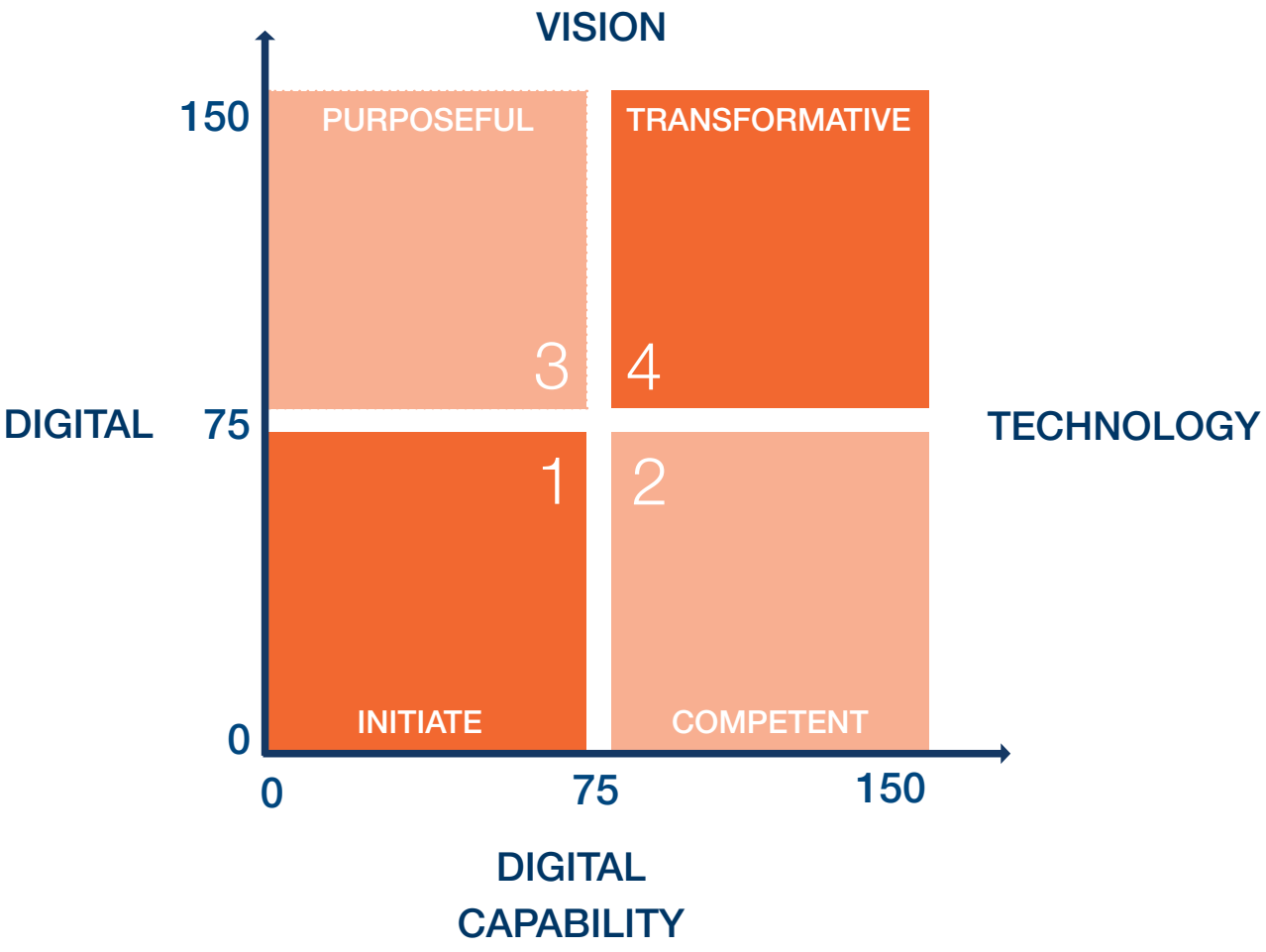
INDICATOR	QUESTION	SCORE
VISION	My organisation has a long-term (e.g. 5 years and beyond) goal that reflects its ultimate point of success.	
	My organisation is customer centric and creates digital value by addressing customers' problem in a new and innovative way.	
	Digital technology is an essential element of realising the vision of my organisation.	
	My organisation utilises digital to reach its full potential in the market (local, national or global) by creating new ways to connect with customers.	
	Digital strategy in my organisation is no different from overall business strategy.	
LEADERSHIP	Leaders in my organisation have a compelling long-term goal for my organisation.	

INDICATOR	QUESTION	SCORE
	Leaders in my organisation have the ability to communicate their future foresight throughout the organisation.	
	Leaders in my organisation actively identify and realise opportunities for digital enabled business growth.	
	Leaders in my organisation have empowered employees to work in cross-functional teams and collaborative environments.	
GOVERNANCE	In my organisation everyone has a mandate to think creatively and innovate.	
	My organisation takes a rigorous and systematic approach to innovation or change management.	
	My organisation empowers staff to work autonomously as required, while providing an appropriate level of vision, guidance and coordination to maintains focus.	
	My organisation conducts both small iterative experiments, and enterprise wide initiatives to realise innovation that has business impact.	
	My organisation conducts innovation activities as a regular task.	
	Employees feel empowered and take calculated risks to be successful.	
	Employees regularly work in interdisciplinary teams and are supported in cross-skilling and knowledge sharing.	
	Teams work collaboratively on projects and share developments all the way through, factoring in feedback and new insights to improve as they go.	
VALUE ALIGNMENT	My customers can effectively communicate with my organisation to co-create value.	
	My supplier can effectively communicate with my organisation to co-create value.	
	All staff (e.g., technology and management) in my organisation work in sync towards implementing our (digital) vision.	

INDICATOR	QUESTION	SCORE
	My organisation fosters an integrated digital ecosystem. For example, we share data and/or provide integration points so that third parties can create value-add services that complement our own, increasing revenue and customer retention.	
	Everyone in the organisation knows of, understands and is able to act on our digital strategy.	
REVENUE RESILIENCE	My organisation's business model is continually expanding capacity and increasing utilisation, and they are increasing over time.	
	There are very few technical issues in the delivery of our digital services.	
	When technical issues do occur in service delivery, we are able to resolve them within an acceptable period of time (i.e. within customer expectations of our industry).	
	My organisation's digital initiatives are currently generating value (e.g. new lines of revenue) and/or efficiencies (e.g. cost reductions), and the impacts are increasing over time.	
BUSINESS AGILITY	My organisation's digital initiatives are currently generating value (e.g. new lines of revenue) and/or efficiencies (e.g. cost reductions), and the impacts are increasing over time.	
	My organisation has a proven ability to identify customer's latent needs.	
	My organisation has demonstrated ability to pivot its purpose, products and service based on analysis of customer insight and key performance metrics.	
	Employees quickly recover from setbacks and reframe their approach.	
	Efficient and agile processes and systems are used to react to rapid business change.	
	Technology is no longer a bottleneck in our organisation. For example, our technical delivery teams can implement services faster than we can generate new service delivery ideas.	

CALCULATING YOUR OVERALL MATURITY POSITION

QUADRANT	CAPABILITY SCORE	IMPACT SCORE
Initiate	0 - 75	0 - 75
Competent	76 - 150	0 - 75
Purposeful	0 - 75	76 - 150
Transformative	76 - 150	76 - 150



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