

IT Strategy in the Era of Digital Transformation: Case Higher Education

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1. ABSTRACT

The role of an IT strategy is changing radically with the progress of digital transformation. This is natural as IT is moving from a supporting role closer to the core of the business. Higher education is no exception: IT is now visible in nearly all activities both within the business and also in the supporting functions.

As a result of the role change, there is a new set of expectations for a successful IT strategy. Moving into the core of business requires a new approach in target setting and in the way IT's direction is defined. We briefly analyse the shortcomings of traditional IT strategies and how the additional needs have been addressed so far. While these approaches allow organisations to proceed with their digital development work, the outcome has often been a complex patchwork of strategy documents and related activities. To solve the issue, we propose a model where *digital capabilities* provide the underlying structure for bridging the gap between the new requirements and traditional IT delivery. This allows the inclusion of organisation-wide business aspects into the strategy while keeping the role of IT clearly visible. As a consequence, the use of digital capabilities in the strategy blends the business with technology in a seamless way, just like in real life. To illustrate the approach, we analyse how the proposed approach can be applied to the higher education sector. Examples of higher education are used throughout the paper. This demonstrates that the model works in practice and provides an example of using it in a complex and multi-faceted industry.

2. NEW REQUIREMENTS FOR AN IT STRATEGY

The purpose of an IT strategy is to explain and direct the way IT creates value for the organization. As digital transformation changes the role of IT, the structure of the IT strategy must change accordingly. The traditional approach is to consider IT as a utility or a non-critical support function. Consequently, IT activities are mostly left to the technical people and, in the same way, IT strategy is often a stand-alone document where these people describe how they manage the IT infrastructure and run the related processes. Both are kept apart from the actual business and the value of IT is often expressed in terms of cost savings or in the desire to make the IT as invisible as possible, often disguised under terms user-friendliness and flexibility. This can be seen from the numerous IT strategy templates that are available in the literature, and frequently there is a challenge to find links between the business and the IT (e.g. McKeen & Smith, 2015).

Today, information technology is becoming an integral part of most businesses, and the higher education sector is not an exception (Kähköpuro, 2015). Consequently, links to the business are much easier to find but, at the same time, it is increasingly difficult to manage the use of digital technologies in a consistent way and to develop a roadmap that will not end up in a chaos. This is what makes IT strategies different in the era of digital transformation. Some organisations are using the term *digital strategy* to highlight the change of scope from an isolated traditional IT to the entire business through a digital lens. This is illustrated in Figure 1, where arrows indicate the value created by IT.

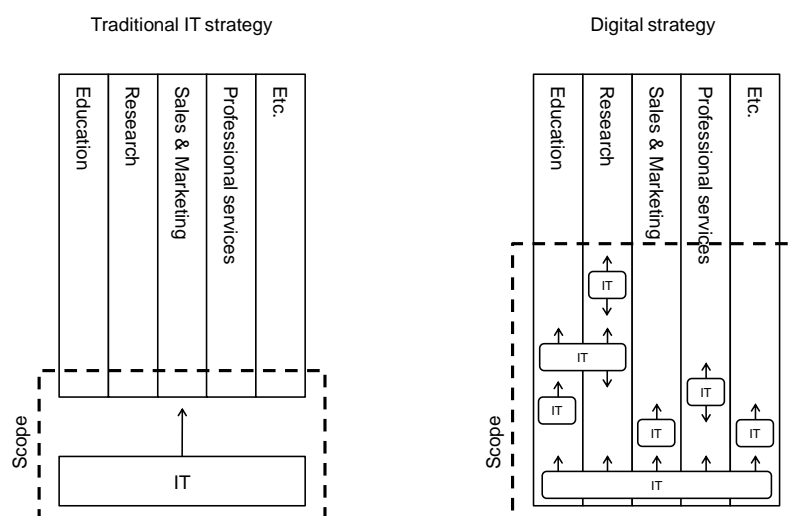


Figure 1. Scope difference between a traditional IT strategy and a digital strategy.

The implications of the above change are visible in a number of new requirements that all affect how an IT strategy should be formulated:

- **Wider use of technology.** Information technology is usually present in most activities taking place across the organization and, consequently, the value of IT and strategic choices need to be considered in the relevant business contexts. For example, choices in the use of some of the (educational) IT technologies need to be made in the context of the selected teaching methodology.
- **New role of technology.** Sometimes digital technologies become indispensable and, unlike before, may even drive the business direction. For example, on-line courses can no longer be implemented without digital tools, and technology choices in the end-to-end process from content creation, delivery, and assessment become critical success factors.
- **Business development.** Digital is increasingly important for differentiation and innovation. In higher education, digital experience can be used to attract both students and staff. In the same way, those institutions that are well prepared for rapid changes with an agile digital infrastructure and integration capabilities are also better prepared for business changes, such as setting up new academic programmes for education and research.
- **Integration across the organisation.** Digital solutions typically span across organizational boundaries and it is often IT that provides the underlying links between different parties. For example, it is increasingly popular to use the same CRM platform for linking the full student lifecycle from recruitment and admission all the way to the alumni status. IT effectively becomes a process and technology integrator for the organisation. In an integrated organisation, the same solution can often create value in different ways depending on the stakeholder group and, consequently, the same technology will have to be addressed in a number of strategic contexts.
- **People and structures.** Today, most business and leadership roles require sufficient knowledge on information technology and, likewise, IT people are expected to have much deeper understanding of the core business. As a result, organizational responsibilities and individual roles become blurred. For example, academic leaders are often information asset owners for business critical information and, therefore, need new skills in information security and data protection.
- **Culture.** Advanced benefits of the digital transformation typically require changes in behaviour in the entire organisation (e.g. automation and self-service) and, consequently the strategy needs to tie cultural and digital elements together.

A traditional IT strategy is not fully equipped to address the above needs. To address them sufficiently, IT strategy should cover areas that are beyond the scope of traditional IT work and organization - often touching elements in the entire business.

Due to the limitations of traditional IT strategies, organisations have recently started publishing their “overlay digital strategies” in addition to their underlying IT strategies and roadmaps. While this approach provides an incremental workaround for addressing some of the above issues, the product is often a patchwork of strategy documents and unrelated activities. This is very close to what Rumelt (2011) calls as bad strategy and will result in non-optimal outcomes for the organisation.

3. USING DIGITAL CAPABILITIES TO BRIDGE THE GAP

A *business capability* refers to the capacity, materials and expertise required to perform a core business function, and *digital capabilities* refer to those business capabilities that are needed to operate successfully in a digital world. The use of digital capabilities can bring clarity for dealing with digital transformation (Hentrich et al., 2016), and the model also works for the higher education sector (Kähkipuro, 2017).

Capabilities have several characteristics that are useful in tackling the issues identified above:

- *Wider use of technology.* Digital capabilities typically combine people, tools, processes and other resources across organisational boundaries for implementing the desired business function. Consequently, IT elements get blended with business elements just like they do in real life, and the right business context is present by default. The new model inherently supports wider use of technology within the organisation.
- *New role of technology.* The proposed approach works with different combinations of technology and other elements within a given capability: sometimes technology plays a key role and sometimes it is in a supporting role and other elements are more important. In all cases, the capability can be addressed in the same way, and its place in the strategy is defined by the business need. There is no need to artificially separate the IT component from the other elements linked to it.
- *Business development.* In traditional strategies, business development is typically managed separately from IT and, whenever technology investments are needed, the implementation starts reactively after the first moves have already been made on the business side. This may lead to suboptimal solutions and IT becomes a bottleneck for business development. The use of capabilities (with their embedded technology components) in formulating the strategy prevents organisations from forgetting the required technology investments needed in the planned business development activities. In fact, the relationship can turn around and digital technology can in some cases be the driver for new business. A classic example for this is the growing on-line education in different forms.
- *Integration across the organisation.* Capabilities span typically across the organisation and, consequently, integration across the participating stakeholders is a natural consequence of the proposed approach. The focus will be on finding the optimal solution for the whole organisation rather than for the individual units. For example, High Performance Computing is often implemented separately in different departments, but it is likely that an institution will get better results by formulating its strategy for the entire HPC capability. The use of a holistic capability doesn't necessarily lead to a centralised implementation. The best approach may still be a distributed implementation model but there may be significant synergies available through joint capacity planning and procurement.
- *People and structures.* With the capability approach, structures will be less important. Consequently, people can be more empowered, and the organisation can adopt different modes of operation depending on the skill sets that are available. In higher education, borderlines between organisational units have traditionally been quite strong and this has often created structural replication across the organisation e.g. independent IT teams in academic units and professional services. The average of formal IT budget in education is 77% of all IT spending while the number across all industries is 84% (Gartner, 2018). The use of capabilities for strategic direction-finding will allow institutions to optimise the use of its resources across the organisation and to avoid duplication of work even if the structure remains intact.

- *Culture*. By combining processes, people and tools together, the capability based approach provides a number of viewpoints to address cultural issues. The development and introduction of new digital capabilities will typically require changes in behaviour, and changing the organisational culture will provide an efficient tool for making this happen.

4. STRATEGY TEMPLATE WITH DIGITAL CAPABILITIES

While the use of capabilities can provide significant benefits for defining an IT strategy, there is also a need to provide a consistent structure for the document. Listing the required digital capabilities is simply not enough, as it would just create a collection of detached initiatives for developing them individually.

In this section, we propose a practical top-down template for a digital strategy based on digital capabilities. The proposed approach illustrates how the elements discussed in the earlier sections can be joined together consistently. On one hand, the structure guides the reader through the strategic narrative and makes it easier to understand the role of each element in it. On the other hand, it allows the implementation teams to be aware of the relevant business context and the related other capabilities when working with a selected capability. This template serves only as an example for building a consistent capability-based IT strategy, and most organisations have their own detailed templates and practices for creating such documents.

The proposed template consists of the following five sections:

1. The context.
2. Digital aspects in the organisation's top level strategy.
3. Role of the IT organisation(s), and capabilities that are predominantly IT based.
4. Digital capabilities across the organisation.
5. The implementation.

The purpose of the first section is to link the strategy into a broader context. This section typically refers to the organisation's mission and vision statements, and discusses the ongoing changes in the business and technology environment. In addition, there may be themes or principles that the organisation wants to emphasise throughout the entire strategy document to address known challenges. For example, "customer first" is an increasingly popular principle in the higher education sector where capabilities have traditionally been optimised from the delivery organisation's perspective and have not always been designed end-users in mind.

The second section identifies digital aspects in the organisation's top level strategy, and provides pointers to the required individual digital capabilities. This section is best organised with a structure that follows the business strategy, allowing the reader to observe how business aspirations in different areas are driving the required digital capabilities. For each area, it is useful to define a business vision that provides guidance for the underlying capabilities, and set of metrics to measure the level of success in reaching the vision. For example, there is often an element addressing business growth and, in higher education, this element could discuss the capabilities needed for creating additional on-line programmes or attracting new students with improved CRM practices.

The third section addresses the role of the IT organisation (or multiple organisations in the case of a devolved structure) and discusses those digital capabilities that are predominantly managed by the IT organisation. Usually, these are technical capabilities intended for running and developing the digital infrastructure, see Kähkönen (2018) for a relevant discussion. This section is also an ideal place for stating the vision and mission of the IT organisation.

The fourth section provides a review of the digital capabilities that cut across the entire organisation. This section provides the essence of a digital strategy. It can be structured in different ways depending on the organisation's priorities, but the following check list of capability categories can be used as a starting point:

- *Business centric capabilities*. These capabilities are typically centred around business domains.
- *Cross-cutting capabilities*. These capabilities are supporting several business domains and are often organised and implemented as a single capability; automation and self-service are typical examples.

- *Operational capabilities*. These capabilities refer to activities providing an essential support layer for business success. Typical examples include IT partnering, procurement, and project delivery.
- *Future-looking capabilities*. These capabilities focus on the future success of the organisation. While some of them could be part of the business centric category (and will eventually move there), these capabilities often have their own processes, tools and people to ensure that the mainstream business does not suffocate emerging opportunities. Hence, they deserve a separate category. Currently, typical examples include the use of artificial intelligence and business analytics in most businesses.
- *People-related capabilities*. With new digital tools and processes, there is a need to improve digital skills within the organisation, and this will require additional capabilities from the organisation. For a generic analysis on the higher education sector, see (Killen et al., 2017).

Each capability can be addressed with a “mini-strategy” with the following elements:

- Context (why the capability is needed).
- Vision or target (the aim of the capability).
- Required elements, such as people, processes and technologies, and guiding policies.
- Actions to reach the vision (together with risks, governance and other relevant aspects).

Finally, the fifth section of the template provides an overview of implementing the strategy. A number of perspectives will be needed, such as:

- How to organise the implementation work (e.g. a holistic programme or a group of projects)?
- How to manage change, e.g. cultural change?
- What are the key risks and their mitigation?

5. APPLYING THE MODEL TO HIGHER EDUCATION

This section provides an example of an IT strategy based on digital capabilities. It is not a full strategy document but it has been obtained from an authentic context and it illustrates how the principles of this paper can be applied to a real-life situation.

Figure 2 provides an overview of an initial digital strategy draft for Brunel University London before it will be submitted through a series of workshops and discussions to get feedback from the organisation for adjusting the strategy to reflect the business priorities properly.

Many of the details are fairly generic and, at this stage of the process, they represent possible strategic choices for the organisation. For example, the structure of the implementation work is just a template that needs to be populated after the full strategy process has been carried out. In the same way, the digital vision statements for the five business domains need to be scrutinised by the business owners and adjusted accordingly.

The structure of the example follows the template provided in the previous section with a couple of exceptions. Firstly, some of the business centric capabilities (from section 4 of the template) have been addressed earlier in the document within the five business domains (i.e. in section 2 of the template). The best place for the description depends on the capability: if it is tightly connected to the business it may fit well to the discussion on business requirements, but if it is more generic or technical in nature, the description is better deferred to section 4 of the template.

Secondly, the Information Services directorate at Brunel includes Library Services. This addition fits well in the template as an extension of section 3 where the organisation is described. This also illustrates how the template can be flexibly adjusted to accommodate different organisational choices.

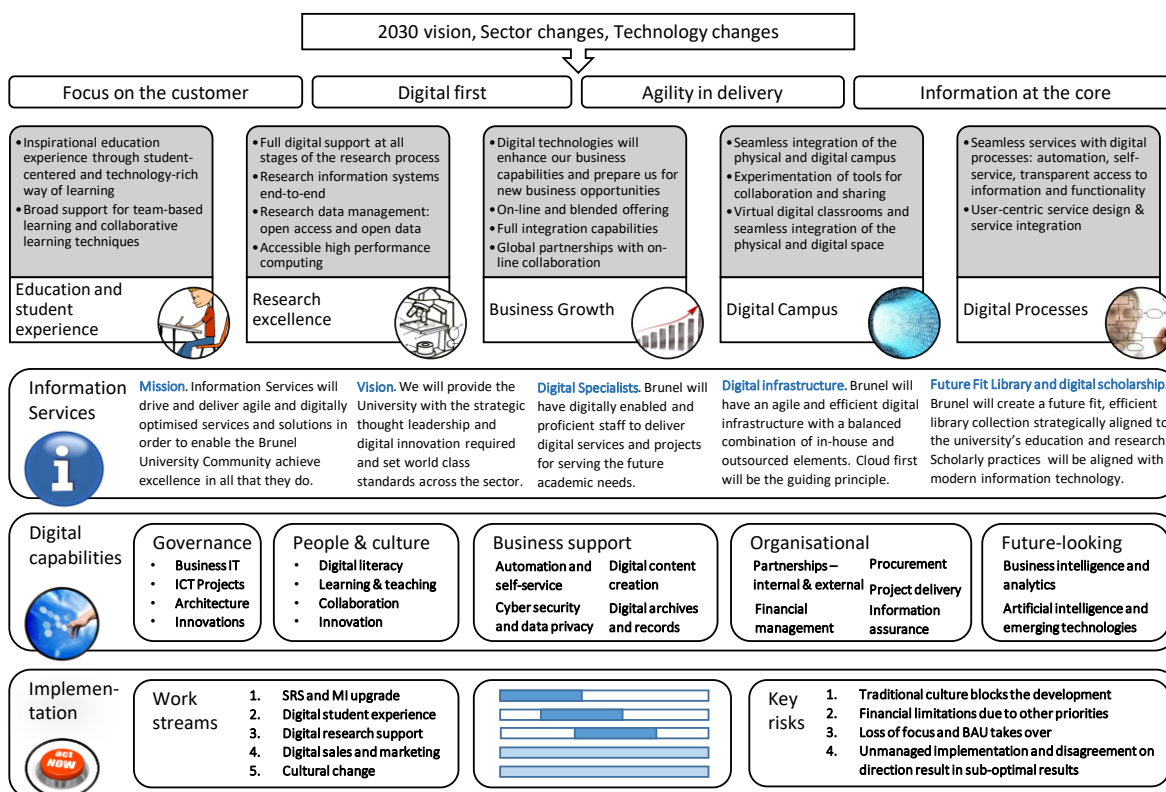


Figure 2. Example strategy based on digital capabilities.

6. ASSESSMENT AND IMPLICATIONS

The process of defining and communicating a strategy is different in every organisation. However, there are a number of elements that the proposed strategy template will bring into the process.

The process of defining a digital strategy is a more collaborative effort compared to the process of defining a traditional IT strategy. There are two main reasons for this. On one hand, the extended scope will need input from a larger group of people and, on the other hand, the definition of each capability will require considerations from more than one perspective. Typically, you would have at least the business, people, process, and tool aspects represented in the definition work.

As a result, the IT organisation will have less control over the IT domain and related strategic choices but, to balance that, there will be more possibilities to influence the entire institution. This only happens if the choices are properly communicated and, consequently, the strategy document needs to be written in a way that is easily accessible by the entire organisation and people outside the audience of a typical IT strategy.

The proposed template doesn't take away the need to follow the principles of good strategy work, which remain largely the same independent of the domain at hand. Rumelt (2011) provides an excellent overview of good strategy. It consists of three elements:

1. A *diagnosis* defines the nature of the challenge. In our case, this is the purpose of sections 1 and 2 in the template. The first section addresses the internal and external forces and the second section translates them into the organisation's top level strategic challenges from the digital perspective.
2. A *guiding policy* explains how to deal with the challenge. In our case, sections 3 and 4 provide a collection of capabilities that define high-level policies for all relevant aspects of the work. Two sections are needed: the first one addresses the organisational viewpoint and the second one looks at the capabilities themselves.

3. A set of *coherent actions* for carrying out the guiding policy. This is the purpose of final section in the proposed template.

As a final note, the template is not a silver bullet that prevents elements of a bad strategy from creeping in. Such elements include fluff, failure to face the challenges, mistaking goals for strategy, and bad strategic objectives (Rumelt, 2011). Using the proposed template will make the creation of a digital strategy more straightforward, but the essential challenges of strategy work remain the same.

7. CONCLUSIONS

The effects of digital transformation are visible in all aspects of business and IT. Consequently, traditional IT strategies are no longer sufficient for providing the required guidance for organisations to survive and thrive in a digital world.

A number of new requirements have emerged. *Wider use of technology* and its *new role* demand business aspects to be combined with technical elements in an unprecedented way. *Business development* is often driven, or at least supported, by digital technologies and this will impose new demands on the agility and preparedness of the IT organisation. In the same way, integration is no longer a simple technical effort but will also involve work with *processes* and *people*, something that will require new skills from the delivery teams. Digital transformation will also mean *cultural changes* that will have to be addressed accordingly.

To address the above additional needs, we propose to use *digital capabilities* for combining technical aspects with other viewpoints and for providing the required structure into modern IT strategies where the primary aim is to support digital transformation. Digital capabilities have been successfully used to analyse the requirements of digital transformation (Kähkipuro, 2017; Hentrich et al., 2016) and the purpose of this paper is to bring this practice to the strategy work.

We propose a strategy template with five sections: (1) the context, (2) digital aspects in the business strategy, (3) role of the IT organisation and digital capabilities that are predominantly IT based, (4) digital capabilities across the organisation, and (5) the implementation. The first two sections present a diagnosis of the challenge. The following two sections provide guiding policies (in the form of capabilities) for dealing with the challenge, and the last section defines a set of actions to implement the policies.

To illustrate how to use the template, we provide an example from higher education where digital transformation is radically changing the sector (Kähkipuro, 2015). The example, while short and fairly generic, shows that the template works in a complex and multi-faceted industry, and can also be easily adopted to organisational peculiarities.

The proposed template reflects the requirements and the underlying capabilities of the higher education sector. However, the approach is sector neutral and should be applicable to other industries. This remains a topic for further work.

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9. AUTHORS' BIOGRAPHIES



Pekka Kähköpuro is Chief Information Officer at Brunel University London since 2016. He is heading the Information Services Directorate responsible for ICT, Media, and Library services. Prior to joining Brunel, Pekka was Director of IT at Aalto University in Finland in 2010-2016 and, before that, he held various senior roles in the private sector including Nokia. He has been EUNIS board member on two occasions (2011-2015 and 2018 onwards) and President in 2015. Pekka obtained his Ph.D. in computer science from the University of Helsinki in 2000.