From Strategy to Skills Development in a Higher Education IT Organisation

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Abstract

People are typically identified as key assets for a successful IT organisation, and this is particularly true for HE institutions where the level of outsourcing is often lower than in other sectors. Therefore, we need a way for ensuring that the IT organisation's skills and capabilities reflect the institutional strategy and there is a solid process for identifying and addressing possible gaps.

Traditional approaches, such as IT skills frameworks, are well suited for analysing and addressing technical and content-specific skills development, but they do not provide a convenient way of addressing non-technical skills development.

This paper provides an approach for analysing the requirements for non-technical skills and for addressing them with appropriate development activities. The approach is based on identifying key business capabilities of a HE institution and mapping them into a categorisation that provides the required guidance for competency assessment and development. The approach can be combined with traditional approaches for technical skills analysis, hence providing a comprehensive tool for translating strategy into relevant skills and competency development actions.

1 People are key in keeping up with the change

People are typically identified as one of the key assets of a successful IT organisation. People are involved in all stages of the lifecycle of IT services from the overall service strategy definition to service design, service transition, service operation, and continual service improvement. In all these stages the required skills and competencies are different and, consequently, managing the IT workforce is not a simple task. See (SFIA, 2022) for an example of a framework providing a comprehensive picture of the required skills in IT work. While such frameworks are useful for assessing and improving individual competencies, it is still challenging to identify where and when such competencies are needed to obtain desired business results.

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The effectiveness of HR practices is an important factor for obtaining desired business outcomes, see (Guest & Conway, 2011) for a discussion. One of the required practices is the assessment and development of skills and competencies in an organisation. However, to be effective in this work, there is a need for the ability to link the required skills to the business needs. For IT skills, an intermediate step for converting business needs first into IT requirements is often necessary before they can be interpreted in an IT skills framework such as SFIA. Digital transformation, *i.e.,* the use of digital technologies to transform business, is complicating the picture even further.

Digital transformation is effectively pushing the centre of gravity of an IT organisation towards business related activities and this in turn requires IT people to be familiar with the concepts and dynamics of the business. While many technical IT tasks are similar in most sectors, it is becoming increasingly important for IT people to be aware of the business side of the sector they are working for. This is no different in higher education and, therefore, a modern higher education IT organisation needs people with skills and competencies that reflect the sector and its ongoing transformation, see (Kähkipuro, 2015) for a discussion. Figure 1 illustrates the required high-level steps from business needs to effective HR actions for improving skills and competencies.
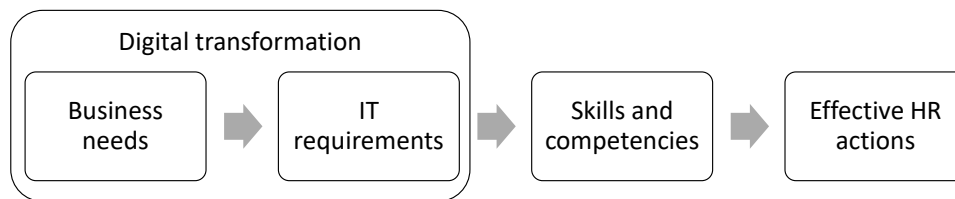
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┌─ Digital transformation ──────────────┐
│  ┌──────────┐      ┌──────────┐        │   ┌──────────┐      ┌──────────┐
│  │ Business │  ▶   │    IT    │        │ ▶ │Skills and│  ▶   │Effective │
│  │  needs   │      │requirements│      │   │competencies│    │    HR    │
│  └──────────┘      └──────────┘        │   └──────────┘      │ actions  │
└────────────────────────────────────────┘                     └──────────┘
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Figure 1. Path from business needs to effective HR actions.

In this paper, we propose an approach for successfully going through the above steps for improving the skills and competencies in a higher education IT organisation. To do this successfully, we are using *business capabilities* as a means of structuring the problem and splitting the challenge into smaller and more manageable elements. The proposed model uses higher education as an example, but the same approach can be used in any similar business domain.

2   Using capabilities to address the challenge

Business capabilities provide a way to bridge the conceptual gap between the business and the IT – they are typically used within the enterprise architecture practice when a holistic approach is needed to understand IT and the business together. A business capability consists of elements that are needed for an organisation to perform a given business activity. It is typically a combination of processes, tools, resources, competencies, and other relevant elements.

Business capabilities provide a convenient way of expressing an organisation's strategy in terms of practical and understandable elements. Typically, you would have two sets of capabilities – one for describing the current state and another one for describing the target state of the organisation. In this way, the strategy of the organisation can be turned into a roadmap that stepwise turns each capability from the current state into the target state, element by element.

Capabilities come in different flavours. Sector-specific capabilities define building blocks for a specific business sector, and they can be combined into generic models that provide a good understanding of a particular business. A good example is the UCISA UK HE capability model illustrating the business of a typical UK based HE institution (UCISA, 2022). However, capabilities

do not have to be specific to a given sector. For example, Hentrich & Pachmajer (2016) provide an analysis of sector-independent capabilities required for a successful digital transformation.

To use capabilities successfully, they must be interpreted in the context of a particular organisation. This typically reduces the number of capabilities and makes it easier to categorise them in different ways. A typical way to structure capabilities is to divide them according to the organisation's business areas and support functions. For example, a HE institution could use the generic model proposed by UCISA and use categories such as Teaching & Learning, Research, Strategy & Governance, and Enabling Capabilities (with relevant subcategories). This viewpoint provides an excellent insight into the technical and content-specific competencies and skills required by the organisation.

A typical way to use the traditional capability structure in skills and competency development is to analyse the (a) current competency level and (b) the target competency level for each relevant capability. The gap between the two generates a 'heat map' that indicates those competencies and skills that would be needed to be improved for the organisation to be successful. This is how competency gaps have been addressed traditionally, and the outcome is typically sufficient for understanding the required development in technical and content-specific competencies.

3 New categorisation to deal with non-technical competencies

It has been observed, however, that the above approach does not provide a *full* understanding for the required improvements in the organisation and, in particular, it does not bring forward the non-technical skills that an organisation needs for challenging tasks, such as a successful digital transformation. Consequently, additional means have been proposed to address this and, for example, Struckman (2021) has identified 21 'people and organisational building blocks' for digital acceleration.

Rather than extending the range of conceptual tools, we propose a second way of categorising well-known business capabilities to address the challenge of understanding non-technical skills and capabilities development. This approach is particularly useful for organisations undergoing (digital) transformation, as it considers the transformational aspirations of the organisation.

We are using a two-dimensional approach with four quadrants. The first dimension is measuring how internal or external the impact of the capability is ('focus'). For example, the ability to operate a data centre is a purely internal capability while running a digital customer service channel is clearly an external capability. The second dimension is measuring how operational or transformational the impact of the capability is ('orientation'). For example, supporting and maintaining an ERP system is at the operational end, while enabling innovation projects for the organisation is at the transformational end. Figure 2 illustrates the approach.
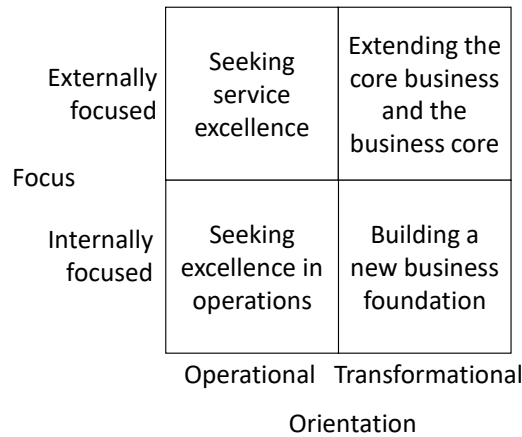
	Operational	Transformational
Externally focused	Seeking service excellence	Extending the core business and the business core
Internally focused	Seeking excellence in operations	Building a new business foundation

Focus (vertical axis) — Orientation (horizontal axis)

Figure 2. Two-dimensional approach for categorising business capabilities.

This approach is similar to the framework discussed in (Kähkipuro, 2017) but the scope is broader. Instead of discussing digital (or IT) capabilities we are now extending the approach to all business capabilities within the institution. Figure 3 provides a more detailed description of the four quadrants.

Focus	Orientation	Characterisation
Internal	Operational	Seeking excellence in operations. Capabilities in this section are 'keeping the lights on' and their focus is on improving the efficiency and effectiveness of existing operations.
	Transformational	Building a new business foundation. Capabilities in this section are focusing on improving the business foundations and enabling new ways of running the business.
External	Operational	Seeking service excellence. Capabilities in this section are aiming at improved customer and user experience, and at improved ways of delivering the service promise.
	Transformational	Extending the core business and the business core. Capabilities in this section are aiming at expanding the business both with existing products and services and also with new offerings.

Figure 3. Four quadrants of the proposed capability categorisation.

4 Mapping capabilities into the new categorisation

To understand how the proposed new categorisation works, Figure 4 illustrates this with two sets of capabilities. On the left-hand side, example digital capabilities are mapped into the grid, and, on the right-hand side, a set of generic business capabilities have been placed into the same framework. Both diagrams provide examples from the higher education sector.
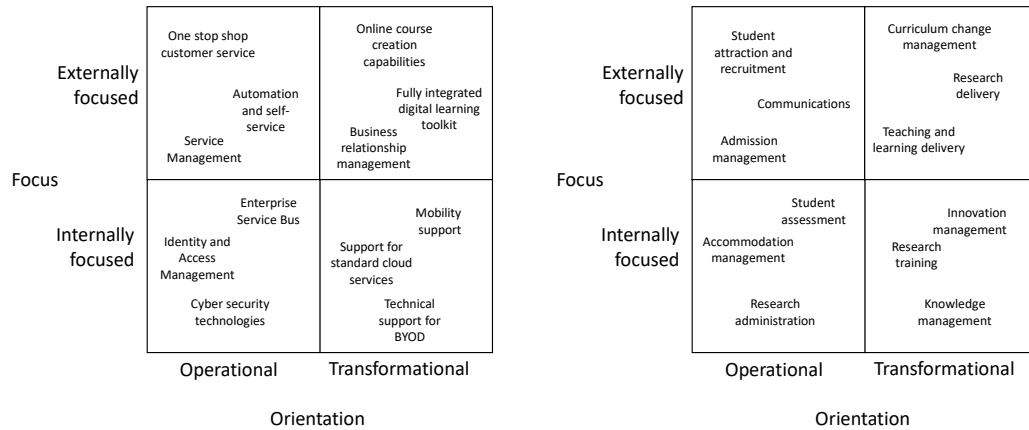
Figure 4. Mapping capabilities into the new categorisation.

The example on the left-hand side has been borrowed from (Kähkipuro, 2017) and the example on the right-hand side is a representative collection of capabilities from (UCISA, 2022). The mapping illustrates how capabilities in any organisation-specific capability map can be easily placed into the proposed new structure.

5 Identifying non-technical skills and competencies

Once organisational capabilities have been mapped into the new categorisation, we can observe similarities in those capabilities that have been placed in each of the four quadrants. This in turn leads to the identification of the required non-technical skills and competencies in each of them. Here is a summary of these observations:

- Lower left corner: delivery and operations, technology management, security and privacy, risk, and compliance,

- Lower right corner: innovation, emerging technologies, providing advice and guidance,

- Top left corner: service management, change analysis, systems development, user experience,

- Top right corner: strategy and planning, change planning and implementation, marketing, selling, and sales.

In addition, we can also observe similarities in capabilities based on their relative positing between the lower left corner ('keeping the business running') and the top right corner ('developing the business aggressively'). Here is a summary of those similarities:

- Lower left corner: focus on delivery, technologies, and suppliers

- Middle ground: focus on development, people, and skills,

- Top right: focus on business and stakeholders.

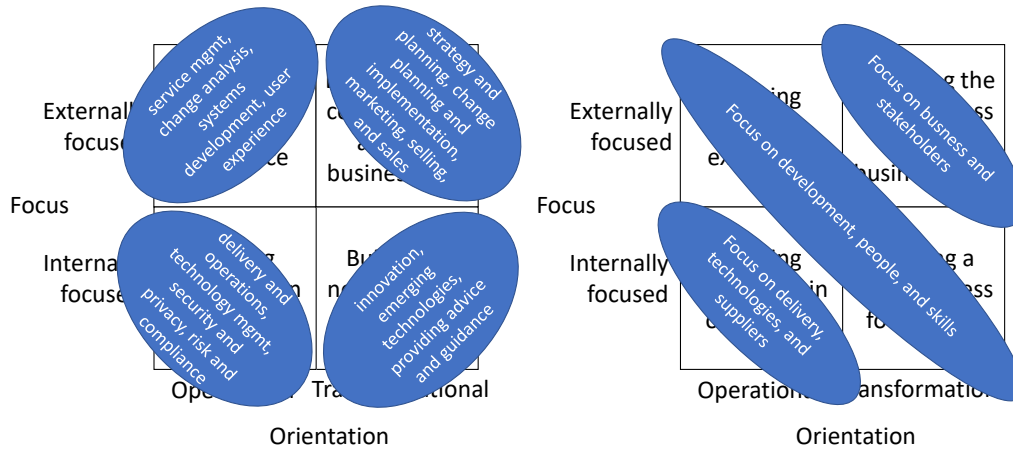These observations are summarised in Figure 5.

Figure 5. Using the new categorisation to identify non-technical capabilities.

The above observations can be used in the same way than traditional capability-based skills analysis. For each capability, the gap between the current state and the target state with respect to the required skill needs to be identified, and actions will be based on the heat map that identifies the biggest gaps.

6 Combining the traditional and the new approach

To deliver a solution to the challenge laid out in the first section, *i.e.*, how to get from business needs to effective HR actions on skills and competency development, we need to provide a way to find improvement activities for both technical and non-technical sides. For the technical side, the use of the traditional gap analysis and heat maps is well known and effective. However, based on the above discussion, these heat maps need to be combined with the analysis outlined in sections 4–5 to get a comprehensive picture of the full requirements. The following two examples show how this works.

In the first example, we investigate *research training*, a well-known activity in higher education and a level one capability in the UCISA framework (2022). Traditional gap analysis would identify all relevant research areas for the institution and possible gaps in the skill sets. In addition, looking at the diagrams in section 5, the advice is to

- look at innovation, emerging technologies, and providing advice and guidance (left-hand side of Figure 5), and

- focus on development, people, and skills (right-hand side of Figure 5).

This effectively defines relevant viewpoints for understanding how the capability should be assessed and what needs to be done to improve the skills and competencies of the people involved (in addition to the traditional gap analysis).

The second example capability is *admission management*, again a level one capability in the UCISA framework (2022). Traditional gap analysis would point us in identifying possible needs to increase competencies in the programmes and disciplines involved. In addition, the guidance in section 5 indicates that

- focus is needed on development, people, and skills (right-hand side of Figure 5), and

- we need to look at service management, change analysis, systems development, and user experience (left-hand side of Figure 5).

As illustrated by these two examples, the mapping provides targeted and accurate guidance on identifying areas that need to be assessed and addressed in building the required technical and non-technical skills and capabilities. In a way, the proposed new categorisation describes *how* the organisation should implement the capability while the traditional business structure describes *what* the capability is for.

7   Summary and further work

In this paper, we have proposed a methodology for translating the strategy of a HE institution into relevant actions for the HR organisation to develop the relevant skills and competencies. The proposed approach is based on using business capabilities to express the organisation's strategy. This way the gap between the current state capabilities and the target state capabilities can be analysed in different ways.

To understand the need to improve skills and competencies for technical and content-related areas, a traditional categorisation of capabilities can be used. It typically reflects the business structure, and the outcome is usually a heat map that indicates where improvements are needed.

However, to understand the improvement requirements on the non-technical side, a different categorisation of the capabilities is suggested. In the proposed approach, we are using two dimensions for grouping the capabilities. The first dimension is measuring how internal or external the impact of the capability is (focus), and the second dimension is measuring how operational or transformational the impact is (orientation). Together, they provide a new lens to the business and effectively describe *how* the business operates as opposed to the traditional structure that provides a view on *what* the business does.

The results of the above two categorisations can be combined to provide a comprehensive picture of the required skills and competency development activities. This has been illustrated by two examples that clearly indicate how the proposed model works. While the model and the new categorisation have been created in the context of higher education IT, it would be possible to extend the same model into sectors that bear sufficient similarity with higher education.

8   References

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Author biographies

Pekka Kähkipuro is Chief Information Officer at Tampere University. where he is heading the IT Department. Prior to joining his current institution, Pekka was CIO at Brunel University London in 2016-2021, and Director of IT at Aalto University in Finland in 2010-2016. Before that, he held various senior roles in the private sector including Nokia. He has been a EUNIS board member on two occasions (2011-2015, 2018-2020), President in 2015, and currently he is the Executive Secretary. Pekka obtained his Ph.D. in computer science from the University of Helsinki in 2000. He is a Fellow of the British Computer Society.