

**Strategizing the Digitalization of Learning and Teaching –
A Resource-based view on the digitalization of learning
and teaching in a Finnish Higher Education Institution**

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Digitalisaatio on suuri mahdollisuus mutta myös haaste korkeakoulusektorille. Lukuisat ulkoiset motivaatiotekijät ajavat korkeakouluja kehittämään toimintakyvykkyyttään ja laatuaan. Korkeakoulutuksen kansainvälistyminen ja demokratisoituminen on yksi näistä uhista – ja mahdollisuuksista – joka pitää huomioida, kun suunnitellaan korkeakouluorganisaation kehittämistä. Organisaatiot, joilla on parhaat resurssit ja kyvykkyudet hyödyntää muutostrendien mahdollisuudet ja haasteet, turvaavat itselleen parhaan kilpailukyvyn pitkällä aikajänteellä.

Tämä intensiivinen laadullinen tapaustutkimus keskittyi yhden suuren ammattikorkeakoulun digioppimiseen ja -opetukseen vaikuttavien ja kytkeytyvien prosessien, resurssien ja kyvykkyysien evaluointiin. Digitalisaation mahdollisuuksien hyödyntäminen oli tunnistettu organisaatiossa kriittisen tärkeäksi kehittämisalueeksi. Lähtötilanne kehittämiselle oli haasteellinen, sillä digioppimisen ja -opetuksen näkökulmasta kohdeorganisaatio ei ole korkeakoulusektorin vahvimpien joukossa, huolimatta siitä, että se on yksi Suomen vetovoimaisimmista ja suurimmista ammattikorkeakouluista. Tutkimus koostui viidestä päävaiheesta ja aineistoa kerättiin lukuisin tapaustutkimukseen soveltuvin menetelmin: esimerkiksi ryhmä- ja yksilöhaastatteluin, työpajoissa, havainnoimalla, organisaation asiakirjoista ja kenttämuistiinpanoja tekemällä.

Tutkimuksen tarkoituksena oli arvioida kohdeorganisaatiota holistisesti, osallistaen tutkimusprosessiin ja sen eri vaiheisiin useita eri alueiden edustajia kohdeorganisaatiosta. Tutkimuksen ja sen eri vaiheiden vaikutuksesta organisatorinen ymmärrys ja tietoisuus prosessien, resurssien ja kyvykkyysien nykytilasta ja tavoitetilasta kehittyi. Jotta tavoitetilaan voidaan päästä, tarvitaan runsaasti kehittämistä.

Evaluoinnin pohjalta, ja eri vaiheiden tulosten yhdistelmänä, tutkimuksen lopputuotoksena on käsitteellinen kehys, jonka tarkoituksena on tukea johtajien ja kehittäjien työtä organisaation strategisessa ja kokonaisvaltaisessa digioppimisen ja -opetuksen kehittämisessä. ”The Management’s Framework for Strategizing Digitalization of Learning and Teaching” sisältää kriittisiä prosesseja, kyvykkyysia ja resursseja, joilla on suora kytkentä organisaation digioppimisen ja -opetuksen strategiseen kehittämiseen. Kehyksen lisäksi ja sitä täydentämään määriteltiin strateginen opetusteknologiakyvykkyuden vaatimusten joukko, joka auttaa jäsentämään ne kriittiset kyvykkyudet, joita opetusteknologian strategialähtöinen kehittäminen edellyttää organisaatiolta.

ABSTRACT

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The digitalization is a great opportunity and challenge for higher education sector. Multiple external motivators for the improvement of operational capability and quality exist. Internationalization and democratization of higher education is one of these threats – and opportunities – that needs to be taken into consideration when planning a higher education institution's development. Changes are emerging, and whoever has the best resources and capabilities to engage with the various possibilities and challenges they set, will achieve the best competitive status in the long run.

This research was an intensive theory creating normative case study research during which the complex resource and capability domain surrounding the e-learning was investigated in a large Finnish University of Applied Sciences. The underlying case specific premise was that the e-learning had been recognized as a critical area of development, and that the current situation in terms of competitive capability was not among the best in the sector. The case institution has strong roots in more traditional approaches to education.

The purpose of the research was to evaluate the case organization in a holistic manner, involving multiple different internal stakeholders during the process and within the different phases of the research. As results of the different research phases, the organizational understanding and awareness of the current and desired state with regards to resources, processes and capabilities was evolved. Plenty of improvements are required in order to achieve the desired leading status in the area of digitized learning – e-learning.

Through the evaluation, and based on the converged outputs of the different research phases, a conceptual framework to serve the manager's and developers responsible for the development of digitalized learning and teaching was defined and proposed as a summative output of the two year process. The 'Management's Framework for Strategizing Digitalization of Learning and Teaching' includes the critical processes, capabilities and resources that have a direct link to the strategizing of organizational development in the area. In addition, 'Criteria for Strategic Planning and Development of Education Technology' was defined to complement the proposed framework.

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FOREWORD

Within this dissertation, the focus is on the resources, processes and capabilities of the case institution, which are relevant with regards to institutional strategic development. The underlying premise of the research is that higher education sector in Finland is under heavy pressures for great changes with regards to improving and modernizing learning and teaching approaches, due to the global megatrend, namely the digitalization. In addition, pressures for improvement of operational effectiveness are great, mainly due to rather dramatic changes in legislation and financing structures. From local perspectives, a project called Tampere 3 was kicked off during the autumn 2014. The project aims for investigating the opportunities for deeper cooperation between – or even merger of – the three higher education institutions in the city area, and thus increases the relevance for this research as well.

Chapter one focuses on the theoretical background related to this dissertation and research, by describing and discussing some of the key concepts with regards to resources, capabilities and competitive advantage. Chapter two is a description of the case institution with regards to some of the key steering mechanisms, processes and activities related to the development.

Chapter three covers the research process. The research process is comprised of five main phases, each with different but complementary perspectives on the phenomena. The research phases in conjunction form a timely continuation of two years of case study research, with the addition of one phase of design research. There are three published articles related to this research, covering research phases one, two and three. The articles attached to this dissertation are the versions, which were originally accepted for publication. The article related to the research phase two covered an ongoing research, and is updated to current situation in chapter 3. Research phases four and five have not been published as articles, and are therefore presented and discussed more thoroughly in chapter three. The research methods and outcomes of the different research phases are presented in Chapter 3 as well.

Chapter four presents the key outcomes of the two year process. Chapter five discusses about the possible future research efforts that are relevant and required to build up the understanding and new knowledge with regards to the digitalization of higher education sector in Finland.

List of original publications related to the dissertation

Article 1

Haukijärvi, I. (2014a). E-learning Maturity Model – Process-oriented assessment and improvement of e-learning in a Finnish University of Applied Sciences. In Tatnal, A. & Passey, D. (Eds.). *Key Competencies in ICT and Informatics: Implications and Issues for Educational Professionals and Management. 2014*. Springer Berlin Heidelberg, Germany: Berlin. Springer, Germany. DOI: 10.1007/978-3-662-45770-2_9

Article 2

Haukijärvi, I. & Nevalainen, T. (2014). Developing a Quality Enhancement Framework for Collaborative Online Courses – Building on Constructivism with a Design Science in Information Systems Approach. In *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2014* (pp. 480-489). AACE, Chesapeake, VA (2014).

Article 3

Haukijärvi, I. (2014b). Opiskelijat muutosagentteina – Opiskelijoiden kokemuksia osallistumisesta TAMK:n pedagogiseen kehittämiseen. In *Tie uuteen opetussuunnitelmaan*. Publication of Tampere University of Applied Sciences. Series B. Reports 70.

1. INTRODUCTION

The role of e-learning has grown essentially during the last two decades. The concept of e-learning in this specific research includes online education, blended learning, and learning and teaching in digitalized physical campus – the use of ICT in learning and teaching processes. Digitalization of learning and teaching is referred to as the organization-wide change process towards more flexible, accessible, higher quality and cost effective approaches to learning and teaching, involving various different domains of an organization.

Many higher education institutions are engaged in studying and utilizing various e-learning solutions and improving their capabilities with regards to producing high quality e-learning. As e-learning has become an essential part of modern-day higher education, comprehensive assessment of the organizational resources influencing the manner in which e-learning is being provided, maintained and developed, has become crucial. Institutional assessment and development have a crucial role in ensuring and enhancing support for the achievement of desired outcomes. In addition to emphasizing continuous development on the micro level of an organization, such as e-learning environments and technologies, learning resources, learning processes and pedagogies, emphasis should be given on the macro perspective – the management and evaluation of institutional processes, capabilities and resources affecting and defining the development.

Due to the rapid development of digitalization, internationalization and democratization of higher education, increase in accountability, easy access to public quality and efficiency ratings, economic depression, and increased competition for students, higher education institutions are facing a tremendous amount of external and internal change pressures, which are forcing the management of the institutions to be constantly aware of the external and internal environments. In addition to awareness of environmental competition, strong emphasis must be placed on an organization's resources as well. The resource domain in which an organization operates has a critical influence on its very survival in the given time and space, let alone on its planning for the future – implementing new competitive strategies. Resources must not be regarded as stable, but rather as dynamic assets that are being continuously improved, refined, re-allocated, and even disposed of if they turn out to be strategically irrelevant.

All external changes set large-scale challenges for higher education institutions, and in order to fully utilize their potential, resources must be aligned with new strategies as soon as they are adopted, and a lot of internal development of organizational resources, processes and practices is required. In public higher education, increasingly more business-like approaches to management are needed in order to meet the challenges emerging due to the rapid changes.

Although this research focuses on organizational macro-level perspectives, and little emphasis is placed on specific learning theories, it is important to acknowledge that the development of an educational institution should be aligned with current and relevant approaches to learning. From technology perspectives, Leidner & Järvenpää (1995, 266) write that the effectiveness of information technology in contributing to learning is dependent on how well the technology supports the chosen approach to learning. This emphasizes the importance of relevant pedagogic perspectives to the development of educational technology. In the following

paragraphs, three common learning models are briefly discussed: objectivism, constructivism and collaborationism.

The assumption behind the objectivist model is that learning takes place through the transfer of knowledge from the teacher to the students, and that the instructor should be in control of the material and pace of learning (Leidner & Järvenpää 1995, 267). Traditional classroom lecturing is an application of the objectivistic approach.

The constructivist approach to learning is more learner-centric and individualistic; it puts great emphasis on the importance of knowledge construction by the learners themselves, and gives the students more control over the pace of the learning, while the instructor focuses on giving feedback (Leidner & Järvenpää 1995, 267-268). The students acquire information and improve their understanding of the subject in real life contexts. Leidner & Järvenpää (1995, 268) write that, in practice, the constructivist approach tends to focus on searching for preordained knowledge, which could actually be transferred more efficiently by the instructor, and that critics of constructivism argue that there is little benefit in such approaches.

The collaborative learning model emphasizes the interactions among learners. The students improve their mental models through discussions and information sharing. As with the constructivist approaches, the collaborative model also assumes that knowledge creation is an outcome of knowledge sharing, and the more sharing takes place, the more is learned. (Leidner & Järvenpää 1995, 268). Project-based learning is an example of collaborative *authentic* learning, during which the peer-learners share and create knowledge, and produce concrete outputs through collaborative effort. The instructor's role is to facilitate and support the collaboration.

Objectivist approaches to learning have generally given room for constructivist and collaborative approaches to learning and teaching, in the case institution as well. A variety of different international development projects have also been carried out, in which the collaborative model to learning has been in the very core of course development. In addition, based on an attended recent work shop organized by the Finnish Ministry of Education and Culture, one of the common themes rising in the change related discussion, which involved academic staff from universities and universities of applied sciences, was the transition away from objectivist approaches (MINEDU 2015).

When discussing comprehensive and holistic development of an educational institution, different learning models can be covered. However, it is important to take into consideration pedagogic relevance when planning and prioritizing development measures. The premise is that whatever the preferred model of learning is, it most likely can be improved through well planned implementation of ICT, at least in terms of cost efficiency, accessibility and flexibility. With this in mind, also objectivist approaches can be improved. Objectivist approaches are still rather common in online and blended-learning settings, but the difference between now and the past is the improved flexibility and accessibility, mainly due to the use of novel video technologies.

The decisions regarding the development should represent the desired approaches to learning and teaching, and as such, support those models of learning. Thus, the strategic e-learning development has to take into consideration this relevance aspect. At the case institution, the local pedagogic principles are one of the steering mechanisms that guide the organizational development of resources and capabilities.

1.1 Resources and capabilities for sustained competitive advantage

Organizational resources are tangible and intangible assets that an organization possesses and utilizes to achieve competitive advantage in the markets. Resources and capabilities are of critical importance to any organization, whether functioning in public or private markets. In 1991 Jay Barney introduced to public the Resource-Based View of the Firm -theory, in which an organization's competitive capability is determined by the resources it has direct control of. The resources and capabilities are defined as resources such as the management skills, processes and practices within a firm, and the information and knowledge the organization possesses and controls (Barney et al. 2001, 625). Ever since the initial publication in 1990's, the Resource-Based View of the Firm has established its status as an essential theory for strategic management, and has influenced many different fields of study, such as human resource management, economics and finance, entrepreneurship, marketing and international business (Barney et al. 2001, 627 – 630).

In his article in 1991, Barney criticized earlier research that focused heavily on environmental – whether internal or external – aspects on strategic competitive advantage, for making the assumption that the competitors in the market possess similar strategies and strategically relevant resources, and that the resources that are utilized to implement new strategies are highly mobile (1991, 100). Environmental approach, such as SWOT-analysis, is a common framework for assessing organization's internal and external environment, its internal strengths and weaknesses, and the opportunities and threats the external environment sets. Barney introduced a novel approach and theory for assessing organization from its resources point of view, emphasizing the role of the possessed resources as enablers of sustained competitive advantage.

The physical resources that an organization may possess are the used technology, equipment and premises (*plant*), location and the access to raw materials. Human capital resources include training, experience, judgment, intelligence, relationships, and insight of managers and workers. Organizational capital resources include formal reporting structure, formal and informal planning, controlling, coordinating systems, and its informal relations with internal and external groups. (Barney 1991, 101).

Barney adds that not all the mentioned resources an organization possess at a given time – physical, human and organizational – are necessarily relevant for implementing new strategies, and in fact, some of these resources may actually prevent an organization to effectively implement new strategies and gaining sustained competitive advantage (1991, 102).

An organization has sustained competitive advantage when it is implementing value creating strategy that no other competitor is implementing simultaneously, and when the competitors are unable to duplicate the benefits of the strategy. Barney adds that sustainability in this sense does not mean that the advantage is ever lasting, and unanticipated changes in the economic structure may cause the existing resources to become irrelevant in the changed economic environment. (Barney 1991, 102).

The ability of an organization's to alter and move its resources is crucial in terms of sustaining a resource base that is aligned with strategic purpose and goals. Having resources that were relevant and valuable for implementing the old strategy, may actually be heavily in conflict with the goals of the new strategy, thus refinement and development of resources is needed. Technology, human resources, formal reporting structures and formal planning are just a few examples of resources that may be under heavy pressure for refinement in organization's strategy implementation process, especially when the new strategy is drastically different from the old strategy. As an example, existing processes and technology may be insufficient for effectively and successfully implementing ambitious strategy for new digital business and digital operations. In addition, during the rapid changes in the businesses and public sector towards digitalization, personnel capabilities are of critical importance in implementing strategies, thus special focus for human capital development is needed.

1.2 The VRIO-framework

The VRIO framework, introduced by Barney in 1995, is a resource-based approach to assessing an organization's resources – physical capital resources, organizational capital resources and human capital resources – and thereby the organization's sustained competitive advantage. The framework assesses resources from four different perspectives: Value, Rarity, Imitability and Organization.

1.2.1 Value

Valuable resources of an organization are defined by Barney (1991, 106) as resources that enable an organization to implement new strategies that improve its efficiency and effectiveness. With valuable resources an organization is able to exploit the opportunities and strengths, and counter and overcome the threats and weaknesses of the external and internal environment. From this perspective, the environmental approach, as the SWOT-analysis, and the VRIO-framework as resource based approach complement each other.

1.2.2 Rarity

Rarity of a resource means that no other competing organization possesses the same exact resource that is exploited to gain strategic value. If a resource is common, other organizations have the same resource, thus it can't be considered as a resource for gaining sustained competitive advantage. A resource can be valuable but at the same time not rare, and thus only enable gaining competitive parity at best. (Barney 1991, 106). Barney describes the managerial skills as one key example of resources with regards to implementing strategies: if the skill sets of the management are common, a large number of organizations are able to implement the strategies in question, which leads to the situation of unachieved competitive advantage. Barney emphasizes that common resources are not be regarded as unimportant, since they can be utilized to gain competitive parity and ensure an organization's survival (1991, 106).

1.2.3 Imitability

With regards to *sustained* competitive advantage, an organization must possess resources that are not just valuable and rare, but also imperfectly imitable by competing organizations. Without these kinds of resources, competitive advantage can be achieved, but only until other organizations imitate the resources needed to conceive of and implement value creating strategies. There are three reasons, which separately or as combined, make the resources imperfectly imitable: 1) unique historical conditions of an organization, 2) the link between possessed resources and competitive advantage is causally ambiguous, or 3) the resource is socially complex (Dierickx & Cool, 1989, cited by Barney 1991, 107).

With regards to unique historical conditions and imperfectly imitable resources, Barney (1991, 107 – 108) writes that organizations are historical and social entities, whose ability to utilize resources depends upon the place and time they are in. In other words, an organization operating in a particular location at a particular time may have access to resources which are unavailable at a later date and/or in other places. It therefore follows that organizations operating in different times and/or places space-time cannot obtain these space and time-dependent resources, thus making such resources imperfectly imitable. The ability to exploit particular resources is path-dependent

Causal ambiguity with regards to imitability means that under conditions of causal ambiguity, it is hard for competing organizations to acknowledge which resources should be imitated in order to achieve competitive parity with an organization that has gained competitive advantage by exploiting its resources. Competitors may still be able to describe some the essential resources, but no guarantee of the causality between the described resources and the outcomes – achieved competitive advantage – can be obtained. Thus making it challenging to predicting, which resources to duplicate. In these situations, the organizations who seek to imitate the resources, must first engage in reducing their lack of knowledge related to the causalities, for example through hiring managers of the organization with competitive advantage or through systematic study of the competitor's success. (Barney 1991, 108 – 109).

Socially complex resources are resources such as the culture, reputation among suppliers, interpersonal relations among managers and customers (Hambrick 1987, Barney 1986, Porter 1980, Klein, Crawford & Alchian 1978; Klein & Lefler 1981, cited by Barney 1991, 110). It is impossible to systematically manage and influence these kinds of resources (Barney 1991, 110).

1.2.4 Organization

To effectively utilize valuable, rare and imperfectly imitable resources, an organization needs to organize these resources and capabilities (Barney 1995, 56). Organization of these resources relates to formal reporting structures, management control systems and compensation policies that encourage the employees to be creative and innovative, and are utilized to steer the operations to a desired direction. These sets of resources are defined as complementary resources by Barney (1995, 56), since they have only limited ability to generate competitive advantage when isolated, but in combination with other resources and capabilities, they enable

an organization to fully realize the potential for sustained competitive advantage. Management nowadays is more and more expected to be the enabler and provider of the best possible conditions for the employees to be productive and innovative.

Table 1. Summary of the VRIO-framework.

Summary of VRIO				
Valuable?	Rare?	Difficult to Imitate?	Organized Adequately?	Competitive Implications
No	No	No	No/Yes	Competitive disadvantage
Yes	No	No	Yes	Competitive parity
Yes	Yes	No	Yes	Temporary competitive advantage
Yes	Yes	Yes	Yes	Sustained competitive advantage

1.3 Resource based view on the human resources

Human resources are one of the key factors when defining a knowledge intensive organization's sustained competitive advantage. No matter how effective processes and practices, or coherent structure and infrastructure – including such as reporting chains and ICT architecture – an organization has, if it lacks high quality and ever evolving human capital resources, sustained competitive advantage can't be achieved. Barney & Wright (1998, 32) introduced a resource based view on the human resources, focusing on human capital resources, such as knowledge, skills, experience, commitment and human relationships, with the addition of focus on HR-practices, through the VRIO-framework.

From the value's perspectives on human resources, an organization should address how to create value through HR, either by helping to decrease costs or to increase revenues (Barney & Wright 1998, 33). Barney & Wright share a few examples of how to decrease costs and to increase revenues. Increasing revenues through HR can be achieved through improving and sustaining personnel satisfaction in organizations that rely on human interactions within the service or product delivery processes. In higher education environment, this would mean that satisfied academic and administrative staff has a positive influence on the student experience with teaching and administrative services. The experienced quality of the service has an impact on the student processes during their studies. Barney & Wright (1996, 33) support this view by introducing few examples and by referring to previous studies on the subject. HR-practices may also have an influence on costs and revenues, such as in the form of incentive policies and practices (Barney & Wright 1998, 33).

Providing incentives is an aspect of HR practices which has been discussed in higher education contexts. With particular respect to promoting innovation and the development of e-learning, Marshall for example, in his E-learning Maturity Model (2006), considers the effectiveness of providing incentives to developers. Locally, my personal experience is that recognition and

incentives have seen a rise of status in local discourses and practices as ways of encouraging development of digitalized learning. Experience so far suggests that by providing the academic staff with incentives to develop e-learning capabilities, greater and wider impact can be achieved in terms of quality and performance.

As Barney & Wright (1998, 34) write, valuable resources alone do not guarantee sustained competitive advantage, thus it is important to possess human capital resources that are rare, not homogenous, and not similar with competing organizations. A valuable but common resource does only guarantee competitive parity, not sustained competitive advantage, thus HR executives should examine how to develop and utilize rare human capital resources (1996, 34). The rarity of human capital resources relates to the utilization of the different strengths and characteristics of the heterogeneous personnel group. Within in higher education as well, rarity can be achieved through HR-practices, for example through recruitment and personnel training. Defined policies for recruitment can be exploited to find and recruit personnel with specific strategically relevant novel skillsets, whereas through personnel training, it is possible to improve and refine the existing skill pool of the personnel with an emphasis on strategic relevance. Novel approaches to digitalized learning and related pedagogy are emerging, and some of these approaches, when utilized effectively, can turn out to be the rarity factor in terms of human capital resources.

If an organization possesses human capital resources that are imitable, it can only achieve a short term competitive advantage, as the competitors in the market are able to and will imitate the resources that could provide strategic value for them as well (Barney & Wright 1998, 34). In order to achieve imperfectly imitable human capital resources, Barney & Wright suggest (1998, 34) that HR executives should develop and nurture human resources that are not imitable, through focusing on exploiting the socially complex phenomena such as an organization's unique history or culture. From my personal experiences, culture is a crucial aspect of organization's performance, and can be affected by organization's strategy and its operationalization, work practices, acknowledgement practices, HR-policies and practices, and management practices. Encouraging collaborative and open sharing of best practices and ideas can be effective in terms organizational learning, and yet many organizations fail at it. It is safe to make the assumption that developing and sustaining a culture that nurtures and promotes open sharing may turn out to be beneficial in terms of achieving sustained competitive advantage, since this organizational culture would be hard for competitors to imitate.

As the last factor of sustained competitive advantage, the organization of resources means that an organization has systems and practices that help utilizing the potential of the human resources (Barney & Wright 1998, 35). Barney & Wright (1998, 35) bring forth the importance of having a coherent HR-system, in which all the different HR practices are coordinated as one, not isolating the different practices, such as staffing, training and compensation.

1.4 Resources, processes and capabilities

Business processes can be defined as chains of activities and related actors, such as information systems and humans, which produce outputs that are beneficial in terms of business purpose, and relevant to set objectives. Ray et al. (2004) define business processes as actions that firms

engage in to accomplish some business purpose or objective. In a traditional business environment, common examples of business processes are product or service delivery, sales, marketing, customer service, production and invoicing. In the higher education environment, examples of business processes are student and personnel ICT support services, administrative services, Quality Assurance, project portfolio management, Enterprise Architecture management, procurement management, teaching and course production, to name but a few.

Whether speaking of business organizations or higher education organizations, the processes are many and usually heavily interconnected, making an organization a complex system to manage as a coherent entity. Ray et al. (2004, 24) write that an organization's performance is defined by the net effect of its business processes on its position in the market place. An organization may be effective and have fully adequate business processes in one area, and at the same time have partly adequate or inadequate processes in other areas. Competitive capability may vary drastically between different business processes, thus impairing the organization's overall capacity and capability. Ray et al. (2004, 24 – 25) give a simple example of this variation and its impact on performance: an organization has two different business processes, both of which are important in order to implement a new strategy, but one of the processes has competitive disadvantage. This leads to a diminished net effect on the market position of the organization, thus enabling only average levels of performance. This example, in all its simplicity, concretizes the importance of managing and developing an organization's business processes in a holistic manner, through understanding the interconnectedness and networked nature of multiple business processes and their required capabilities, in order to define and execute high performance processes so as to achieve competitive advantage.

Resources alone do not ensure competitive advantage, since they can only function as a source of competitive advantage if they are utilized effectively through business processes. Business processes are the building blocks of corporate strategy, not products or markets, and resources are valuable only when they allow organizations to perform activities, thus making the business processes the actual source of competitive advantage. (Stalk et al. 1992, Porter 1991, cited by Ray et al. 2004, 26). Ray et al. (2004, 26) add that not all business processes are sources of competitive advantage, and business processes that utilize valuable but common resources can only be a source of competitive parity, whereas business processes that utilize valuable and rare resources can function as a source of temporary competitive advantage. In order for a business process to be a source of sustained competitive advantage, the resources must be valuable, rare and hard to imitate.

Business processes that utilize intangible resources, such as human resources, are more likely to provide competitive advantage than processes that utilize more easily imitable tangible resources (Lippman & Rumelt 1982; Itami 1987; Dierickx & Cool 1989; Barney 1991, cited by Ray et al. 2004, 26). Nevertheless, both tangible and intangible resources must be utilized together in order to execute a business process, thus making both resource categories interconnected with each other and vital for an organization, despite the fact that in the end, it is the intangible resources which confer sustained competitive advantage.

An example of this kind of bundling of resources is an ICT support process for customers that is built on ICT systems and human-to-human interaction. Despite having high quality and usable ICT systems, if the support-to-customer personal interaction is inadequate in quality, the organization will fail to satisfy the customer. Thus a lack of adequate human capital resource will prevent an organization from gaining competitive advantage, and the process will have competitive disadvantage due to inadequate intangible resources. The other way around,

if an organization has mediocre ICT systems but high quality personal service – i.e. interaction – the output of the process is more likely to be positive, and at least competitive parity can be achieved. An organization with sustained competitive advantage through efficient business processes will most likely develop its business processes and related resources in a holistic manner, and issues related to tangible and intangible resources which are needed as input for business processes will be handled in an efficient manner.

Business Process Management (BPM) can be regarded as a management approach to process development, including tools and means for designing, assessing and refining the process design and execution in an on-going, cyclical fashion. BPM has its roots in statistical process control, such as Just-In-Time production, Continuous Improvement, the automated Toyota Production System, Total Quality Management (TQM), Six Sigma, and Business Process Re-engineering (Paim et al. 2008; Harmon 2007; Chang 2005, cited by Hyötyläinen 2013, 19). The basis of the process management cycle is the planning, documentation and implementation of processes, with the intention to prevent distractions, variations and obstacles in operations (Hammer 2010, 5).

“Despite the historical transformation of work and organizations, contemporary BPM continues to resemble Taylorism in its focus on the systematic elimination of distractions and obstacles in the production.” (Hyötyläinen 2013, 79).

According to Hammer, the reasons for possible failures in process outcomes are flaws in the process design or in the execution, of which the execution-related issues are more challenging to overcome, as they are usually random, and therefore harder to address specifically, and are usually caused by a lack of sufficient human capabilities or inadequate tools (2010, 6). The Process Management Cycle is illustrated in Figure 1.

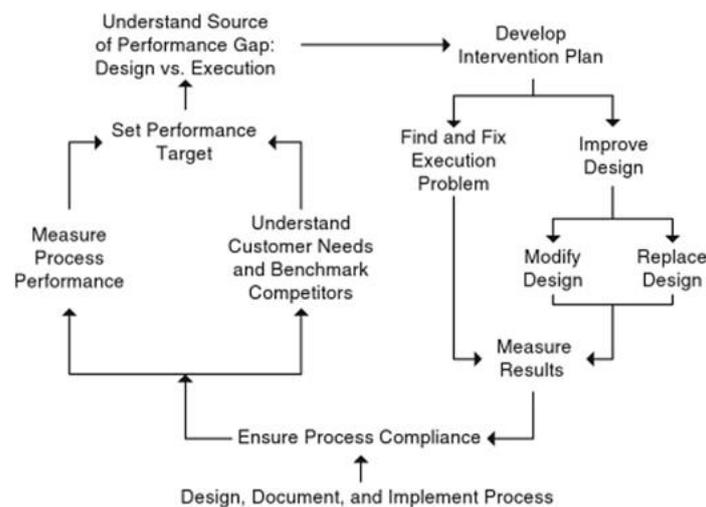


Figure 1. Process Management Cycle. (Hammer 2010, 5).

BPM has been regarded as an approach which improves shared business-IT understanding through the involvement of different stakeholders in the adoption of new BPM technologies (Hyötyläinen 2013, 93). However, Hyötyläinen (2013, 93) argues that previous studies on BPM have lacked understanding of interactions required in process change management, related technology management and other socio-technical aspects – the ability to transform a current state into a new state utilizing BPM and related BPM systems (BPMS). In a rapidly changing

environment, the ability to improve and implement new processes and related technologies with key stakeholders is indeed important, and may even be regarded as a source of competitive advantage.

1.5 Competitive advantage and Information Technology

Ray et al. (2007, 88) write that one way of gaining competitive advantage with IT is through the application of valuable, rare and costly-to-imitate IT resources in business processes. Another way of gaining competitive advantage with IT is to utilize IT resources to maximize the potential of other competitive resources which are valuable, rare and costly to imitate, and through this gain sustained competitive advantage. This means that an organization may have common IT resources that are not valuable, rare or costly to imitate, but competitive advantage is gained through improving and enabling the use of non-IT resources with IT. (Ray et al. 2007, 88). In many cases, organizations may use the same common technologies in their businesses, but one organization can gain relative competitive advantage by applying the common technologies in more efficient and more innovative ways.

As an example from the higher education environment of how competitive advantage can be gained with common IT resources, institution 1 and institution 2 may both have the exact same learning management system (LMS) in use, but there can be drastic differences in how they apply the LMS. The learning management system as such is not a source of competitive advantage, being a common resource, but the knowledge and skills to utilize it in an efficient manner may differ in the two institutions. The ability to apply the LMS is dependent on the skillset of the academic staff and technical staff: the e-learning pedagogic skills, technical skills and the ability to integrate the LMS with the key administrative systems. In addition, a critical resource in terms of the efficient application of the LMS is the capability to implement the technology and succeed in gaining acceptance of the technology among the academic staff. This has a direct relation to resources, processes and related capabilities such as culture, motivation, skills, project management and personnel training, among other issues.

A third way of gaining competitive advantage is through the combined utilization of rare, valuable and costly-to-imitate IT resources and non-IT resources that are also valuable, rare and costly to imitate (Ray et al. 2007, 88). Within higher education, some institutions have the capabilities and resources to develop information and communication technologies themselves. Through innovation and research and development, these institutions may produce valuable, rare and costly-to-imitate IT resources that gain them competitive advantage. Technology innovation is rather common in higher education, and co-creation of novel IT artefacts by staff and students may produce IT resources and skills that other institutions do not possess. Especially in the field of e-learning (digitalized learning), technology innovation may prove to be a valuable asset for an institution, especially if it is combined with high pedagogic skills.

In order to measure the effect of IT resources on an organization's performance, the examination should be addressed to the process level rather than the overall performance level, due to the fact that their performance impact is more easily measurable on the process level, whereas the overall performance of an organization is dependent on the net effect of multiple business processes. Secondly, because the impacts on the process level are more easily

measurable, they are also more easily appropriated by the internal stakeholders, such as the managers. (Ray et al. 2007, 88).

Mata et al. (cited by Ray et al. 2007, 89) discuss shared IT-Business understanding, by which they mean the shared domain knowledge and common understanding between the IT specialists and line managers about business processes and the potential which IT has for improving process performance. The challenge with shared IT-Business understanding is that it develops slowly over time, through numerous development projects in which the business and IT experts participate collaboratively. Ray et al. (2007, 89) write that shared IT-Business understanding is a tacit resource, which is built on trust, interpersonal relationships, and shared knowledge between IT specialists, line managers, top management and other stakeholders, such as external(?) networks. The tacit nature of this specific understanding makes it a potential resource for competitive advantage, and through developing this tacit resource, capabilities to innovatively utilize IT can emerge (Ray et al. 2007, 89).

In my personal experiences as practitioner and manager, the gap between IT and business can be an obstacle in gaining better process performance, but the gap can be narrowed through participative collaboration in IT development projects, and use of language that is understandable by both the IT and the business people. Also, utilizing Enterprise Architecture at my institution has proved to be useful in terms of building a shared IT-Business understanding, as it has helped the institution to deploy an approach to IT-Business joint development that integrates both these domains, and visualizes the interconnectedness between business processes and IT systems, thus making it a tool to communicate complexity and address process-level or even activity-level issues.

Performance gains through IT relies on how IT resources are deployed and utilized, rather than on how much is invested in IT financially (Ray et al. 2007, 90). As the simple example of LMS use in two imaginary HEIs illustrated, competitive advantage is not conferred by the technology itself, but rather by the intangible resources combined with the technology.

As Ray et al. (2007) emphasize, it is vital to build a shared understanding between the business and the IT specialists, and to nourish the development of the shared knowledge domain, as this, not the technology alone, is a resource for competitive advantage. With regard to digitalized learning in higher education institutions, better shared understanding between the students, the academic staff, the managers and the IT staff will enable development that takes into consideration different relevant perspectives and a range of possible benefits, so that conflicts between the domains can be more effectively avoided.

As the role of IT and IS (Information Systems) has increased - and is continuing to increase - dramatically in organizations as one of the resources that help in gaining competitive advantage (albeit not the direct source), the importance of being able to plan, develop, implement and utilize information technologies and systems from strategically relevant perspectives is greater than ever. Based on Earl (1993, 1), earlier literature suggests that strategic information systems planning (SISP) should focus on the following areas:

- Aligning investment in IS with the business goals
- Exploiting IT as a resource for competitive advantage,
- Directing efficient and effective management of IS resources, and
- Development of technology policies and architecture

Carr (2003) in his much debated article, (see for example Brown, Hagel, McFarlan, Nolan & Strassman 2003) argued that IT's role as a source of competitive advantage is questionable, and that instead of approaching IT as a source of or tool for gaining competitive advantage, it should be approached as a commodity, to which basically every competitor has the same access in the contemporary competitive environment. Thus, it is also easily replicable. With regard to infrastructural technologies, according to Carr, the real impacts on competition take place at the macroeconomic level, not at the level of the individual company: the real strategic differences may be realized at a national level, and separate countries from each other in terms of competitive advantage.

Carr suggests that organizations should rather focus on realizing the full potential of IT through efficient exploitation, and lowering of operational costs. However, despite the misinterpretations of his critics, Carr does not state that IT does not matter at all; what he does say is that IT resources are essential to competition, but inconsequential to strategy (Carr 2003).

“Today, an IT disruption can paralyze a company's ability to make its products, deliver its services, and connect with its customers, not to mention foul its reputation. Yet few companies have done a thorough job of identifying and tempering their vulnerabilities.” (Carr 2003).

Carr (2003) calls for more patience in planning and executing IT investments, greater rigor in the evaluation of expected business benefits from IT investments, more creativity in exploring simpler and more cost-effective solutions, a more aggressive approach to procurements, and openness to partnerships and outsourcing.

Aligning investments in information systems (IS) with business goals is about investing in strategically relevant development of IS. Exploiting an IT resource for competitive advantage requires the capability to effectively utilize the existing resource for the good of gaining leading status in the markets. IT as a resource may or may not be a source of competitive advantage, and on many occasions, competitive advantage is actually gained through utilizing non-valuable and common IT resources combined with valuable, rare and costly-to-imitate resources, such as high skills in exploiting information technologies in a distinctive manner.

To cite a few examples from the higher education context, alignment between IT investments and business goals could manifest itself as investments in IT that promote efficient and effective implementation of high quality e-learning, that facilitate efficient management of R&D projects, or that enable the creation of novel digitalized laboratories. Exploiting IT resources for competitive advantage could be realized in these examples through efficient application and utilization of education technologies, project management systems, and/or IT-supported laboratories. In my experience as a practitioner and a researcher in an HE institution, directing the management of *information systems* (IS) resources demands shared IT-business understanding, up-to-date managerial skills, and clearly defined strategy for development. Operationalization needs to be supported by transparent institutionalized processes and decision-making mechanisms for resource and investment planning, an efficient and strategy-aligned ICT portfolio, effective project management and enterprise architecture management, and related high-level skill sets from individuals and teams operating in all these domains.

Galliers writes (1993, 286) that it is sometimes hard to recognize whether the positive impact of IT on competitive advantage is achieved through careful strategic planning of IT or rather as a result of serendipity. To support the serendipity explanation, he refers to the often cited cases of airline reservations systems development, in which the core purpose was to achieve improved process efficiency. The competitive advantage was partly achieved by increased efficiency and effectiveness, and partly as a result of placing information about the airline's own flights on the screens above the other flights. Galliers (1993, 286) points out the possibility that the latter may have occurred almost accidentally, and the impact it had on the airline's competitive position surprised everyone, including its rivals.

Even though this example took place more than two decades ago, it is an excellent illustration of the causal ambiguity between IT resource planning and competitive advantage. Was the IT resource as such the actual source of competitive advantage, or did the competitive advantage result rather from the manner - whether deliberate or unintentional - in which the IT resource was utilized? Can an IT resource as such, in isolation, be regarded as a source of competitive advantage, or does it rather function as a complementary resource, which must be combined with other resources that are the actual sources of sustained competitive advantage, such as user capabilities and managerial skills? Or can competitive advantage depend on the nature and innovativeness of the IT resource as well?

Galliers (2004, 256) introduced an information systems strategizing framework, in which the focus is not merely on the internal matters, but also involves external factors, such as partners, customers, suppliers and other organizations. Thus, information systems strategy is an increasingly more substantial part of collaborative business strategizing (Galliers 2004, 257). This concept can be fully aligned with a higher education institution: more and more cooperation with other HEIs, suppliers, customers and third sector institutions is taking place, and the boundaries between the operations of one organization and another are fading. When strategizing the development of IS and education technology in an HEI, the external bodies play a crucial role in enabling successful strategy implementation, largely by providing valuable capabilities for doing so. Gallier's framework is an excellent tool for communicating the complex environment, and how information systems strategy is connected with the external environment, the business strategy, and continuous organizational learning and change management.

In 2011, Galliers (3) introduced a refined framework (Figure 2.), which incorporated into the earlier version the socio-political regulatory environment as an external domain influencing the strategies. The regulatory and socio-political environment plays a major role in public higher education in Finland, due to the fact that universities of applied sciences are strongly directed by the Ministry of Education and Culture, national politics and legislation. Recently, the political discussion around education has put rather a strong emphasis on the digitalization of education. The socio-political environment directly affects strategy formulation and implementation in Finnish HEIs.

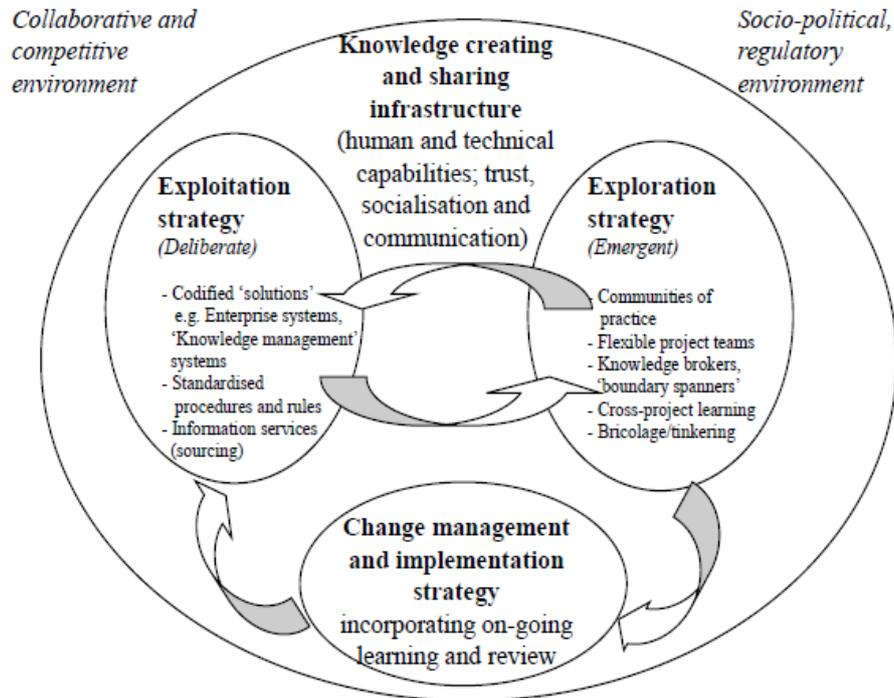


Figure 2. Information Systems Strategizing Framework (Galliers 2011, 3).

Galliers (2004, 257) writes that information systems strategy is processual and ongoing, meaning that it is also emergent, influenced by factors such as organizational learning, and emergent and unintended consequences of strategic decisions and technologies. Karpovski, et al. (2014, 31) refined further on Gallier's model and proposed a new framework for information systems strategizing (Figure 3.).

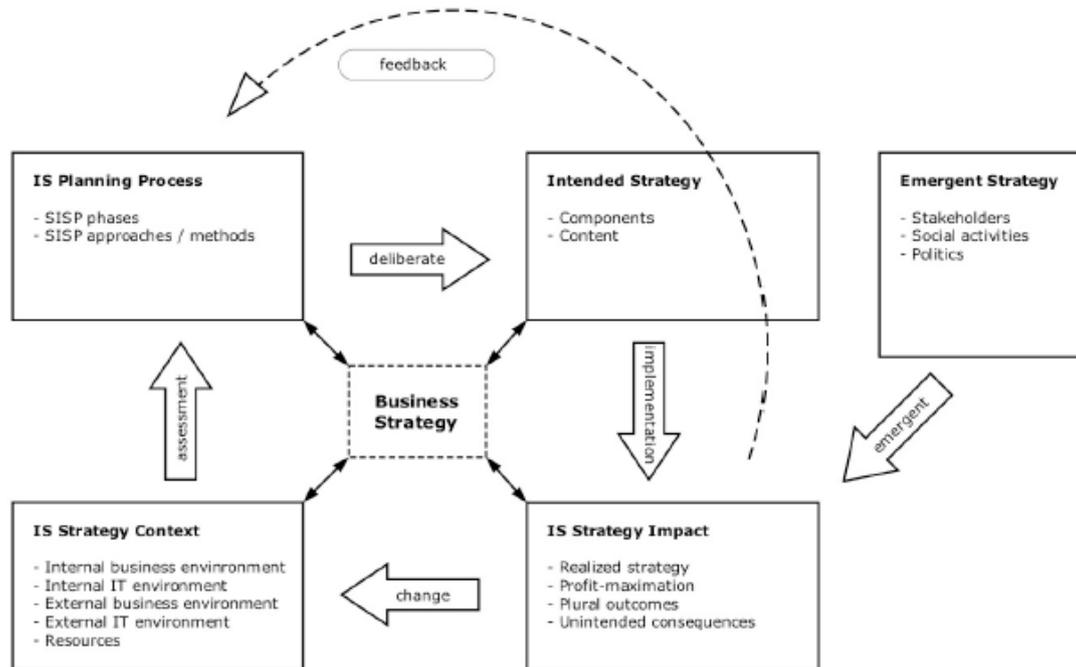


Figure 3. A proposed framework for information systems strategizing (Karpovski, Hallanoro & Galliers 2014, 31).

The proposed framework suggests that the intended strategy and the emergent strategy both contribute to the impact of information systems strategy, and the context of the IS strategy is under the influence of both. The realized impacts of the strategies have a relation to further IS planning, which means that what is being perceived and learned from the realized strategy implementations affects the next cycle of the strategic information systems planning, strategy formulation and implementation – the IS strategizing process. The feedback element in the proposed framework represents the assessment of the strategizing process itself (Karpovski et al. 2014, 32).

The involvement of multiple stakeholders is important in evaluating the outcomes of IS strategy, as suggested by Karpovski et al. (2014, 32). Within a higher education institution, this stakeholder involvement can manifest itself as the involvement of the students, partners, suppliers, personnel and management. The strategizing of digitalization of learning and teaching within the context of this research focuses on the creation of knowledge needed to support and guide the strategy implementation – planning and management of the development in the specific area. For this implementation, it is crucial to have a holistic understanding of the existing strategy context, the internal and external environments, and what needs to be improved in order to achieve the strategic goals.

From operational perspectives, information systems are vital for contemporary organizations, and without them it would be challenging or impossible to manage in the markets, or to even operate at all. This does not necessarily mean that they are in themselves sources of sustained competitive advantage, although this does sometimes happen. For example, the information systems of Amazon.com proved to be disruptive technology and have been the source of

competitive advantage for the company, which also continuously builds its competence to maintain its lead in the e-business market (Ruohonen 2015).

According to Peppard and Ward (2004, 169), the universally accepted message from research literature on strategic IT, is that technology alone is unlikely to be a source of competitive advantage. IT investments are rather seen as tools for business changes, new business models, process improvements or new services, and to fully realize the potential, an organization needs to be capable of assimilating these changes (Peppard & Ward 2004, 169). Increasing effectiveness of business processes through IT investments is a common activity in today's organizations, including higher education institutions. Informal and occasional observations of the Finnish higher education sector suggests that a lot of the IT development resources are allocated to the development of administrative effectiveness. The rationale behind this is, in many cases, the decreasing amount of funding for HE and acknowledged ineffectiveness of the processes concerned.

Peppard & Ward (2004, 170) suggest that any gains in competitive advantage will most likely be short-lived if the advantage is based on IT alone; they emphasize the importance of understanding the mechanisms and processes which lead to continuous realization of outcomes that produce competitive advantage through the deployment of information systems and information technologies.

Sustainability from an IS perspective is the ability to deliver business value from IS investments, and is enabled by the organization's IS capability (Peppard & Ward 2004, 171). According to Peppard & Ward (2004, 171), building IS capability is challenging, as it requires:

- understanding how IT impacts the business,
- identifying new strategic opportunities,
- assessing technological innovations,
- deriving new technology-enabled business models,
- prioritizing investments opportunities,
- managing IT-enabled change,
- managing vendors,
- exploiting investments in technology,
- ensuring appropriate usage of the IS,
- management of IS projects

Continuous organizational learning is at the very core of the processual IS strategizing process; the planned, developed and implemented strategy alone very rarely forms the future of an organization, as the unexpected and unintended happens despite the most careful strategizing. This emphasizes the importance of having dynamic capabilities for dealing with change.

1.6 Dynamic capabilities – capability to build, expand and alter an organization's resource base

Within the ever-changing operational environment, whether for private business or in the higher education sector, the more dynamic and mobile the resource base that an organization possesses, the more flexible it is in terms of addressing the changes in its environment. Capability to refine the resource base according to changes in the competitive environment is vital in order to maintain or achieve competitive advantage. Teece et al. (1997, 516) defined dynamic capabilities as the ability to refine, build and integrate competencies – internal and external – to gain competitive advantage within rapidly changing environments. Later, Eisenhardt & Martin (2000, 1107) refined the definition of dynamic capabilities as an organization's processes that utilize resources, and through this create the ability to react to and create new market changes. Zollo & Winter (2002, 340) separated dynamic capabilities from operational capabilities, placing much emphasis on organizational learning as the source of dynamic capability. They suggested that dynamic capability, which is gained through organizational learning, is utilized to modify operational routines to achieve greater operational efficiency and further, competitive advantage.

In 2007, Helfat et al. (2007, 4), building on the previous research and definitions of dynamic capabilities, refined still further on the definition of dynamic capabilities; he explains them as the capacity to create, expand and alter tangible, intangible and human capital resources, and all the capabilities which an organization possesses, controls or has access to. An organization can have resources and capabilities which it does not own, such as its personnel or personal networks, through which it has preferential access to resources and capabilities (Helfat et al. 2007, 4). In the higher education sector, for example, one essential rationale behind networking with other HEIs, public sector institutions and private businesses is the need to expand the resource base that can be utilized to implement new strategies and gain competitive advantage.

The ability to refine, transform and build a resource base that includes valuable, rare, costly-to-imitate and well organized resources is the key factor enabling an organization to succeed in a rapidly changing environment. As the Finnish higher education sector is under heavy pressure to make changes, some of which were briefly described earlier in this chapter, the relevance of having dynamic capabilities is greater than ever. In terms of development, at one end of the line is the need for improvement of operational efficiency, and at the other, improvement in the quality of learning and teaching. Quality and performance do not need to be in conflict, but practice has shown that changes that are easily measurable in financial terms are more easily accepted than changes that firstly affect the quality of education, and through that, in the long run, may also provide financial benefits. Both approaches are needed, which means that all the resource types defined by Barney (1991) – physical resources, human capital resources and organizational capital resources – need to be under continuous evaluation with regard to strategic goals. Only by creating, altering and expanding all resources on the basis of this evaluation, can the opportunities emerging from the rapid changes in the environment be seized.

2. THE CASE STUDY INSTITUTION

The institution which is the focus of this research is one of the largest universities of applied sciences in Finland, with a budget of 75 million euros, about 750 staff members and 9500 students. Bachelor level students, numbering approximately 7500, represent the majority of the student population. The institution offers over 40 different degree programs, in six different fields of education. In addition, the institution provides vocational teacher education and specialization studies for approximately 1000 students annually.

The importance of e-learning has been acknowledged, and organizational development efforts have been made in the area, but so far they have been focusing on the micro level rather than the strategic level, as digitalization of learning and teaching has not been fully strategized. The role of e-learning has grown during the past decade, but a substantial amount of further development is needed. The planning and execution of development measures must be founded on a rigorous information base, thus comprehensive evaluation of the institution is needed.

Student experience as a concept has seen an increase in status in the institution in question, leading to deeper student involvement in development processes. As the quantity and diversity of digitalized learning is increasing, motivators for refining the institutional steering of its development have emerged. The underlying goal behind the development of digitalized learning and teaching is the simple desire to provide students with more alternative approaches to carrying out their studies, by improving institutional resources and capabilities for producing high quality learning experiences.

In this chapter, I briefly describe the key mechanisms for steering the development of resources related to e-learning. The description focuses specifically on the perspectives of strategy, annual planning, and the steering of ICT-related development.

2.1 Planning and steering the institutional development

The case study institution uses various means for steering its continuous development and related decision-making. Different kinds of metrics and assessment tools are utilized, in order to provide a rigorous and informative basis for decision-making. Strategy is operationalized in the annual planning of quantitative and qualitative goals. Each member of the personnel has the opportunity to influence the process through involvement in their own unit's annual planning. Figure 4. is a simplified process map representing the external and internal inputs into the institution's processes, together with the steering mechanisms affecting the realization of value proposition in the institution.

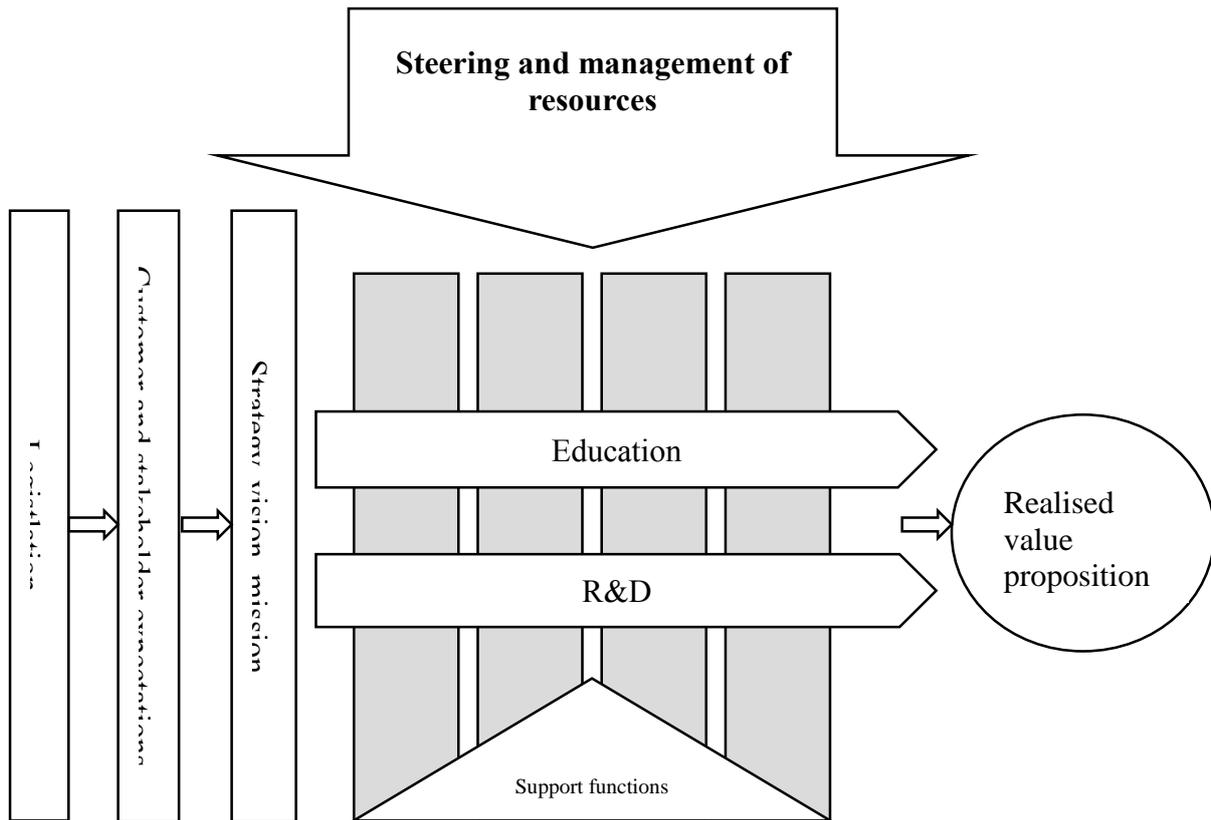


Figure 4. The process map and steering mechanisms from a top-down perspective.

Despite the existence of a vast array of steering mechanisms, professional autonomy is of critical importance in the development of the institution. The personnel expect to have power to influence the direction in which the institution is going. Thus, there needs to be continuous balance between centralized steering and distributed power.

The various steering aspects and mechanisms affecting the institution's development are described in Figure 5. The strategic layer includes the organization's strategy, sub-strategies and principles, and communication of strategy-related matters – what is to be achieved in the long run and how. This layer sets the contextual framework for the key processes influencing the development.

The strategy-based annual planning process is an institutional process for planning the development, usage and distribution of resources, setting qualitative and quantitative objectives, and defining the operational focuses for the following year, from the strategic perspectives. Quality assurance and process management include the means and the responsibility to measure and evaluate operational quality, efficiency and effectiveness, and provide information for and guide continuous improvement.

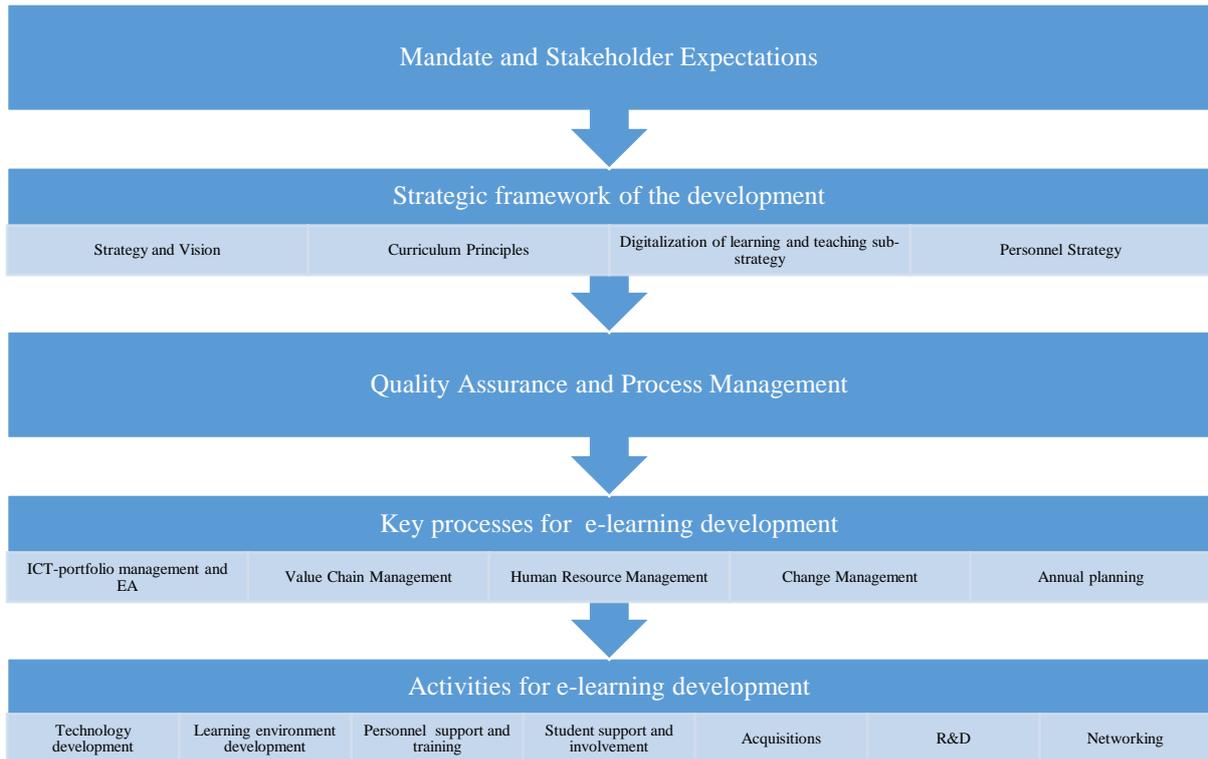


Figure 5. The layers of the institution's steering of development.

In the activity layer in Figure 5, the key activities for developing e-learning are listed; these activities have a direct impact on the development of the related resource base. For example, each decision related to procurements or value chains in the context of e-learning development has a direct impact on the direction in which the institution advances. In addition, each decision concerning ICT-related development has an impact on e-learning development, since it ties institutional resources, time and money, to the chosen development projects. Human resources play a critical role in terms of steering the expertise allocations and skills development.

Annual planning of personnel resources is based on the strategy-aligned planning and development of resources and related goals – both qualitative and quantitative – and takes into consideration aspects such as need for additional personnel, skills development, and improvements in work practices. The key institutional mechanisms for personnel training and support with regards to e-learning are briefly presented in Figure 6.

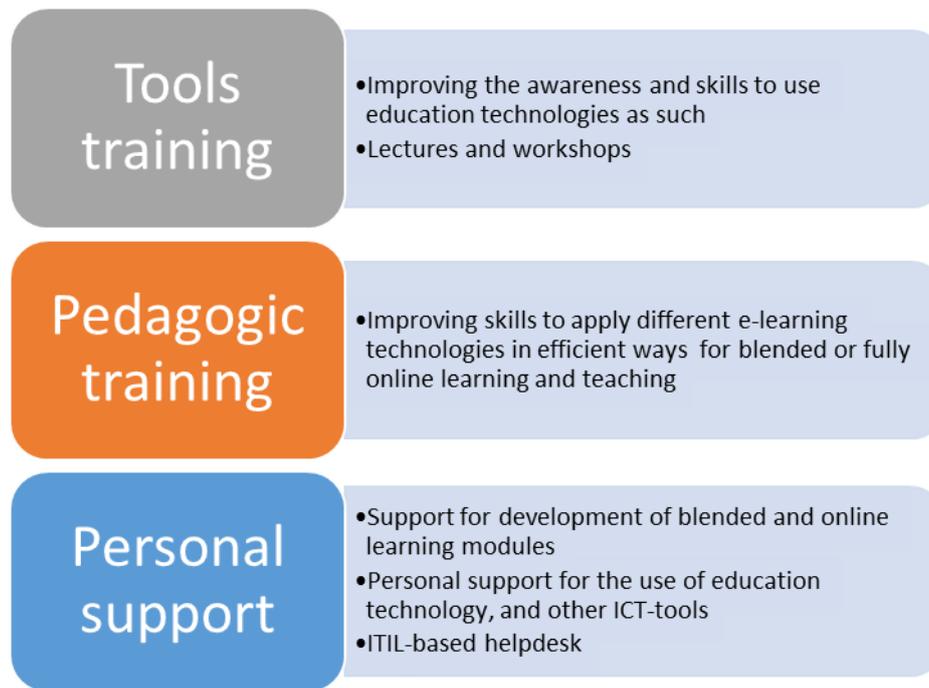


Figure 6. E-learning specific personnel training and support mechanisms.

2.2 Digitalization of learning and teaching sub-strategy

During the autumn of 2014, a digitalization of learning and teaching sub-strategy was defined for the institution. I was responsible, as a researcher and practitioner, for the strategy planning process. The sub-strategy was defined in order to communicate explicitly the goals, the means and the measures which the institution desires to be achieved and which need to be undertaken during the strategic five-year term from 2015 to 2020.

The decision to initiate planning of the sub-strategy was made by the strategic management team in August 2014. The definition of this specific sub-strategy is linked to the research process. This statement is discussed more thoroughly in chapter four.

The future challenge is to operationalize the strategy, through the institutionalized management processes of the institution. The management of the operationalization will be actualized through a dispersed virtual organization, in which many representatives from various different domains participate. Currently, the operationalization project is under planning. The core themes of the sub-strategy are:

1. Flexible learning paths and curricula
2. Cost efficiency and volume
3. Personnel skills
4. Education cooperation
5. Networks

6. Commercial education
7. Shared expertise and student involvement
8. Brand and image
9. Technology and learning environments
10. Digitalized content
11. Research
12. Quality assurance and improvement

(TAMK 2014c).

Goals and metrics have been defined for each of the above listed strategic themes, and the operationalization will take place through the strategy-based annual process of planning resources and development. In addition, the theme of internationalization has been acknowledged as a key component of all of these core themes. In other words, operationalization must take into consideration how a given strategic goal will promote the internationalization of the institution as a whole, which is one of the goals of the institution's main strategy as well.

2.3 Steering the development of ICT and education technology in the case study organization

Within the annual planning of development and related resources, IT has a fundamental role: a large portion of the organization's IT expertise and IT resources is tied as an outcome of the process. This planning provides the organization with the capability to more efficiently and effectively manage IT-related resources, but on the other hand, makes the organization somewhat inflexible. However, as of 2014, there are two IT investment planning and evaluation cycles, to provide more flexibility in the planning of IT-related development.

Project portfolio management and service catalogue management are essential domains of the organization in aligning the resource reality with the institution's operational demands and needs. Enterprise Architecture (EA) governance justifies and guides decisions regarding and affecting architecture development. EA governance at the institution includes the architecture principles which were defined for the organization during summer 2013; this work was coordinated and managed by myself. The purpose of the principles is to guide the development of business and ICT in the pre-defined and accepted direction. Principles as such do not guarantee high-level compliance, thus it was essential to integrate the principles into the key decisive mechanism of the annual planning and evaluation of investments. This means the principles play a crucial role during the preparation of ICT investment and development proposals, and during the initial evaluation of the received proposals.

Enterprise architecture (*EA*) provides an approach in which an organization's different domains can be described and governed in a comprehensive and holistic manner. Business architecture, information architecture, systems architecture and technology together form the multidimensional and multilayered structure of the organization's EA in its entirety. The relevance of EA has become increasingly greater in Finnish higher education during the last few years. Goals for developing EA in public organizations have been set at the national level.

Many government bodies have started long-term development programs to enhance their architectural structure, with the support of dedicated enterprise architecture frameworks. The aim is to produce higher quality systems and services, within budget and with the entirety of the organization in mind. The Finnish higher education sector has its own EA framework named Kartturi (2013).

The purpose of the development of EA is to develop an organization's IT from strategic perspectives, focusing on business purpose and business model execution, which are enabled and supported by information, information systems and technologies. The alignment and cooperation between business and IT is critical in terms of developing the architecture towards better sustainability, cost efficiency and quality. Enterprise architecture's key value is the integration and alignment of business strategy and IT (Gregor et al. 2007, 100).

The key question is: how much do we want to control and steer the development? A balance between control and creativity should be enabled. Constraining innovativeness and continuous development will inevitably lead to dissatisfied teaching personnel and dissatisfied students. Action driven by pedagogic experts should not be controlled too heavily, but certain steering mechanisms and active collaboration between educational units are needed.

EA governance and EA principles together with portfolio and service catalogue management play an important role in managing the vast array of technological solutions. The current problem is that there are numerous similar technologies in use, and no information is shared regarding their possible utility in other applications. The key problem is the lack of efficient knowledge-sharing and lack of development collaboration between different units.

In addition to the EA and architectural principles together with ICT governance, essential assets for the development of IT include:

- creation, analysis and sharing of information and development initiatives throughout the different domains of the organization;
- involvement of the students and the staff in research and development related to the internal and external environment;
- sharing of best practices and experiences.

3. THE RESEARCH DESCRIPTION

This two-year research process started with evaluation of the business processes of the case study institution, through which a better understanding of the current state of the institution was reached. Through a process maturity analysis, a wide array of development needs on different levels and in different domains of the institution was identified, all of which could not be covered in the research or in the dissertation.

From the beginning, it was clear that the desired path of the research would be strongly related to the management aspects of the institutional development of e-learning. This decision has firmly guided the research process. The domain on which the research process has focused is the organizational resources, processes and capabilities that are related to the steering of the development of e-learning. Steering is defined in this dissertation as the means and mechanisms which an organization can utilize to guide development in the desired – strategy-based – direction. My personal status and role as the development manager at the case study institution has supported the chosen approach.

3.1 The research process and questions

The research discussed in this dissertation was conducted in five phases. Work on the first three phases has already been published in the form of three articles; two of these were double-blind reviewed and the third appeared in the institution's own annual publication. The research also includes two additional case studies, the fourth and the fifth phases; these studies have not been published elsewhere, so are presented more thoroughly in this dissertation.

Article one was initially presented at the IFIP/KEYCIT KCICTP conference in Potsdam, Germany, after which it was included in the conference proceedings published by Springer, the academic publisher. The second article was presented at a global e-learning conference, Edmedia 2014, in Tampere, Finland. The article's final version was published electronically in the conference proceedings. Articles one and two were double-blind reviewed. The third article was not double-blind reviewed; it was published in the electronic publication of the case study institution. The topic of the third article was student involvement in the development of the institution's operational quality and efficiency, an issue that has provoked much discussion recently. This topic is also related to themes which arose in the discussion and results of research phases 1 and 2. The final publication dates of articles one and two do not follow the order of the research process's phases; article 1 was accepted for publication first, but was published after article 2.

3.1.1 The research questions

The main research questions, which the whole two-year process aimed to answer were:

- What are the key resources, processes and capabilities that a higher education institution needs in order to strategize the development of its digitalization of learning and teaching?
- What needs to be stressed in order to enable strategic implementation and improvement of e-learning (digitalized learning and teaching), and why?

The five-phase research process aimed to answer the main questions by solving the research challenges and related questions listed below. The different phases had their own specific research questions, which can be considered as sub-questions of the main question. Answering the sub-questions built up knowledge which eventually, put together, functions as the basis for the summative output of the research process. The summative output, presented in chapter four, is the outcome of the two-year process, during which a deep and holistic evaluation of the processes, practices, resources and capabilities was carried through, involving various different internal stakeholders of the case study institution.

- Research challenge of phase 1: Assessment of the institution's process maturity, and definition of development needs accordingly, through utilizing an e-Learning Maturity Model
 - Question 1: what is the state of the process maturity and capability of the case study organization?
 - Question 2: what development actions should be taken in order to improve the maturity and capability?
 - Question 3: how does the maturity model method used serve the purpose of the assessment?
- Research challenge of phase 2: To design a quality enhancement framework for collaborative online courses, which will guide and support the course design process
 - Question 1: what kind of quality instrument should be developed to support the design of online courses?
 - Question 2: how should this instrument, once developed, be implemented to improve the organization's capability to learn, and to produce higher-quality online courses?
- Research challenge of phase 3: Student perceptions and experiences of student involvement as change agents in e-learning development, compared to traditional student feedback approaches
 - Question 1: what are the students' conceptions of being deeply involved in the development of the organization's e-learning, working as essential development resources within the student living lab?
 - Question 2: how do students value the living lab approach compared to the traditional student's voice approach?
- Research challenge of phase 4: Investigation and analysis of matters related to distribution of financial and work-time resources for proposed IT projects in 2014
 - Question 1: what is the current situation with regard to IT development investment proposals, in terms of outgoing money and work hours for ICT expertise?
 - Question 2: what is the balance of the proposals between administrative development of effectiveness and the development of e-learning?
 - Question 3: what actions could be taken in order to transform the current balance towards greater strategic emphasis on IT resource planning and allocations?
- Research challenge of phase 5: Strategic management perceptions of the current state of the organization's resources, processes and capabilities, through a VRIO-analysis.

- Question 1: what is the organization's current competitive status in terms of resources and capabilities, with regard to e-learning?
- Question 2: what, if any, differences are there in the strategic management team members' conceptions of the current state of resources and required improvements?
- Question 3: what aspects should be emphasized in the improvement of the organization's competitive status, resources and capabilities, based on the results of the VRIO-analysis?
- Question 4: what kind of impacts on the resources and capabilities are expected to happen through the Tampere 3 project, if the merger of the three HEIs takes place?

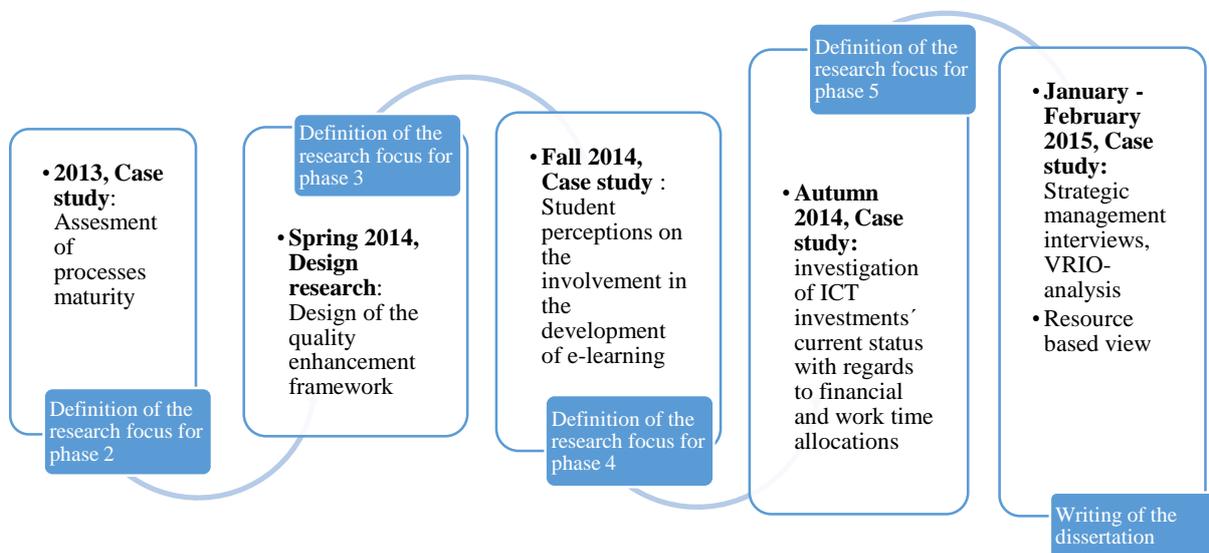


Figure 7. The research process.

3.1.2 The Resource-based view of the firm theory's link with the research process

The resource-based view of the firm (RBV) is the underlying theory for the whole research process. It provided the desired strategic viewpoint on the research. In addition to RBV, two other theoretical frameworks which were used in research phases one and two were Business Process Management (BPM) and Quality Assurance of e-learning (QA). These theories can be considered as subsidiary theories to RBV, and were considered appropriate for the specific contexts and approaches of the first two research phases.

In research phase 1, the aim was to form a holistic understanding of the case study institution's process maturity, including processes and practices related to e-learning, and its development, deployment and support. All these aspects have a direct relation to the resource-based view of

the firm theory, and represent an essential portion of an organization's resource and capability base.

Research phase 2 focused on a narrower, selected area of the resource base - Quality Assurance instruments and personnel skills. In research phase 3, the chosen aspect of the framework was internal stakeholder involvement – specifically, student involvement in development. The relevance of this approach is the acknowledgment of students as important resources for internal development.

Research phase 4 was a case study which aimed to provide an understanding of the current situation regarding IT-development project proposals - specifically, the balance between administrative development and e-learning development initiatives. This was important since IT development has a strong relation to the development of e-learning. Research phase 5 focused on the top management's assessment of defined tangible and intangible resources, capabilities, processes and activities. This assessment of resources was based on the VRIO framework described in chapter one.

In addition, the role of dynamic capabilities as a part of the theoretical foundation is rather explicit: the resource-based view helps provide an understanding of the resource base; but only through utilizing dynamic capabilities can the needed changes in the resource base be realized. Thus, the concept of dynamic capabilities was briefly described as part of the theoretical framework. The four key theoretical foundations on which the research process was built are:

1. The Resource-based view of the firm
2. Business Process Management (BPM)
3. Quality Assurance (QA)
4. Dynamic Capabilities

3.1.3 Personal role as a professional and a researcher during the process

Schön (1983, 11) discusses the challenges that appear when a professional's interests and the public interest are in conflict: the individual's interests become the focus of the work, leading to outputs that don't necessarily support the improvement of social well-being. This is an important point of view to remind oneself of, especially when doing empirical research in an institution where one has a dual role – as a researcher and as a member of the institution's management. A researcher's ability to identify and acknowledge possible conflicts of interest, and to avoid any bias in the research process is an essential part of his/her professional practice.

Schön writes that in the Technical Rationality model, professional activity consists of instrumental problem-solving with rigorous methods, through which the application of scientific theory and techniques are manifested (1983, 21). Schön criticizes the Technical Rationality model for its view of knowledge as a hierarchical structure, in which research and practice are institutionally separated, and the researcher's role is considered as superior to the role of the practitioner. (1983, 26-27)

Recent discussions within the case study institution have brought up the importance of methodological rigor and continuous reflective practice in the institution's development (e.g. Karttunen, 2014). As an example and to concretize the relevance of this issue, a large portion

of the decisions regarding investments in the institution's future may have an influence on thousands of people and involve allocations of substantial financial resources. Thus, these decisions must be based on rigorous methods, including scientific theory and instruments, to avoid biased or misleading analysis resulting in false conclusions. As for reflection, the institutional quality assurance philosophy and related practices are built on the concept of continuous reflective improvement, whether on the individual or the institutional level. In this sense, professional autonomy is justified and actualized through rigorous methods for research and development in the local context, with the support of intuition and application of implicit knowledge.

I myself as a researcher had a role of reflective practitioner during the process, being deeply involved in the institution's e-learning development, management and coordination of the enterprise architecture development as a development manager. A comprehensive understanding of the local context, both the official and unofficial organization, promotes continuous reflection on current practice and on what changes are needed in order to best meet the expectations of the key stakeholders of the institution. For a development manager, the key professional activities are to analyze and reflect on possible gaps between current state and defined goals; to align the daily operations with the institutional strategy and to lead the necessary operational changes; to have an understanding of current scientific paradigms and methods; to be aware of external change trends and motivators, and to try to align these with the local, internal change motivators, and vice versa.

During the research process, emphasis was placed on the utilization of rigorous and diverse research methods, to avoid misleading and biased analysis. It is justifiable to raise the question whether a larger proportion of development projects should be executed as genuine action research, design research or case study projects, or as a combination of these, with strong theoretical and instrumental foundations. By genuine research, I mean the kind where rigorous, impartial, scientific methods are applied, as would be the practice in any ethical research process.

3.2 The used research approaches and methods

Two qualitative research methods have been utilized during the different phases of the research process: case study research (phases one, two, three, four & five) and design research (phase two) – more specifically - design science in information systems research (DSISR).

3.2.1 Case study research

Case study is a research strategy that is used in many disciplines today, such as management and information science; it originates in the field of social sciences. Case study is used to produce knowledge of individual, group, organizational, social, political, and related phenomena (Yin 2003, 1). Case study research helps to build an understanding of socially complex phenomena, through a holistic approach to subjects such as organizational and managerial processes. It is used to answer the questions “how” and “why” (Yin 2003, 2).

According to Yin (2003, 195), some concerns have been raised about the case study research strategy:

- it lacks rigor if no systematic procedures have been followed, or biased views have influenced the direction of the findings and conclusions,
- it provides little basis for generalization – i.e. the process of forming conclusions about a wider context based on a narrow set of data,
- it is resource-consuming, and results in massive amounts of unreadable documents.

To ensure an appropriate level of scientific rigor, the researcher must report all evidence clearly and fairly. Voss et al (2002, 195) write that case-study research is time-consuming, requires high-level interviewing skills, and demands care in drawing generalizable conclusions from a limited number of cases. But case studies do enable generalization, and it is the researcher's job to theorize on the basis of findings and expand the area of their applicability, not only to enumerate frequencies. As for the time required – this is largely defined by the chosen method of data collection rather than the research strategy itself. (Yin 2003, 10-11).

Even when the number of cases is limited, case studies can provide new insights, develop new theory, and have a great validity among practitioners (Voss et al. 2002, 195). Multiple data sources can be used during a case study research, such as field notes, workbooks, memos, interviews, observations and focus-group discussions. The various data-collection methods used enable triangulation, through which the validity of the research can be improved further (Voss et al. 2002, 195).

Eisenhardt (1989, 533) introduced a process model for theory-creating, i.e. inductive, case studies (Table 2.). Later, Järvinen (e.g. 2004) discussed the same process model. The notes in the right-hand column of the table show how the different steps and activities of the Eisenhardt/Järvinen model were applied to the specific two-year research process presented in this dissertation.

Table 2. Process of Building Theory from Case Study Research (adapted from Eisenhardt 1989, 533-545; Järvinen 2004, 73-78).

Step	Activity	Explanation	Reflection of the research process
Getting started	a. Definition of research questions b. Possibly a priori constructs Neither theory nor hypotheses	Determining the research focus – the questions – helps to avoid getting overwhelmed by the volume of the data. Possible definition of <i>a priori</i> constructs helps accurate measurement of the constructs. Theoretical flexibility can be ensured by avoiding preordained theoretical perspectives or propositions, since they may bias and limit the findings. (Eisenhardt 1989, 536; Järvinen 2004, 73-74)	Research questions have been defined for each research phase. Each of the research phases led to the definition of the questions for the next phase. The main research questions for the research were defined close to the end of the process, in fact, during the last research phase. The main research questions and the phase-related research questions are presented in Chapter 3.1.
Selecting cases	a. Specified population b. Theoretical sampling	The cases are selected to replicate previous cases, to extend emergent theory, or to fill theoretical categories: cases are chosen for theoretical, not statistical reasons. (Eisenhardt 1989, 537; Järvinen 2004, 74).	The definition of the first phase and the related case has functioned as initial output for the following research phases. Each of the cases has been defined after or during the previous phase; aggregated together, they form a logical, continuous, two-year research process. Selection of the cases has been the result of careful analysis of what more needs to be known in order to answer the main research questions, and how to advance towards the final output, in which all the different phases converge logically.
Crafting instruments and protocols	a. Multiple data collection methods b. Qualitative and quantitative data combined Multiple investigators	Multiple data collection techniques enable triangulation of data, which leads to stronger substantiation of constructs and hypotheses. It is recommended to use both quantitative and qualitative data. Together, the different data collection methods and different types of data, from different sources, enable wider perspectives on the	Multiple data collection methods and data sources have been used during the research (<i>see Table 3.</i>). Although this research was conducted by only one researcher, multiple individuals have participated in it in different ways. Especially phases one and two have been a collaborative effort in some parts - specifically, the more pragmatic parts. The maturity

		<p>phenomena. Multiple investigators improve the creative potential of the study as they have different perspectives, which may lead to novel insights into the data. In addition, converging perceptions strengthen the empirical grounding of the theory. (Eisenhardt 1989, 537-538; Järvinen 2004, 74).</p>	<p>analysis and the design of the quality-enhancement framework for online courses have been conducted in small workshops. Analysis of information collected from such sources as interviews has been conducted by the researcher alone. Other research phases have been conducted entirely by the researcher alone, although in phase four, the initial raw data was a group output of the IT steering group of the organization.</p> <p>The data has been qualitative for the most part. In phase five, the qualitative data was quantified for the purposes explained in section 3.8. In research phase four, both qualitative and quantitative data was collected. Some quantitative data has been utilized as part of the basic description of the organization which is the focus of these case studies.</p>
Entering the field	<p>a. Overlap data collection and analysis, including field notes</p> <p>b. Flexible and opportunistic data collection methods</p>	<p>Field notes collected during the research enable overlap of data, and support early analysis of the data. A key feature in theory-creating studies is the freedom to make adjustments during the data collection process. Different themes may emerge during the process, which may lead to adding new cases, or to interview previously unknown individuals. Addition of questions to an interview protocol is one example of these kinds of in-process adjustments. (Eisenhardt 1989, 538-539; Järvinen 2004, 75).</p>	<p>As a reflective practitioner and researcher, I have been in the habit of using field notes as a way of collecting data, mostly in the form of memos related to internal discussions and meetings. Constant adjustments have taken place during the two-year process; additional cases have emerged due to increased knowledge and insight, and new constructs have arisen from the different phases.</p>
Analyzing data	a. Within-case analysis	<p>This is the most difficult and least codified part of the research process. In qualitative studies, the amount of data tends to be large, and it is not readily</p>	<p>The amount of data has been rather massive, despite the fact that only one organization was investigated in these case studies. Analysis of the data has been</p>

	<p>b. Cross-case pattern search using divergent techniques</p>	<p>amenable to mechanical manipulation, analysis and data reduction. Thus, the goal is to become familiar with the data by searching for coherence and order. Within-case analysis provides means to become intimately familiar with the cases as stand-alone entities, and usually involves detailed case-study write-ups. Through within-case analysis, the different patterns of each case emerge, before the generalization of patterns across cases takes place. (Eisenhardt 1989, 540; Järvinen 2004, 75).</p> <p>Cross-case pattern search forces the investigators to look beyond initial impressions and see evidence through multiple lenses. One tactic for cross-case pattern search is to select categories or dimensions, and then look for similarities and differences within a group. Another tactic is to select pairs of cases and list the similarities and differences between each pair. A third tactic is the division of data by source type, with each investigator working on a different type of data. All the different tactics enable greater accuracy and reliability of the emerging theory – theory which has a close fit with the data. (Eisenhardt 1989, 540; Järvinen 2004, 75).</p>	<p>conducted systematically in each of the phases and related cases. Similarities and differences have been identified (<i>see, for example, research phase five</i>). Reflection on the different phases of the evolutionary process has also been conducted, and the different phases are in logical order: the output of the previous phase and case dictated the definition of the next phase and case.</p>
<p>Shaping hypotheses</p>	<p>a. Iterative tabulation of evidence for each construct</p>	<p>Tabulation of evidence for each construct sharpens construct definition, validity, and measurability: the theory is compared with the data constantly. One step in shaping a hypothesis is to sharpen the constructs through a two-part process involving 1) refining the definition of the construct and 2) building evidence to measure the construct. This includes comparison between data and constructs.</p>	<p>The research process has been developed in an evolutionary manner, and the different phases and cases have been defined emergently. Each of the cases contributed to the actual output of the two-year process (<i>see Chapter 5</i>). Tabulation of each of the constructs has been conducted during and after each of the phases. Constructs of the earlier phases have also been evaluated and confirmed intra-</p>

	<p>b. Replication, not sampling, logic across cases</p> <p>c. Search evidence for “why” behind relationships</p>	<p>A well-defined construct is the output of convergences of different evidence. The second step is to verify that the relationships between constructs fit with the evidence in each case. Sometimes the relationship can’t be confirmed, or is thrown out due to insufficient evidence. A hypothesis is examined for each case, which separates theory-creating research from hypothesis-testing research. (Eisenhardt 1989, 541-542; Järvinen 2004, 77).</p> <p>Replication is the logic of treating each series of cases as a series of experiments, the result of which may be either confirmation or disconfirmation of the hypotheses. Confirmation of the emergent relationships improves the validity of the relationships, whereas disconfirmation can provide an opportunity to refine and extend the theory. Shaping hypotheses in theory-creating research involves more subjective judgement since statistical tests can’t be applied. (Eisenhardt 1989, 542; Järvinen 2004, 77).</p>	<p>organizationally in pragmatic applications, such as planning of organizational development. Different data sources, collection methods and data types have been used throughout the process.</p>
Enfolding literature	<p>a. Comparison with conflicting literature</p> <p>b. Comparison with similar literature</p>	<p>Comparison of the emergent concepts, theory or hypotheses with conflicting literature builds internal validity, raises the theoretical level, and sharpens construct definitions. If conflicting findings are ignored, confidence in the research’s findings is reduced. Conflicting literature also presents an opportunity; it forces researchers into a more creative mode of thinking. This may lead to deeper insight into conflicting literature and emergent theory. Similar literature ties together</p>	<p>No systematic literature review (SLR) has been conducted during the research. Literature on IS-related strategizing, business process management and maturity, and quality assurance of e-learning has been discussed and aligned with the research and its output.</p>

		underlying similarities which have not normally been associated with each other. (Eisenhardt 1989, 545; Järvinen 2004, 77-78).	
Reaching closure	a. Theoretical saturation when possible	No additional cases are needed when theoretical saturation is reached; the process should end when marginal improvement becomes small. In practice, more pragmatic reasons are usually combined with theoretical considerations; e.g. time and money may also dictate when to stop collecting more cases. The output of creating theory may be concepts, a conceptual framework, propositions or mid-range theory. (Eisenhardt 1989, 545; Järvinen 2004, 78).	During the two-year research process, the development of the case study organization has been under constant evaluation. The research phases and the research as a whole have influenced the strategizing of the development of e-learning. The relationship between the research and the sub-strategy for digitalization of learning and teaching is discussed in chapter five.

Different options of doing case study research

Cunningham (1997, 403) identified three different approaches to case study research: 1) intensive cases, 2) comparative cases, and 3) action cases. The different approaches are explained in Table 3.

Table 3. Different types of case studies (Cunningham 1997, 403).

	Type of case study		
	Intensive cases	Comparative cases	Action research
Purpose	To develop theory from intensive exploration	To develop concepts based on case comparisons	To develop concepts which help facilitate the process of change
Assumption	Creativity through comparison with existing theories	Comparison of cases leads to more useful theory	Theory emerges in the process of changing
Examples	Dalton	Eisenhardt	Trist
Situation	Usually evolves out of a researcher's intensive experience with culture or organization	Usually concepts are developed from one case compared with another case	Developing theory to assist practices and future social science
Types	Narratives Tabulation Explanatory Interpretative	Case comparisons Case survey Interpretative comparisons	Diagnostic A.R. Experimental A.R.

Intensive case studies

Intensive, normative, theory-creating case study research best characterizes the type of case study approach utilized in this research process, thus a brief description of its key characteristics are presented in the following paragraphs. The discourse of normative studies focuses on codification, on search for regularity, on normalization of experience and on strategic control orientation (Deetz 1973; Hollway 1984, cited by Deetz 1996, 201).

“The organization is usually treated as an existing object produced for instrumental ends, usually making money, though some conception of the invisible hand makes that goal well integrated with other social goals of development and widespread availability of goods and services.” (Deetz 1996, 201).

According to Deetz (1996, 201) this discourse is most evident and present in classical management theories, theories of leadership, contingency theory, and most other systems theories. Although the research presented in this dissertation is specifically focused on providing constructs for organizational decision-making and management with regards to strategizing the digitalization of learning and teaching, it does have a constructive aspect to it as well (*see phase two*).

In intensive case studies, the researcher develops understanding of the object, and searches for explanations or interpretations, and because the research setting cannot be controlled, evidence from different viewpoints and time perspectives are required. (Cunningham 1997, 403). Data can be gathered via four different approaches: narrative, tabulation, explanatory, and interpretative. Narratives are the summaries and descriptions of interviews, meetings, and individual documents. These descriptions require accurate information from various perspectives, and the quality of the research is dependent on the researcher's ability to triangulate between different perspectives. (Cunningham 1997, 403; Järvinen 2004, 78-79).

Tabulation of information is used to categorize information into appropriate categories to describe relevant information. This may be beneficial especially when trying to explicate how frequently something occurred in the data. The explanatory approach enables the researcher to record information and draw inferences from it; this approach is concerned with providing accurate accounts and explanations of events. In explanatory cases, only the evidence that contributes to providing a proof is presented. (Cunningham 1997, 404; Järvinen 2004, 78-79).

In this research process, the practical purpose has been to create knowledge for the future development of the case study organization's processes, capabilities and resources. Cunningham (1997, 417) writes that when using decision making as a criterion for research, it is important that the research results are useful in solving practical problems and contributing to general knowledge within organizations. Case studies can be useful for discovering properties and their inter-relationships, and for verifying and generalizing the findings (Cunningham 1997, 420).

Sources of data and triangulation

Yin presents six different sources of evidence within case study research. Table 4 lists the different sources, their strengths and weaknesses, with examples from this research process.

Table 4. Six Sources of Evidence: Strengths and Weaknesses and examples from this research (adapted from Yin 2003, 86).

Source of Evidence	Strength	Weakness	Examples from this research process
Documentation	<ul style="list-style-type: none"> • stable: can be reviewed repeatedly • unobtrusive: not created as result of the case study • exact: contains exact names, references, and details of an event • broad coverage: long span of time, 	<ul style="list-style-type: none"> • retrievability: can be low • biased selectivity, if collection is incomplete • access: may be deliberately blocked 	<ul style="list-style-type: none"> • strategy documents • guidelines and policies • memos

	many events, and many settings		
Archival records	<ul style="list-style-type: none"> • [Same as above for documentation] • precise and quantitative 	<ul style="list-style-type: none"> • [Same as above for documentation] • accessibility due to privacy reasons 	<ul style="list-style-type: none"> • organization's ICT-budget and ICT-investments proposal data • quantitative reports
Interviews	<ul style="list-style-type: none"> • targeted: focuses directly on case study topic • insightful: provides perceived causal inferences 	<ul style="list-style-type: none"> • bias due to poorly constructed questions • response bias • inaccuracies due to poor recall • reflectivity- interviewee gives what interviewer wants to hear 	<ul style="list-style-type: none"> • individual interviews • focus group interviews and discussions
Direct observations	<ul style="list-style-type: none"> • reality: covers events in real time • contextual: covers contexts of event 	<ul style="list-style-type: none"> • time-consuming • selectivity: unless broad coverage • reflexivity: event may proceed differently because it is being observed • cost: hours needed by human observers 	<ul style="list-style-type: none"> • continuous observation of the surrounding organization as a reflective practitioner and researcher • observations, including field notes, during workshops
Participant-observation	<ul style="list-style-type: none"> • [Same as above for direct observational] • insightful into interpersonal behavior and motives 	<ul style="list-style-type: none"> • [Same as above for direct observational] • bias due to investigator's manipulation of events 	<ul style="list-style-type: none"> • none
Physical Artifacts	<ul style="list-style-type: none"> • insightful into cultural features • insightful into technical operations 	<ul style="list-style-type: none"> • selectivity • availability 	<ul style="list-style-type: none"> • none

In theory-building case studies, multiple sources of evidence are needed (Yin 2003, 97; Eisenhardt 1989, 537). By using multiple sources of evidence, the validity and rigor of the research can be ensured: the findings and conclusions are likely to be more convincing and accurate if multiple sources of information have been used. If no triangulation of data takes place, the research consists of separately analyzed data, and comparisons between the

conclusions from the different analyses (Yin 2003, 99). Convergence of the evidence is thus important: all the data sources and related analysis should contribute to the same evidence base of the case study.

3.2.2 Design Science in Information Systems Research

Design Science in Information Systems Research (DSISR) is a methodology which guides the development of information systems, by providing the means to carry out a cyclical build & evaluate design process for an IS artifact. During this process, the theoretical knowledge base provides rigor for the research, while the surrounding context, such as the business environment, provides the relevance and sets the expectations for the development.

The DSISR approach was chosen for this research process for rather obvious reasons: the purpose of the given research phase was to build an information artefact based on a chosen background theory of learning and on local relevance, to be utilized by the users in their work. Also, given that the users have an important role in DSISR, the approach was ideally suited for designs in which, during different build & evaluate cycles, stakeholders' opinions were collected.

Design science in information systems research consists of build and evaluate activities (March & Smith 1995, 254). It aims at improving organizational and human capabilities through building new and innovative IS artefacts. Awareness and understanding of current problems and related solutions develops during the building and implementation of an artefact (Hevner et al. 2004, 75).

Evaluation as part of the research focuses on artefacts which have an impact on how the organizational processes function. These artefacts can be constructs, models, methods or instantiations (March & Smith 1995, 253). Constructs provide a common language for defining problems and solutions, and communicating about them (Schön 1983, cited by Hevner et al. 2004, 78). Models promote understanding of the problems and related solutions, and make explicit the causalities between them, by enabling the observation and recognition of the impacts of changes in real life settings. Methods define and guide processes - showing how and where to look for solutions. Methods can be formal mathematic algorithms or informal textual descriptions, such as defined best practices, or a combination of both. Instantiations enable concrete evaluation of an artefact's suitability for its intended purpose. In addition, through instantiations, the researcher is able to assess how the artefact affects the real world, and how users appropriate it. (Hevner et al. 2004, 78-79).

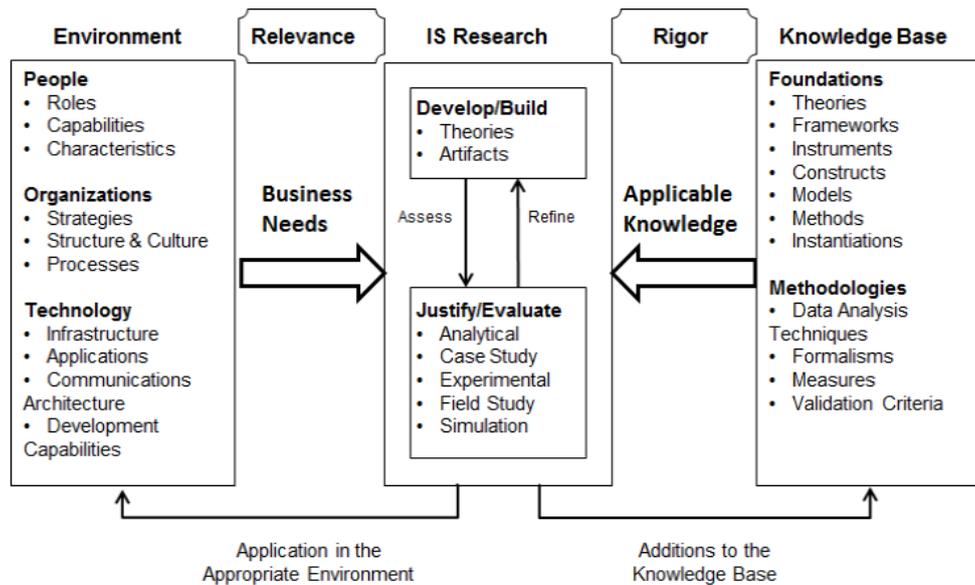


Figure 8. Information Systems Research Framework (adapted from Hevner et al. 2004, 78).

As a result of the evaluation, possible artefact or theory-related weaknesses will be spotted, and based on this, needs for further re-assessments and re-definitions or for further research can be identified. The knowledge base includes methodologies and foundations for information systems research, and it has evolved through previous research and related outputs in the form of tools, constructs, models, methods and instantiations, which can be further utilized during the research's build and evaluate cycle. The rigor and validity of the research can be ensured by utilizing existing foundations and methodologies. Evaluation of an artefact's quality and efficiency can be based on empirical approaches from the behaviorist research paradigm, or on mathematical and statistical analytical methods (Hevner 2004, 80).

Evaluation of an artefact is an integral part of the research process, during which the artefact is assessed through different metrics and data analysis methods. (Hevner 2004, 86). The surrounding environment sets the preconditions for the evaluation, as the practical real-life business needs are defined by the environment. The different evaluation approaches are listed in Table 5.

Table 5. Evaluation methods of DSRIS (adapted from Hevner et al. 2004, 68).

Observational	<i>Case study:</i> Study artifact in depth in business environment <i>Field Study:</i> Monitor use of artifact in multiple projects
Analytical	<i>Static Analysis:</i> Examine structure of artifact for static qualities (e.g., complexity) <i>Architecture Analysis:</i> Study fit of artifact into technical IS architecture <i>Optimisation:</i> Demonstrate inherent optimal properties of artifact or provide optimality bounds on artifact behavior <i>Dynamic Analysis:</i> Study artifact in use for dynamic qualities (e.g., performance)
Experimental	<i>Controlled Experiment:</i> Study artifact in controlled environment for qualities (e.g., usability) <i>Simulation:</i> Execute artifact with artificial data

Testing	<i>Functional (Black Box) Testing:</i> Execute artifact interfaces to discover failures and identify defects <i>Structural (White Box) Testing:</i> Perform coverage testing of some metric (e.g., execution paths) in the artifact implementation
Descriptive	<i>Informed Argument:</i> Use information from the knowledge base (e.g., relevant research) to build a convincing argument for the artifact’s utility <i>Scenarios:</i> Construct detailed scenarios around the artifact to demonstrates utility

3.3 Summary of the data sources and analysis

Research data has been gathered through various means: focus group workshops, observations, themed focus group interviews, semi-structured individual themed interviews, face-to-face group discussion, the institution’s work books and documents, and data archives. The different data sources were presented in Table 4.

In research phase 1, the data was collected as field notes taken during the assessment workshops on process maturity. This evaluation-related qualitative information was collected in the predefined maturity assessment tool, which was a crucial part of the collection of the data as it represented the evidence of the case study institution’s state of maturity. In addition, the evaluation of the e-learning Maturity Model (eMM) was documented by collecting user comments on the model.

In research phase 2, evaluation of the designed quality-enhancement framework was carried out as descriptive informed argument. The information from the informed argument was collected in the shared work document of the framework design, in face-to-face meetings with experts, and in an open focus group discussion. The focus group members were given a chance to walk through the current design in advance, and prepare their comments for the group discussion. During the discussion, the comments were documented in a work document, and the documented data was analyzed afterwards using content analysis methods.

In research phase 3, the data was collected in a themed group interview, which was recorded then transcribed. Content analysis methodology was applied to this material; themes and sub-themes for the content were defined by coding the transcript. Analysis of the results was structured and presented according to the defined themes.

In research phase 4, the data was collected from archived documents of the institution. The raw data was processed and utilized as the basis for further analysis. In research phase 5, the data was collected through personal themed interviews with the top management. After the interviews, the collected comments from the interviews were sent to the informants, to enable them to make additional comments and possible corrections. The collected final data was analyzed with content analysis methods, as in research phase 3. Observations were also used - mostly to provide more insight for the background of the study and the dissertation into what kinds of issues are being raised on a national level with regard to development of learning and teaching and the future of education.

3.4 The research phase one – Summary

The research process started in 2013, with the evaluation of the case study institution's process maturity related to the development, deployment and maintenance of e-learning. This process maturity analysis was carried out in focus group workshops. The focus group was formed of experts from different key domains of the institution: representatives from top management, and specialists in pedagogical development, quality assurance, e-learning technology development, e-learning pedagogy and e-learning support.

The tool utilized for the maturity analysis was a maturity model which was still quite unfamiliar: the e-Learning Maturity Model (eMM) CORE-version 2.0, developed and published by Stephen Marshal of Victoria University of Wellington, New Zealand (Marshal 2007). In addition to the maturity analysis, the eMM itself was evaluated during the analysis; the focus group shared their views on the model as they utilized it.

Through the research project's first phase – the maturity analysis – a better understanding of the complex organizational system influencing the manner in which e-learning is developed, deployed and maintained in the institution was formed. Both efficiency and quality were examined. As a result of this first phase of the two-year research process, development needs and suggestions were defined and presented. A tremendous number of development activities, projects and initiatives have since been planned, established and carried out. A second maturity analysis is scheduled for late spring 2015, thus no updated information on process maturity is covered in this dissertation.

The limitations of the phase one maturity analysis are related to the abstraction level on which the analysis was carried out: many of the possible strengths and weaknesses specific to particular degree programs were obscured because of the over-viewing approach. Since the analysis was made in order to form an overview of the whole institution's maturity level, the details of maturity variations between different degree programs remained invisible. An institution's maturity status as a whole is affected tremendously by variability between different units, such as degree programs: it is impossible to achieve high overall maturity if there are drastic differences between the domains.

Where the key support functions were concerned, however, the phase one maturity analysis enabled development needs to be addressed in greater detail. This was due to the fact that there are only a few support functions related to e-learning, whereas there are over 40 degree programs, which have very different approaches to e-learning.

Despite the fact that the e-learning maturity assessment failed to reveal the details of maturity variations between different domains, the institutional management of e-learning development and related quality improvement nevertheless benefitted from the analysis. Institutionalizing e-learning development, related decision-making and quality improvement requires understanding of the key challenges from the institution-wide standpoint, and from this perspective, the institution is only as strong as its weakest link.

The maturity analysis can be regarded as one of the key inputs for further institutional development. This was due to the discussion, recognition and understanding of the comprehensive organizational system affecting e-learning – and the phenomena collectively known as digitalization. As for the evaluation of the eMM, experience gained through using it for this analysis suggests that it is not a comprehensive tool for forming an understanding of the current status of an institution as such. However, it is certainly a useful tool, enabling further planning of organizational development to be defined. In the research process discussed in this dissertation, the maturity analysis does play an important role as input for the next phases.

3.5 The research phase two – Summary

After the first phase of the research the focus turned to the development of a framework for quality assurance and enhancement of online courses. This focus was chosen because the results of the process maturity analysis indicated particularly weak maturity in the process category that related directly to the quality assurance of e-learning, as seen in Table 6.

Table 6. Maturity matrix of the Evaluation process category. (Haukijärvi 2014, 17).

<i>Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle</i>	Del.	Plan.	Def.	Man.	Opt.
Students are able to provide regular feedback on the quality and effectiveness of their e-learning experience	1	1	0	1	1
Teaching staff are able to provide regular feedback on quality and effectiveness of their e-learning experience	1	1	1	1	1
Regular reviews of the e-learning aspects of courses are conducted	0	0	0	0	0

Furthermore, it was considered that the educational designers and developers, including teachers and e-learning development experts, would get more rapid and concrete benefits if they were provided with a practical quality instrument which they could use to guide the process of designing online courses. In addition, it was recognized that the designers and teachers should be provided with better support mechanisms, ~~resources~~, which took into consideration aspects of course design that were relevant to e-learning, but were commonly excluded from the traditional quality assurance and quality enhancement support mechanisms in use at the institution.

The aim was to design a framework based on a chosen learning theory – social constructivism – that was acknowledged to be up-to-date and relevant to the online education of the institution. The framework's purpose is to provide developers and teachers with a set of guidelines that help to steer the development of online courses, and capabilities related to e-learning pedagogy and the utilization of learning technologies.

The research was carried out as design science in information systems research (DSISR). The purpose of the research was to create a quality instrument which would help the educational designers to design high quality collaborative online courses, based on social constructivist learning theory. In addition, the need for inclusion of an organizational dimension, the macro aspect, in the design of online courses was acknowledged, thus organization-wide parameters were included in the instrument. The basic features of the framework's final structure are presented in Table 7.

Table 7. The designed structure (refined from Haukijärvi & Nevalainen 2014, 12).

Cycle phase	Dimension	Focus of quality guidelines
Plan	Macro level acknowledgement	Organisation's pedagogic strategies and/or principles, curricula, programme objectives, guidelines
	Learning Design (micro level)	Approaches to assessment, feedback and interaction
	Course Design (meso level)	Usability, materials and content decisions, technology decisions
	Instructional Design (meso level)	Student instructions, content management, tasks and activities
Do	Learning facilitation and instruction	Schedule and workload management, assessment, feedback and interaction implementation, technical support
Study	Student feedback (e.g. student experience)	Instruction and facilitation, course design, learning design, instructional design, generic aspects
	Self-assessment (e.g. instructor experience)	Instruction and facilitation, course design, learning design, instructional design
	Learning outcomes	Summative evaluation and analysis of learning outcomes
Act	Definition	Definition of refinement needs, based on feedback and evaluation
	Planning	Planning of implementation of refinement, based on definition

Up to this point the build and evaluate –cycles focused merely on the structural design of the framework, thus excluding any content or aspects that are related to the complete framework with the set of actual quality design guidelines.

3.5.1 Update on the research phase – The analysis of the feedback on the proposed complete quality framework

Evaluation data on the complete framework was collected from a focus group during a workshop session. The focus group consisted of multiple academic experts and administrative staff. The framework was sent to the group members before the workshop, then during the

session they discussed and gave feedback on the framework, and their comments were collected into field notes. The feedback collected from the focus group was analyzed using a content analysis method, and the data was sorted into different classes and dimensions of the classes, as presented in Table 8.

Table 8. Classes and dimensions.

Class	Dimensions and codes	Total amount of items per code	Explanation
1. Features	1.1 Coherence, clarity and structure	6	Technical features and content clarity
	1.2 Theory base and perspective	1	Linkage with the chosen learning theory
	1,3 Scope and perspective	3	The extensiveness of the framework
2. Rationale and relevance	2.1 Target group	2	Intended users – who is it for?
	2.2 Purpose	5	The actual purpose of the framework, how will it be utilized?
3. Operationalization	3.1 Implementation	4	The challenges and means to implement the framework in every day operations

3.5.2 Summary of the results

After collecting and analyzing the feedback, the final, complete version of the framework was refined. The next phase of the development of the framework will be based on actual field use and related feedback. Up to this point, the development has been based on informed arguments during the evaluation; there is therefore an acknowledged need for additional evaluation through actual utilization of the framework. The result of research phase two is thus the first version of the completed framework. Since the framework is rather massive, it is not presented in this section, but added as an appendix to this dissertation.

3.5.3 Conclusions

The inclusion in the framework of the organizational, or macro level has been considered important and beneficial in terms of creating a quality instrument that has validity throughout the institution. However, different sub-organizations within the institution have different pedagogic principles, which are aligned with the institution-wide principles, but may differ drastically from one sub-organization to another, because of the context and the subject being studied (Myllylä, 2014). This variability is appropriate within such a diverse institution, but at each successive level of specificity (at the meso and micro levels) the relationship between the whole-organization parameters and sub-organization parameters must be clear.

The one key challenge is the operationalization of the framework in the case study institution (Myllylä, 2014). To support this, pedagogical experts from the institution's school of vocational teacher education are currently analyzing the contents of the framework and considering how they could be aligned with the various pedagogical approaches and models related to the social constructivism paradigm, within different fields of education.

At the time of writing, the finalized complete framework is being tested in practice by a few educational designers – teachers – who are applying it to the development of their courses. So far, feedback on the utility of the framework has been positive (Kilkku & Koivumäki, 2014), but a lot more data regarding its utility needs to be collected before continuing with the development. The framework has also had an impact on the design of personnel training, in terms of both contents and pedagogical approaches of the modules (Sintonen, 2014). The aim of the field testing is to gather knowledge on possible further refinement needs of the framework. As an instrument, it has not been designed to be static, but rather a developing resource to be refined for and utilized by educational designers throughout the institution.

In addition to the design of the framework, a conceptual visualization of online course quality enhancement was created during the research (Figure 9), building on some of the aspects included in the Design Science in Information Systems Research (DSISR) framework (Hevner et al. 2014). The visualization illustrates the relationship between the applicable knowledge base and the continuous improvement of online courses. The knowledge base is divided into two knowledge areas: the contextual practical knowledge which provides the local relevance for the design process of an online course, and theoretical knowledge, which provides rigor for the design process of an online course. Both of these knowledge areas together provide the capabilities and constraints for the continuous improvement cycle, i.e. Plan -->Do -->Study-->Act (PDSA).

Through continuous analytical improvement, the organizational knowledge base evolves – organizational learning takes place, and related resources evolve. Whether this evolution contributes to the practical knowledge area or the theoretical knowledge area depends largely on the setting and methods used in the study phase of the design process. Occasionally, more comprehensive and systematic approaches to the evaluation of online courses may be taken, and as an output of these evaluations new theoretical knowledge may be produced. These kinds of settings are established quite rarely, and are largely dependent on the research interests of the teachers responsible for the courses.

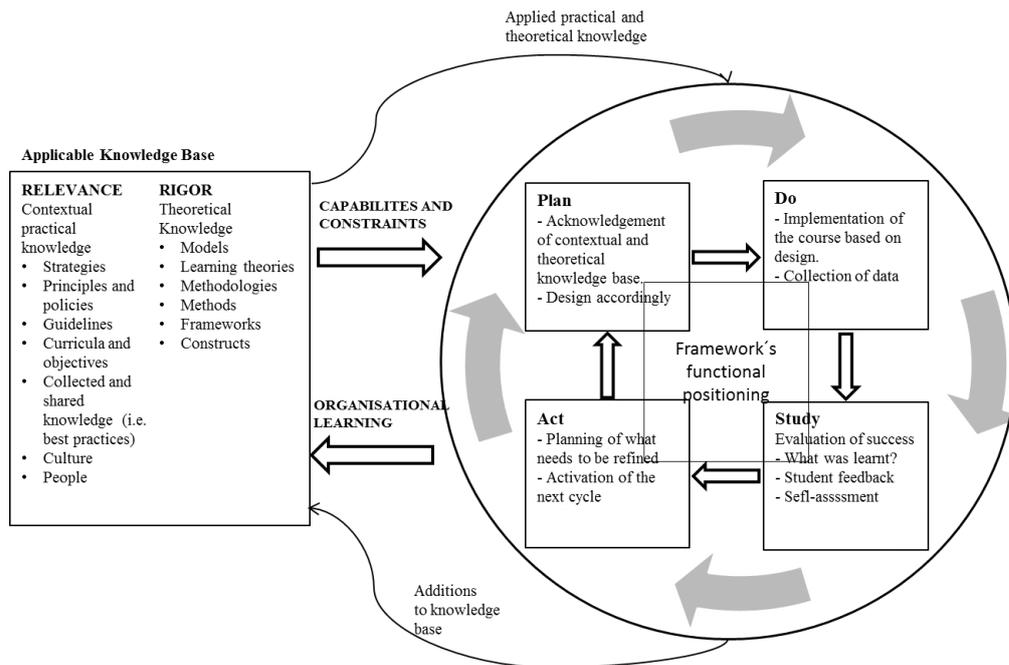


Figure 9. E-learning Course Development Cycle and the relation to organization's knowledge base. (Haukijärvi in Haukijärvi & Nevalainen, 2014, 8).

The practical knowledge base should continuously evolve throughout the cycle, whether it is shared knowledge, individual or team-wide learning and improved skills, documented and shared best practices and development plans or case descriptions. In Figure 9., what Sein et al. (2011, 39) defined as the organizational intervention in the context of action design research is applied to the PDSA-based design of online courses. In addition, the similarities with the Design Science in Information Systems Research (DSISR) framework (Hevner et al., 2014, 80) are notable; both involve cyclical continuous development within an environment which surrounds and affects the development. In the DSISR framework, this is described as the entity that defines the business needs which must be taken into consideration during the build & evaluate cycle.

3.6 The research phase three – Summary

The aim of the research in phase three was to gather knowledge about the views and conceptions on student involvement in the institution's e-learning development from one of the key stakeholder groups – the students themselves. Student involvement in the development of the case study institution has been a relevant topic of discussion and force for organizational change during the past two to three years. In addition to the traditional and formal approaches to listening to the students' voices, which include student representation in official decision-making bodies in the institution, a need for more engaging and constructive approaches was acknowledged. This acknowledgement has led to the establishment of a student-entered living

lab function, in which student-driven projects are carried through, with the aim of developing the institution's processes, practices, methods, and learning resources, to name but a few.

Students are regarded as valuable human resources for organizational development of e-learning, thus it was considered important to gather knowledge about their views on the subject. In this case, student involvement was actualized by the participation of a number of students in student-driven living lab development projects which were part of the institution's e-learning development function.

Greater student involvement in development of e-learning is in alignment with both the process maturity results and the discussion related to the design of the quality enhancement framework: in addition to top-down quality assurance and quality enhancement approaches, more emphasis on student involvement in the development of the institution is needed. Improving student involvement can be regarded as improvement of capabilities related to e-learning development, and thus it is important to find out what the students expect and think about this involvement, and thereby provide a better basis for further improvement of student input into development processes.

3.6.1 Summary of the results

The case study carried out in phase 3 was a pilot study; only a small group of students were involved in conducting a student-driven project which aimed to develop institutional approaches to utilizing MOOCs (mass open online courses) in the future. For data-collection purposes, the students were interviewed in a group, and content analysis was applied to the transcribed interview material. The results indicated that students highly appreciate being deeply involved in change processes – both planning and executing institutional changes. Even more value is gained if the planned changes are actualized and the students involved have the opportunity to see the effects of their own work. Also, interaction with personnel – professionals – was considered important. Based on the content analysis, the main classes of information and related dimensions were identified; the analysis is presented in Table 9.

Table 9. Classes and dimensions based on the student interview.

Main classes	Dimensions	Explanation
1. Students' Voice vs. Students as Change Agents	1.1 Transparency	Transparency of the traditional approaches versus being deeply involved in the development
	1.2 Value, purpose	The perceived value and meaning of participating in student projects
	1.3 Influence	Anticipated impacts and influence of own effort on the development of the institution
2. Incentives	2.1 Compensation	The importance of financial compensation in motivating students to take part in projects
	2.2 Intangible benefits	What is relevant and meaningful in terms of non-financial or material benefits that can be gained through participating in projects
	3.1 Support and tutoring	The meaning and importance of expert support and presence during the projects

3. Prerequisites and challenges for success in projects	3.2 Trust and accountability	Mutual trust between the students; belief in the institution's motives for utilizing the outputs of the projects
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3.7 The research phase four

The aim of the fourth phase of the research was to form a better understanding of the current situation regarding IT-related development project proposals, from the perspectives of the required financial and work-time resource allocations in the case study institution. This phase can be considered as a complementary phase in the research process, during which the investment proposals that were received and evaluated in the autumn of 2014 were examined from the perspectives of number of proposals submitted, financial investment required, and the amount of IT expertise needed, in terms of worktime resources. This phase provided a quantitative view of the IT development project proposals, set within the resource reality in which the case study institution was operating.

This investigation is relevant due to the strong link which exists between the mentioned resource types and the development of e-learning. IT investments form a substantial proportion of the annual investment portfolio, including financial outlays and working time of IT personnel. During this phase of the research, data from the institution's workbooks and records related to investment proposal planning and evaluation was collected, refined and analyzed.

Where IT-related planning and resourcing of development is concerned, the current challenge in the institution is that the number of e-learning-specific development project proposals received is extremely low compared to the number of administration-specific development proposals. As a result, the vast majority of IT-related development resources – money and expertise – are allocated to the development of administrative efficiency and modernizing administrative procedures. This represents a critical challenge in terms of achieving a resource-allocation practice which is balanced and – even more important – which focuses on the institution's core functions (*teaching and learning & R&D*). In other words, the aim is a value-driven allocation of resources that is balanced between administrative IT development and development which directly facilitates the creation of new and innovative e-learning approaches and solutions. As the situation stands, a great part of the IT resources are tied to ongoing long-term projects related to administrative process development, thus limiting the realistic possibilities for significant changes in the resource-allocation balance in the near future.

The concept of IT development projects within the institution covers IT-related development proposals that require expenditure of at least 10 000 euros, over 10 days' work of IT personnel, and that take at least three (3) months to complete as a project (TAMK, 2014a). I call this category of investment proposal *class one*. With that in mind, there are plenty of development proposals that are not considered or handled as actual IT development project proposals because they do not meet the conditions for class one. To clarify, IT-related investments cover also another category of investments, which is the investments on ICT tools, including workstations, which are worth at least 3000 euros and are not part of common smaller

acquisitions during a fiscal year (TAMK, 2014a). I call this category of investments *class two*. These investments are mostly acquisitions of tools used in teaching or administration, and require only a small amount of IT personnel resources, if any. In terms of money, class one proposals represented a total of about 830 000 euros, and class two proposals a total of about 1,2 million euros in 2014. Class two investments are not covered within this research.

Since this phase of the research focused on IT-development project *proposals*, it does not represent the final project portfolio which was actually approved. Some proposals are rejected due to budget restrictions. The rationale behind choosing project *proposals*, rather than approved project plans, for this investigation was that they provide a more accurate picture of the volume and nature of the IT-related development initiatives that are being planned within the institution. This constitutes an indicator of the direction of IT development. In an institution that relies on its grassroots community to plan development efforts that are relevant to and influential on e-learning, on a larger scale as well, it is important to promote, support and encourage the different domains to ideate and plan these kinds of proposals. So far, the e-learning-related development proposals have generally been of the class two type.

The aim of this research phase was to promote discussion of the future of IT-related development: should IT-related expertise and financial resources be allocated more strongly towards development of digitalized learning and teaching? And if so, what measures should be taken to increase the volume of these kinds of development project proposals and initiatives?

3.7.1 Data collection and analysis

The raw data for this phase was collected from official institutional documents (TAMK 2014b) in which all the class one IT-related investment proposals were presented. The basic information on the proposals consisted of a description of the IT development project, its rationale, influence on operations and alignment with curricula and the institution's strategy, the amount of internal IT expertise required, expressed as the total number of working hours for IT personnel, and an estimate of the necessary financial outlay. Using a scale of 0 to 5, the IT steering group evaluated each of the proposals on two different dimensions predefined by the IT-manager: estimated impact on improvement of efficiency (0 = no impact, 5 = large impact), and estimated contribution to the creation of new activity (0 = no contribution, 5 = large contribution).

This original data was refined further during the research phase. Based on the refined and categorized data, an average value for each of the proposals was defined for both dimensions, after which the data was categorized into numeric classes that represented a specific value on two axes in a table, corresponding to the two dimensions. Two categories for the class two-specific investment proposals were defined: 1) all proposals, and 2) proposals that focused on the development of e-learning. This categorization made it easier to elaborate the differences between these two categories in terms of money, work days and volume. The proposals that were placed in the e-learning category were those that focused on digitalization of learning, such as gamification solutions and digitalized exams. Proposals related to development of digitalized exams could have been excluded from the e-learning category, since they could definitely be regarded as belonging to the administrative sector, too, with the purpose of improving cost efficiency. However, it was decided to include them in the e-learning category

on the grounds that digitalized exams improve the flexibility of learning, as exams are one part of the learning process.

3.7.2 Results

In Table 10. the distribution of all the proposals in class one is shown in a 2-axis matrix, where the vertical axis represents the estimated impact on improvements in efficiency, and the horizontal axis represents the estimated contribution to the creation of new activity (e.g. *modern approaches to pedagogy and didactics*).

The total number of proposals in the final evaluation stage was 33, and they varied a lot in terms of estimated requirements for IT-person work hours and financial expenditure. The variation on the dimensions represented in the matrix is somewhat notable as well.

Table 10. The distribution of all the received and evaluated IT development proposals.

Estimated impact for improvement of efficiency (0-5)	5											
	4,5								2			
	4							1	2			
	3,5				1	1	3	1	1			
	3				5	2	2					
	2,5			1	2	2	2		1			
	2			2					2			
	1,5											
	1											
	0,5											
	0	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	
Estimated contribution to the creation of new activity (0-5)												

The total number of e-learning-specific IT development proposals was four (4), each one of which were considered to have strong potential for creating new (*and innovative*) activities: i.e. enabling the creation of new approaches to teaching and learning. These four proposals represented 12,1 % of the total number of the evaluated proposals.

Table 11. The distribution of the received and evaluated e-learning specific IT development proposals.

Estimated impact for improvement of efficiency (0-5)	5										
	4,5										
	4							1			
	3,5										
	3										
	2,5								1		

	1										
	0,5										
	0	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5
Estimated contribution to the creation of new activity (0-5)											

3.7.3 Conclusions

The institution which is the focus of this whole research process was formed by a merger of two universities of applied sciences as of 1.1.2010. This merger led to the situation in which a large amount of architectural refinement and development was needed. Some of these projects have tied a substantial amount of institutional resources during the last few years. The purpose of bringing up this information is to open up discussion - not only on the future of the institution's digitalization and related demand for resources - but also on the proper focus of investment practices and investment culture.

The low inflow of e-learning-specific development project proposals is a problem that should be addressed. Providing more e-learning-profiled support in the ICT unit could be one solution; this would mean dedicated expertise for the planning, preparation and execution of e-learning-related development. These experts would need to work closely with colleagues in the educational units, gathering reliable knowledge and understanding of the daily operations, and demands for digitalization-related development of teaching and learning. Currently, very little of this kind of expertise is available in the institution. Also, providing the personnel with incentives for creativeness could prove to be beneficial in terms of generating high quality investment proposals.

There is also a place for constructive discussion on whether or not resources should be allocated in a more strategically balanced way. By more strategically balanced, I refer to a more even sharing of development resources between activities which improve administrative efficiency and those which develop digitalized teaching and learning. One possibility would be to reassign IT-development expertise to a more learning and teaching centered development area within the institution. This would undeniably lead to structural changes within the ICT unit, and create challenges in terms of developing the necessary personnel skills.

Currently, IT governance is moving towards an approach to allocating development resources which places greater emphasis on strategy and core functions. This change is now possible, due to the fact that the most resource-heavy administrative projects have been completed or are close to finalization (Naukkarinen, 2014; Hartikainen, 2014). This is freeing up a large amount of institutional resources. A probable direction for the ICT profile transformation is shown in Figure 10

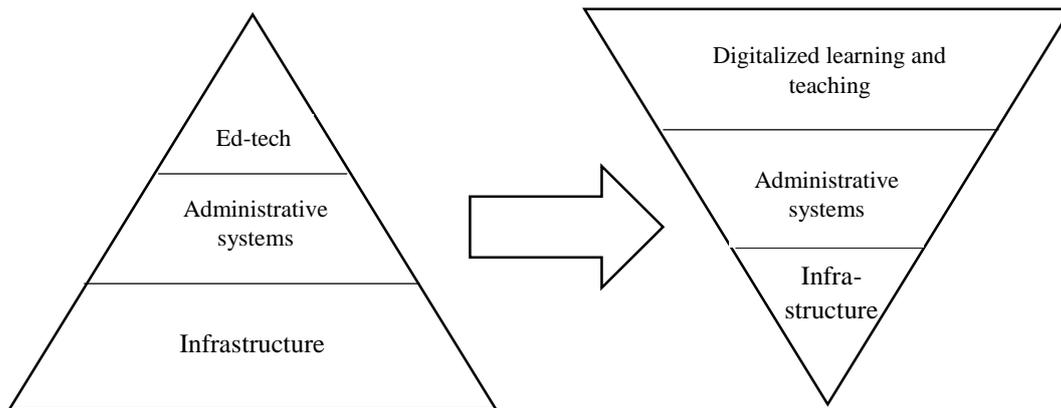


Figure 10. The resource distribution transform from current state to the desired state.

In the right-hand triangle in Figure 10 one possible desirable state is presented in a simplified form: the vast majority of development resources are allocated to the development of digitalized learning and teaching, whereas maintenance and development of infrastructure is at least partially dealt with centrally, through higher education collaboration (Hartikainen, 2014).

Drastic changes are needed in order to meet the demands set by digitalization and by radical paradigm changes in higher education pedagogy. The relationship between this specific discussion and the research presented in this dissertation is evident; in order to achieve dramatic changes and significant progress towards high quality e-learning, a readjustment of development resource priorities, improvement in the abilities of personnel to plan and support development initiatives, and more critical analysis of current practices will be required.

3.8 The research phase five

In research phase 5, the aim was to collect and analyze the views of the case study institution's strategic management regarding the resources and capabilities described in Table 17, using the VRIO framework. This meant gathering the top managers' views and conceptions on the current status of the institution's resources with regards to e-learning and related development. This was a highly relevant issue due to a couple of special factors: 1) a new sub-strategy for digitalization of learning and teaching was defined for the institution during autumn 2014, for the years 2015 – 2020, and 2) the process of planning future cooperation between the three higher education institutions in the city area is getting under way. The aim of this planning process, which is named the Tampere 3 project, is to evaluate and plan possible scenarios for future cooperation in the higher education sector in the Tampere area. This will inevitably affect all aspects of the case study institution's future, including learning, teaching, and related processes, practices and resources.

3.8.1 Informant profiles

Table 16. Informant profiles.

Role in the organization	Experience with organizational management (years)	Main areas of responsibility
Vice-rector	18 years in higher education	Quality Assurance; Vocational Teacher Education; Process of annual resource planning; Pedagogic development (including e-learning)
Vice-rector	16 years in higher education	Research, Development and Innovation functions; IT
Director of HR	3 years in higher education 17 years in private sector (middle-sized businesses)	Human Resource Management
Director of internal education services	10 in higher education	Student services; International services; Library services; Communication services
Director of finance	16 in higher education	Budgeting and accounting
Vice-rector	10 in higher education	Degree awarding education
Rector	18 in higher education	CEO

3.8.2 Data collection method

The data was collected during individual themed interviews. The structure of the interview is presented in appendix one. Before each of the actual interviews, a 45-minute meeting was held with each informant separately, during which the purpose of the interview was explained and the underlying theoretical background was presented. This was considered essential preparation as the background theory was unfamiliar to the informants, and the interview framework was particularly complex and extensive. During these preliminary meetings, the informants were able to form a better understanding of the subject and what was to be expected from the upcoming actual interview. At the same time, the interview itself was scheduled with each of the informants.

Each interview took two hours, with the exception of one interview, which lasted for four hours. An interview form was used to record the interview data, which included qualitative textual narratives and assessment values for the resources discussed, following the VRIO framework. After each of the interviews, the collected narratives were sent to the informant concerned for commenting, for correcting possible misunderstandings, and for adding possible missing information.

3.8.3 Data analysis

For each individual interview, the material was processed separately. The content was categorized as shown in Table 17, and coded according to the VRIO values. Each letter of the VRIO framework (V, R, I & O) functioned as a code. Each possible combination of the different codes (V, VO, VR, VRO, VRI, VRIO & O) assigned to a particular resource represented its overall value to the institution.

The qualitative data – the narratives from the interviews – and the coded values from the VRIO analysis were categorized as shown in Table 17. The matrix structure shows how resource categories are divided into main classes and sub-classes or dimensions, and how specific resources and capabilities are aligned. The resources were evaluated during the interviews, and the narrative was categorized per dimension. In the narrative column of the table, comments were also collected on the expected impacts of the possible merger of the three higher education institutions in the city area. In the results section in Tables 19 – 26, the codes from the content analysis – V, VO, VR, VRO, VRI, VRIO, O – and the competitive status abbreviations are combined. The competitive status abbreviations are explained below:

- CD = Competitive disadvantage
- CP = Competitive parity
- TCA = Temporary competitive advantage
- SCA = Sustained competitive advantage

Within the table, there are two examples of narratives and related resource status and competitive status definitions.

Table 17. The acknowledged classes and resources for the VRIO analysis.

Category: Tangible resources				
Main class	Sub-class: resources	Narrative	Code – resource status (V, VR, VRI, VRIO)	Code – competitive status (CD, CP, TCA, SCA)
1. Financial resources	1.1 Capacity and capability to invest on strategically relevant learning environment digitalization (physical)	An example: Financial capability is crucial in order to invest on development. Our institution's financial capacity is very strong compared to many others, based on the financial facts, but we should give more emphasis on what we want to prioritize in investments. We should be more strategically aware when prioritizing investments proposals and	VR	CD

		organising financial resources.		
	1.2 Capacity and capability to invest on strategically relevant technology development			
2. Physical environment	2.1 Facilities, integrated physical and technological environments			
3. Technology	3.1 Learning environments & education technology	An example: Education technology is very important a resource, but even more important than the technology itself, is the capability to utilize it effectively. We have very traditional and similar technologies as other UAS's, so in that regard, we don't differentiate from others. Our education technology environment is being developed through established and institutionalized processes and practices.	VO	CP
	3.2 ICT-tools and information systems			
	3.3 IT-infrastructure			
Category: Intangible resources				
Main class	Sub-class: resources	Narrative	Code (V, VR, VRI, VRIO)	Code – competitive status (CD, CP, TCA, SCA)
4. Human resources	4.1 Experience and capabilities			
	4.2 Managerial skills			
	4.3 Motivation and attitudes			
	4.4 Personal professional			

	networks and relationships			
	4.5 R&D and innovation skills			
5. Incentives	5.1 Incentives to promote development and innovation			
6. Reputation	6.1 Brand and image			
	6.2 Reputation among students			
	6.3 Reputation among partners			
	6.4 Reputation among customers			
7. Culture	7.1 Collaboration			
	7.2 Open sharing of knowledge and best practices			
	7.3 Trust			
8. Networks and partnerships	8.1 Operational networks			
	8.2 Strategic partnerships			

In addition to the VRIO-based analysis of the defined resources, a more open assessment of the current state of the case study institution's processes, activities, steering mechanisms, and dynamic capability was carried out during the interviews, to guide the interviewee and interviewer to take these important aspects into consideration when assessing the various resources. These processes are directly linked with each of the main classes of resources and related sub-classes of resources and capabilities. The comments were recorded on the same form as the VRIO analysis.

Table 18. Processes included in the interview themes.

Process
Strategic management and planning
Quality assurance and process management, and reporting
Project portfolio management
Enterprise Architecture management
Systems administration and ICT-support
Personnel e-learning support and training
Human resource planning and recruitment
Investment planning and evaluation

Production
Value chain management
Procurement management
Student involvement
Policies and strategies
R&D
Organization's Dynamic Capability
Capacity to combine, modify and expand tangible and intangible resources and business processes, using the dynamic capabilities to react to changes in the environment, internal and external

3.8.4 Results

Financial resources

Table 19. Financial resources.

Sub-class: resources	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
1.1	VR/CD	V/CD	V/CD	VRI/CD	VO/CP	V/CD	V/CD
1.2	VR/CD	-/CD	V/CD	-/CD	VO/CP	V/CD	V/CD

In general, the institution's financial resources, capacity and capability, were considered as valuable resources with regards to implementing the new sub-strategy on digitalization of teaching and learning. Some informants considered the resources to be rare or even imperfectly imitable as well, referring to the strong financial position of the institution – i.e. its financial capacity. However, organization of these resources was considered to be inadequate, despite all the institutionalized processes and mechanisms through which the investment plans are made and monitored, and evaluations are carried out. This assessment was based on the perception that more influential and more ambitious development initiatives are needed in order for a high standard of e-learning to be achieved.

“We should steer the organization more effectively towards the strategically desired goals when it comes to investment planning as well.”

“The problem is that financial resources are steered from outside the core functions, but at the same time the development initiatives are expected to emerge within the core functions.”

“The level of ambition with regard to the investment proposals is not high enough.”

“We lack clear priorities when it comes to financial allocations. One problem is that we allocate financial resources rather equally to everyone, and therefore it is hard to gain a leading position in any specific area.”

Thus, the problem with the organization of financial resources did not lie in the processes and mechanisms, but rather in the perceived failure to invest in strategically-relevant major initiatives, due to the lack of ambitious initiatives. As explained in section 3.7, the institution is dependent on the grassroots community to come up with proposals for these initiatives. Also, the transparency of the planning and evaluation process was brought into question by some informants.

“The rather heavy and multi-phased financial planning process weakens the transparency of the strategic intentions and goals. We should develop the transparency of the process and also emphasize this development aspect more strongly.”

To summarize the current state assessments, the institution’s financial resources, and especially the capability to invest in strategically relevant aspects of the organization, were considered to be vital, and a lot of improvement in the institution’s capability to plan ambitious development initiatives needs to take place.

Physical environment

Table 20. Physical environment.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
2.1	VR/CD	VRIO/S CA	V/CD	VRI/CD	VRIO/S CA	VRI/CD	VRO/TC A

The physical environment as a resource was considered to be heterogeneous. The case study institution was acknowledged to have certain facilities which are valuable, rare and imperfectly imitable, and which have great strategic relevance. One example cited by the informants of this kind of valuable, rare and imperfectly imitable physical environment resource is the Mediapolis campus, where cutting-edge technology is a central aspect of the everyday operations. Furthermore, the fact that the Mediapolis campus shares space with some of the major professional operators in the field of media and television in Finland creates a networked environment which was seen as a strategic asset, enhancing the rareness and challenging the imitability of the resource.

On the other hand, Mediapolis is the physical base for only one of the seven schools within the case study institution. The facilities of the main campus area were considered to be only valuable – in VRIO terms – revealing that a lot of improvement is needed.

As regards the organization of physical environment resources, approximately half of the informants considered that the organization is adequate, with the support of structured institutionalized processes for their development. The other half of the informant group considered that the development of the physical environment does not take the institution’s core functions into consideration sufficiently, and shows a lack of clear development priorities. In the view of these informants, more resources should be allocated to the development of the

physical environment from pedagogic perspectives. Also, some of the informants reported that the process of planning and developing the physical environment is too exclusive; they expressed a desire to involve a wider range of experts in the process.

“Where development of the facilities is concerned, pedagogic needs and aspects tend to be ignored too often, and it seems that the educational experts cannot have enough influence on the direction and manner in which the facilities are being developed.”

“Not enough emphasis is given to the needs of the core functions. This would require a more holistic approach to the development of these resources.”

”The development of both the physical and technological environment needs to take account of the learning and pedagogic perspectives.”

More guidance from the organizational steering level was mentioned as a possible way of enabling holistic visionary development.

“The organization of the facility resources is too dependent on initiatives from the grassroots community. There is a lack of holistic visionary development.”

This implies a desire for more centrally-guided development, which is a rather different approach from the current one. More central guidance might enable sufficiently ambitious and influential development initiatives to be undertaken; however, greater centralization could decrease grassroots commitment.

Some of the informants also brought up the point that the relevance of physical facilities might diminish in the future, if more and more of the education is delivered online.

“We can assume that the relevance of the physical environment may decrease in the future, due to the growing demand for and availability of web-based learning.”

Technology

Table 21. Technology.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
3.1	VO/CP	O/CD	V/CD	O/CD	VO/CP	V/CD	V/CD
3.2	VO/CP	V/CD	V/CD	VO/CP	O/CD	VO/CP	VO/CP
3.3	VO/CP	V/CD	V/CD	O/CD	VO/CP	VO/CP	VO/CP

With regard to education technology, there were rather notable variations in how the informants assessed it as a resource. The majority considered it to be valuable, and two of these informants also regarded the organization of these resources to be adequate. On the other hand, two of the respondents rated it as neither valuable nor rare nor difficult to imitate, but well organized

nevertheless. The O/CD values in Table 21 stand for well-organized but non-valuable common resources.

The key message was that the capability to exploit technology for pedagogical purposes is more important than the technology in itself. Nevertheless, the role of technology was seen as important; there was a rather clear consensus on this.

”I’ve understood that our education technology is on an average level, and does not in any way differentiate us from other universities of applied sciences. However, there are plenty of opportunities to improve the situation. More important than technology as a resource in itself, is the capability to exploit it.”

”We need both the technology and the capability to utilize it efficiently. Education technology as such should be advanced and novel, and in this case, then it perhaps could be a source for competitive advantage as such.”

“Effective multi-disciplinary exploitation of these resources is important. Education technology as such does not necessarily enable differentiation within the sector.”

“In order to be able to meet the demands of the student population and economic pressures, education technology plays an important role. Currently [our technology resources] are most likely very similar to those in any other UAS.”

What is important is the analytical approach – combining both technology use and pedagogical aspects. To exploit different technologies, and to develop the technology environment appropriately, integrated studies of impacts on learning should be carried out.

“[There’s] nothing unique about our education technology, but if we find the right combinations of technology, perhaps then it could function as a source for competitive advantage. This would require that we study and analyze the connections between learning outcomes and different technologies.”

The assessments of ICT tools and information systems showed some differences compared to the assessments of education technology. This was mainly due to the acknowledged importance of information systems, not the ICT tools. Information systems were mainly considered strategically valuable, especially in terms of enabling effective analytics and knowledge-based management of the organization.

”Information systems have improved the availability of information, effectiveness of processes, and transparency.”

“Information systems are the basis for business analytics. An extremely important resource, especially if we want to operate more like a business organization.”

One informant stressed the importance of the capability to utilize available information, pointing out that greater dynamicity and responsiveness can be achieved if information systems are adequately exploited. Some improvement needs were acknowledged in terms of utilizing the information systems.

Human resources were considered very important in terms of strategy implementation and competitive advantage. In the categories of personnel experience and capabilities, managerial skills, personal networks, and R&D and innovation skills, only one of the informants recognized rare or imperfectly imitable resources. Personnel capabilities and experience, personal networks, and R&D and innovation skills were considered valuable by the vast majority, but at the same time, most of the informants found the organization of these resources to be inadequate.

Again, the lack of strategic ambition with regard to the development of e-learning was brought up. In addition, personnel capabilities were considered to be rather similar to those at other universities of applied sciences.

“I think that in strategic management the ambition is not explicit enough: people are allowed to develop, but we lack strong organizational priorities and ambition, and support for the development.”

“The capabilities are rather similar to those at other universities of applied sciences, due to the similar profiles of the institutions.”

Some considered that the organization’s e-learning development rests on the shoulders of a few highly skilled individuals.

“We have a rather small group of enthusiastic developers.”

”We have a few personnel resources, individuals, whose competencies could be utilized more efficiently to gain better competitive status.”

As regards managerial skills, and motivation and attitudes, the resources were mainly considered to be valuable and adequately organized. The managers were considered to be committed to the strategic goals, but the informants felt that more emphasis should be placed on leading the organization towards future visions, rather than focusing only on the management of current operations.

“I think it is important to emphasize leadership, not management – the ability to operationalize the vision and strategy.”

”We should probably focus more on how to get the managers to take a more strategic viewpoint on the leadership, and through this promote the emergence of ambitious development initiatives.”

”Strategic communications and management capability still needs improvement...”

On the other hand, the informants valued highly the strong pedagogical skill-base of the majority of the managers, their ability to collaborate, and their ability to recognize need for changes.

“Our pedagogic expertise is strong among the managers, and also the ability to recognize the need for changes is rather good as well.”

“One of our strengths is the collaborative skills of our managers and directors.”

The motivation and attitudes resource dimension was rated a very valuable resource, and was considered by some informants even rare and imperfectly imitable. The personnel’s commitment and positive attitudes towards change were felt to be rather strong.

“Motivation weighs even more than substance knowledge when it comes to succeeding in bringing about change. Our background with the merger of the two UASs five years ago has improved the motivational atmosphere with regards to change.”

”There are indications that people are motivated and enthusiastic to develop our organization into the leading HEI in digitalized learning.”

Leadership was recognized as one important factor for improving motivation. The importance of creating shared meanings and goals was emphasized in terms of implementing strategies.

“Interest and motivation must be promoted through good leadership and management.”

“Motivation should be shared, and through promotion and recognition we can create shared meaning.”

Personal networks were considered to be potential assets for the institution, but the lack of systematic ways of collecting and sharing information on these resources hinders their effective exploitation. This is definitely an organizational challenge.

Research, development and innovations skills were generally agreed to be extremely important, and their relevance is becoming ever greater, due to changes in the funding model for the UAS sector; in the future, more income will need to be generated by externally-funded projects. At the same time, society expects beneficial outputs from R&D. All of the interviewees rated the current state of this resource as rather weak.

”There is a lot of room for skills improvement...we have a very strong profile in educational organization, not R&D organization.”

“Society needs outputs from our R&D, and because of that the relevance is very high.”

”Especially due to the changes in [UAS] financing, the relevance of this has increased. Our goal by 2020 is to increase the incoming funding gained from R&D from 8% to 20%.”

“People regard R&D too much as an obligation”.

The organization of human resources was considered to be strong in some areas and weak in others. According to the informants, some areas lack systematic methods for collecting and

reporting relevant information, and systematic approaches to improvement. On the other hand, a lot of effort has gone into development of managerial skills, motivation for improvement, and promoting positive attitudes, all of which were considered to be well organized. Where recruitment is concerned, the informants feel that more emphasis should be placed on strategically relevant aspects when evaluating the skill-sets of different applicants.

”Our recruitment policies do not emphasize capabilities and previous experience with digitalized pedagogy.”

“We should be more courageous to recruit top-level experts from outside our organization.”

”Line organization perhaps lacks understanding or vision of what is to be achieved; or their vision is in conflict with the development goals of the whole organization.”

Some concerns were expressed regarding the development of personnel skills as well. According to some informants, strategic emphases and priorities should be more explicit in personnel skills development; this requires strong leadership from the managers in the line organization.

“When considering digitalization and e-learning, we have not paid enough attention to this aspect. This requires leadership in the line organization - awareness of how to guide and support personnel to improve their skill sets in a more strategically relevant direction.. This demands holistic shared understanding of what kind of personnel capabilities we want to acquire and develop.”

”The development of personnel skills is not systematic enough, and requires stronger emphasis on the desired objectives.”

Also, the utilization of information about the skills of staff members, which should be collected in the human resource information system (HRIS), was recognized to be inadequate. The role of the HRIS was questioned by several of the informants, who felt that the system should be utilized more efficiently to support the organization of skill resources.

“As far as I have understood it, we collect and evaluate information on personnel skills in the HRIS, but we don’t utilize this information systematically.”

”HRIS tools are not used systematically enough, and because of this, we can’t make the information about personnel skills transparent, and the information is in the hands of the employee and his/her line manager.”

With regard to managerial skills, the organization was generally considered rather adequate. This view was based on the formal, systematic and institutionalized approaches which are in place to promote development of managerial skills through different kinds of mechanisms. But the informants felt that programs for improving managers’ skills should also cover pedagogic leadership, and awareness of matters related to digitalization.

“We have long and short-term programs to improve managerial and leadership skills of the managers, such as the JET education program, management forums and so on.”

“If digitalization and ICT are considered to be strategically relevant, we should increase discussion of these issues and collaborative ideations in programs for improving managers’ skills.”

”I think the key question is, what is pedagogic leadership, and how should an education institution be managed. Managing an education institution is somewhat different from leading a private business.”

According to the informants, the best way to improve motivation and promote positive attitudes is creation of shared meanings and invigorating visions. They also felt that the whole work community should share responsibility for broaching problematic issues and challenges within the organization, so that possible problems with motivation could be addressed effectively.

“Motivation and attitudes should be managed through the creation of attractive visions, which at least part of the personnel are committed to.”

”It is important that the whole professional community is aware and alert to acknowledge and bring to light possible problems with motivation and attitudes. This is the only effective way to solve possible problems as they arise.”

Incentives

Table 23. Incentives.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
5.1	VR/CD	-/CD	V/CD	VO/CP	V/CD	V/CD	V/CD

The institution lacks defined incentive policies and mechanisms. The majority of the informants regarded incentives as a valuable resource, especially for promoting and encouraging development, but the current situation is rather weak in terms of formal strategic incentive mechanisms.

Some informants regarded the allocation of worktime to development as an important incentive mechanism. Some brought up the possibility of more systematic financial compensation. One issue that was raised was the inability of some members of staff to communicate their development initiatives from strategic perspectives, which in turn makes it difficult for them to obtain worktime resources for the purpose. This definitely draws attention to the importance of providing adequate support for the planning of development initiatives and proposals within the organization.

”Allocating worktime resources for development can be regarded as one important incentive mechanism. It also makes a clear statement that development is considered important.”

”...we should create mechanisms to promote the sharing of expertise in commercialized operations.”

”...not everybody is necessarily able to plan or communicate their proposals in a manner that explicates the strategic relevance strongly enough.”

Some of the informants were rather skeptical about the utilization of financial incentives, and were not convinced of the benefits they would provide. They placed greater emphasis on intangible incentives, such as public acknowledgement, as a way of boosting motivation more effectively.

“...motivation and attitudes are much more important. Perhaps some financial incentives could be used, but money does not necessarily guarantee results.”

”The teaching staff are relatively well paid, and because of that creating financial incentives for development could be futile.”

“Incentive mechanisms should be improved so that people who have developed innovative good practices should be given public recognition. This could have a positive impact on the work of others in the organization.”

The organization of incentives was not rated highly, mainly because there are currently so few incentives to organize. Incentive mechanisms and policies were regarded as almost non-existent, although worktime allocations for development and related systematic processes and procedures were mentioned as one important incentive mechanism. However, where organization is concerned, the lack of strategic utilization of incentive mechanisms was recognized as the key issue.

“Some activities in this area, but incentive mechanisms are not used for strategic purposes, to support strategy implementations.”

”We have formal, systematic procedures through which worktime resources are applied for and allocated for development.”

Reputation

Table 24. Reputation.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
6.1	V/CD						
6.2	V/CD	V/CD	V/CD	V/CD	V/CD	VO/CP	V/CD
6.3	V/CD	V/CD	V/CD	VO/CP	V/CD	V/CD	V/CD

6.4

VR/CD	V/CD	V/CD	V/CD	V/CD	V/CD	V/CD
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The general brand and reputation of the case study institution is strong. In this research, however, the focus was on assessing the brand and the reputation of the institution with specific regard to e-learning. The “digital” brand and reputation of the case study institution was considered to be very valuable as a resource, but there was general agreement that it needs a lot of improvement in the future. The informants share the view that the students, the partners and the customers do not regard the institution as a strong operator in the field of e-learning.

“[Digital brand and reputation] are built slowly through vendible education as well, since the majority of the products are built on e-learning.”

“Very strong general brand, not a strong brand as a digitalized HEI.”

Some informants discussed the benefits that would accrue to the institution from a strong brand and reputation in e-learning.

“...I believe that if we had a strong brand and reputation in the field of digitalized learning and teaching, a lot of new opportunities would open up through new partnerships.”

“It is of great importance, affects everything...people want to be part of successful organizations. At the moment we don’t have a strong brand, but it is important to improve this in the future...”

Some of the informants expressed a desire to achieve the leading position in digitalization within the UAS sector. This is in alignment with the defined five-year sub-strategy briefly presented in chapter two, which includes aspects related to reputation and brand-building in the area of digitalization.

“...it is important to build our status and become the leading UAS in digitalized learning and teaching.”

One informant raised the point that within such a large institution, a lot of variation between different degree programs is to be expected, also when it comes to brand or reputation.

“We have over 40 degree programs, and there is great variability between them.”

Where organization of reputational resources is concerned, the informants rated it as inadequate. Even though a lot of different mechanisms exist for collecting information on many aspects of reputation and quality, the e-learning aspect is not included explicitly. Thus, no analytical approach can be taken to the organization of reputation as a resource.

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Culture

Table 24. Culture.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
7.1	VRIO/S CA	VO/CP	VO/CP	VR/CD	V/CD	VO/CP	VO/CP
7.2	VR/CD	VO/CP	V/CD	V/CD	VO/CP	VO/CP	VO/CP
7.3	VO/CP	VO/CP	V/CD	VO/CP	VO/CP	VRO/TC A	VRO/TC A

There was slight variation in how the informants regarded the current status of the institution's culture. Where collaboration is concerned, each of the informants considered it to be a valuable resource for implementing strategies. The majority also considered collaboration and sharing of best practices to be well organized within the organization, and felt that there are adequate mechanisms in place for sharing best practices and knowledge.

"The importance [of collaboration] is great. I don't believe in achieving success through individual effort alone – not from the whole organization's perspectives."

"This is a very important resource. I think we are very advanced in certain fields of education, when it comes to collaborative effort."

"Documentation and transparency have improved."

"There are different kinds of possibilities for sharing best practices."

Even though the collaboration and open sharing culture was mainly considered to be valuable and well organized, development needs were also brought up.

"[Our culture is] still too individualistic...efforts have been put into the development of team-based collaboration on designing and implementing courses."

"...collaboration is still a work in progress, and unfortunately this shows from outside the organization as well."

As for trust, it was considered very important as a resource, and in this respect, the situation of the organization was seen as rather strong. Trust has been increasing over the past few years; this may be due, at least partly, to the challenging but successful merger of the two universities of applied sciences as of 1.1.2010, which created the case study institution in its current form.

"Trust is extremely important when implementing new strategies and when doing multi-disciplinary collaboration."

"Our previous merger has made us stronger as a community, and trust is strong... our stable financial status supports trust."

”...the students’ trust in our organization is very strong, perhaps the strongest in the whole sector of universities of applied sciences.”

”We have a sensible attitude towards mistakes, and failures are allowed as long as we learn from them.”

Still, some concerns were raised, including the suggestion that too much emphasis is placed on monitoring and ensuring compliance.

“This has improved, but unfortunately we still put a bit too much emphasis on monitoring and compliance...”

”Perhaps [there is still] too much cautiousness and protection of individual territory...trust has developed a lot during the past few years though.”

Where the organization of cultural resources is concerned, it is based on formal documenting and analysis of personnel surveys. These institutional procedures promote sharing of knowledge and best practices, and facilitate the implementation of team-based teaching and collaborative practices in the design and creation of educational resources, such as materials and courses.

”...sharing and collaboration take place in a variety of multi-disciplinary work groups.”

”Teacher collaboration is guided, supported and developed systematically.”

”Mechanisms are provided for sharing best practices, but the participation rate is somewhat low.”

“A goal has been set to systematically develop and monitor how collaboration and sharing of best practices is being implemented.”

Networks and partnerships

Table 25. Networks.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
8.1	VRO/TC A	V/CD	V/CD	V/CD	V/CD	VR/CD	VR/CD
8.2	VR/CD	VRI/CD	V/CD	V/CD	V/CD	VR/CD	VO/CP

Networks were regarded as valuable resources, and great importance was attached to improving capabilities by establishing strategic partnerships in the area of e-learning.

”...we cannot be strong in every area of expertise, and that is why we need to be able to find and establish good strategic partnerships.”

The relevance of networking was considered to have increased a lot. This is due to the fact that more and more educational resources are being designed and delivered in value chain constellations. The national initiative on collaborative ICT education between universities of applied sciences was cited as a current example of networking and its importance.

“For example, the development of ICT education is a very significant network initiative.”

One challenge that was brought up was that many of the networks are established around and within R&D projects, and in many cases they cease to exist after the projects end.

“[Networks are] an important resource, but a large portion of these are established around projects, and as such they are not necessarily sustainable in the long run.”

The key challenge with networks is that they are currently organized rather inadequately. There is no analytical approach to evaluating and validating the networks. The analysis of different networks is somewhat inconsistent and informal, and as a result, the evidence base for further development lacks rigor, and this in turn hinders organizational learning.

”We don’t have enough capability to exploit our networks...we don’t manage them systematically...”

”Networks are being established mainly organically, and a more systematic approach is needed.”

”The strategic partnerships have been managed more systematically, and decisions are based on more rational analytics.”

Possible impacts of Tampere 3 on the resources

In general, the informants supported the Tampere 3 project, believing that it will provide opportunities for improving the resource base. However, they also stressed that the need for genuine collaboration is critical, in order to develop and implement new strategies. If the project leads to merger, the informants expect benefits to accrue to R&D capabilities and facilities in particular. Integration of theoretical and applied research and development was considered to be one essential asset for the future. In addition, opportunities for establishing new kinds of centers of excellence around carefully chosen subjects were identified as potential positive outcomes of a merger.

“It would enable the establishment of new advanced facilities, which could also be funded by external bodies as well. One idea could be to establish an “International School of Learning Sciences”, which has been brought up as an idea in discussions at TAMK.”

”The possible merger would provide synergy benefits through the integration of scientific and applied research. It is possible to gain outstanding advantage when it comes to applying for R&D funding as well.”

”The other two universities have some well recognized exceptional personnel resources, at least on a national scale.”

On the other hand, a lot of risks were acknowledged as well. Of particular concern was the challenge of managing such a merger successfully, so that genuine knowledge communities could be established, based on mutual respect and trust.

“It is important to establish collaborative communities, and to genuinely collaborate – so as to avoid duplicating the existing resources.”

Challenges in the area of enterprise architecture integration were brought up as well: this will undeniably require a lot of organizational resources, careful planning, and consistent management, as was the case with the much smaller merger in 2010.

”The possible merger sets challenges, as the architecture would be even more complex, and - based on our experiences from the previous merger - integration of the different architectures would tie up a lot of resources for a long period of time.”

However, developing homogenous integrated enterprise architecture was not necessarily seen as a desirable direction of development; EA itself should not prevent versatility.

“From pedagogic perspectives, it could be justifiable to maintain heterogeneous ICT systems. This could perhaps provide some unexpected benefits.”

Table 26 presents the summarized results of the VRIO analysis for every resource sub-class.

Table 26. Summary of the competitive status per resources.

Sub-class: resource	Informant 1	Informant 2	Informant 3	Informant 4	Informant 5	Informant 6	Informant 7
1.1	VR/CD	V/CD	V/CD	VRI/CD	VO/CP	V/CD	V/CD
1.2	VR/CD	-/CD	V/CD	-/CD	VO/CP	V/CD	V/CD
2.1	VR/CD	VRIO/S CA	V/CD	VRI/CD	VRIO/S CA	VRI/CD	VRO/TC A
3.1	VO/CP	O/CD	V/CD	O/CD	VO/CP	V/CD	V/CD
3.2	VO/CP	V/CD	V/CD	VO/CP	O/CD	VO/CP	VO/CP
3.3	VO/CP	V/CD	V/CD	O/CD	VO/CP	VO/CP	VO/CP
4.1	VO/CP	VRO/TC A	V/CD	V/CD	VO/CP	V/CD	VR/CD
4.2	VO/CP	VRO/TC A	VO/CP	V/CD	VO/CP	VR/CD	VO/CP

4.3	VO/CP	VRIO/S CA	VO/CP	VRO/TC A	VO/CP	VRO/TC A	V/CD
4.4	VRI/CD	V/CD	V/CD	VR/CD	-/CD	V/CD	VRI/CD
4.5	V/CD	V/CD	V/CD	V/CD	V/CD	V/CD	V/CD
5.1	VR/CD	-/CD	V/CD	VO/CP	V/CD	V/CD	V/CD
6.1	V/CD	V/CD	V/CD	V/CD	V/CD	V/CD	V/CD
6.2	V/CD	V/CD	V/CD	V/CD	V/CD	VO/CP	V/CD
6.3	V/CD	V/CD	V/CD	VO/CP	V/CD	V/CD	V/CD
6.4	VR/CD	V/CD	V/CD	V/CD	V/CD	V/CD	V/CD
7.1	VRIO/S CA	VO/CP	VO/CP	VR/CD	V/CD	VO/CP	VO/CP
7.2	VR/CD	VO/CP	V/CD	V/CD	VO/CP	VO/CP	VO/CP
7.3	VO/CP	VO/CP	V/CD	VO/CP	VO/CP	VRO/TC A	VRO/TC A
8.1	VRO/TC A	V/CD	V/CD	V/CD	V/CD	VR/CD	VR/CD
8.2	VR/CD	VRI/CD	V/CD	V/CD	V/CD	VR/CD	VO/CP

The total number of hits for each of the different resource types, based on the material from all the informants, are presented in Table 27. below.

Table 27. Total amount of hits per different resource types.

Resource type	Hits
V/CD	70
O/CD	3
-/CD	4
VO/CP	36
VRO/TCA	8
VRIO/SCA	4

It is important to stress that there were differences between the various informants' conceptions of the current state of different resources, as shown above in Tables 19 - 26. Thus, Table 27 is presented only for illustrative purposes, to provide a general idea of the current distribution of the institution's resources in terms of their strategic value and competitive status.

3.8.5 Conclusions

The VRIO analysis of the case study institution's resources and capabilities revealed two main challenges: the resources are not well organized, and the institution has very few rare and imperfectly imitable resources. However, it is important to bear in mind the fact that higher education in Finland has always been publicly funded, and very strictly guided and controlled at the government level. This approach to higher education has prevented genuine competition, and has thus ensured a very homogenous higher education sector, where no great emphasis has

been placed on competitive capability; it simply has not been necessary, at least for the HEIs in larger city areas.

There were also some differences between the individual informants' conceptions and perceptions of the resource base. This may be due to the fact that each of the informants has a different background and role within the institution, and therefore views the resources from a different subjective perspective. The next step towards validating the results would be to have a group session involving all of the informants, and through this establish a collective understanding of the situation. This would be important from practical perspectives as well, since a consensus is needed to ensure that the development goals and priorities are commonly accepted and supported.

As shown in Table 19 - 26, there is a great deal of room for improving the competitive status of the institution in just about every resource class covered in this research. This is due to the underlying problem identified in this research phase: the inefficient and ineffective – inadequate – organization of the valuable and rare resources which the institution does possess.

The relative paucity of valuable, rare and imperfectly imitable resources is a challenge which needs to be seriously addressed in the future planning of development. This does not mean that the institution should strive to acquire and/or develop well organized VRI resources across the board, but rather think carefully in which resource classes it would be rational and realistic to have these kinds of resources. Valuable and rare resources, if organized adequately, are enough to ensure competitive parity and temporary competitive advantage, which would guarantee the institution's survival in the sector, and could perhaps even enable it to be the top university of applied sciences in certain areas for some time. However, according to the findings of this specific research phase, there is plenty of work to do in order to gain even competitive parity in many areas, let alone competitive advantage.

The future challenge is to refine the organization of and around the resources so that they can be exploited in the best possible manner. In addition to this, it is time to place emphasis on ambitious leadership towards the improvement of resources. Without ambition, the best possible outcome is mediocre. The institution should definitely allocate a lot of effort to the improvement of the evaluated resources if it desires to be the top university of applied sciences in e-learning.

The institution possesses a lot of valuable resources, but only a few rare or imperfectly imitable ones. However valuable, rare and imperfectly imitable the resources may be, without efficient and analytical organization and clear strategic ambition, the resources cannot be optimally exploited, and only publicly funded mediocrity will be sustained.

The five-year sub-strategy on digitalized learning and teaching does actually aim at improving the organization and quality of resources in various domains of the institution. Thus, as a researcher and practitioner, I strongly recommend that sufficient resources be allocated to the operationalization of the strategy throughout the institution. This cannot be achieved by individuals, or by one or two lines or departments working separately, but will require the total commitment of all the many experts, leaders and managers throughout the institution.

4. The output of the research

In the end, the research was mainly about assessing and evaluating the resources, capabilities and processes of the case study institution from the chosen perspectives, and through this providing new knowledge and a rigorous basis for further development of the institution. During the research process, a deep understanding of the case study institution was formed, and plenty of different stakeholders were involved in the different phases. In this chapter, as a theoretical output of this research process, I present a framework that covers the critical aspects which have been at the very core of the different research phases and their related findings, tied with the theoretical background utilized during the two years. The emphasis throughout is on the management of the digitalization of learning and teaching. In addition to the key output, more practical implications of the local impact of the research process are discussed in this chapter.

4.1 Management's Framework for Strategizing Digitalization of Learning and Teaching

Based on the findings of the research process, a framework has been defined which presents key tangible and intangible resources and capabilities that have a direct relation to the digitalization of learning and teaching, alongside the institution's business processes, steering mechanisms and dynamic capabilities. All these in combination are used for the purpose of deploying and developing the resource base surrounding and affecting the development of e-learning. The framework is presented in Table 28. The different phases of the research and the different aspects covered in the research process are aligned with the framework.

Tangible Resources	Focus of evaluation and assessment	Rationale	Suggested actions
Financial resources	<ul style="list-style-type: none"> Capacity and capability to invest in strategically relevant digitalization of learning environments (physical) Capacity and capability to invest in strategically relevant technology development 	The defining factor for success is the capability to use the available financial resources for strategically relevant development, which in the optimal situation benefits a large group of people and multiple domains of an organization.	- definition of a strategic investment portfolio: allocation of resources to strategically relevant investment targets
Physical environment	<ul style="list-style-type: none"> Facilities, integrated physical and technological environments 	E-learning (<i>digitalized learning</i>) concerns also the integration of physical learning environments and technology. Ideally, these environments should provide opportunities for students to access the different learning situations remotely, enable creation of video-based content on the run, and enable effective collaborative sharing of information.	- investments in the technological improvement of the facilities with regards to accessibility, interactivity and flexibility: implementation of video-based technologies in the learning spaces (recording, broadcasting); implementation of interactive communication technologies - BYOD (Bring your own device)
Technology	<ul style="list-style-type: none"> Learning environments & education technology Information systems IT infrastructure 	Education technology as such may not be a source of competitive advantage, but it plays a major role in enabling the achievement of it. Organizational development related to education technology should be approached from strategic perspectives. In addition, investigation of how a chosen technology affects learning processes and outcomes is vital for organizational learning and improvement.	- refinement of organizational processes and approaches to the evaluations of IT investments: greater emphasis on education technology - establishment of more systematic approaches to the exploitation of information systems: reporting and analytics

		<p>Information systems are important to any modern organization. In the management of an organization, information systems, if utilized effectively, play a vital role by enabling management based on information.</p> <p>The coherence of IT infrastructure affects how fluently different systems play together, and also has an impact on the stability of the digital learning environment.</p>	<ul style="list-style-type: none"> - establishment of shared infrastructure services with other HEIs - definition of e-learning architecture - resource allocations for the studying of education technologies and their impact on learning - BYOD
Intangible Resources	Focus of evaluation and assessment	Rationale	Suggested actions
Human resources	<ul style="list-style-type: none"> • Experience and capabilities • Managerial skills • Motivation and attitudes • Personal professional networks and relationships • R&D and innovation capability 	<p>Personnel capabilities are a source of competitive advantage, and have a direct impact on the overall quality of the learning. Having an excellent ability to utilize education technology for pedagogic ends is vital. High e-learning pedagogic skills combined with education technology is a critical success factor in digitalization of learning and teaching, and in gaining competitive advantage. More experienced personnel members can be a valuable asset for promoting the change.</p>	<ul style="list-style-type: none"> - more systematic approaches to personnel training - implementation of incentive policies for active and relevant skills development - refinement of recruitment policy: e-learning related skills and experience as one requirement - activation of management collaboration: more emphasis on cooperative strategic planning - implementation of management training in pedagogic leadership - implementation of R&D training

		<p>Management plays a critical role in the ever-changing environment, so strategic awareness, encouragement, and change management skills are required. Management needs to be committed to the digitalization of education. In addition, pedagogic leadership is a vital capability in managing an educational institution.</p> <p>Motivation and attitudes define what any particular change can be expected to achieve, and is a critical success factor in any change.</p> <p>R&D capabilities define the quality and efficiency of the projects, in terms of producing outputs - even innovations - which benefit the organization.</p>	<p>programs, with a modular, blended approach</p>
Incentives	<ul style="list-style-type: none"> • Incentives to promote development and innovation 	<p>Motivation can be supported through well planned and executed incentive practices. Incentives promote the execution of high quality development initiatives and projects.</p>	<p>- planning and implementation of incentive policies to promote skills development, publishing activity, and development efforts (<i>financial and/or non-financial</i>)</p>
Reputation	<ul style="list-style-type: none"> • Brand and image with regard to e-learning • Reputation among students • Reputation among partners • Reputation among customers 	<p>Ever-increasing competition in the environment and the increasing relevance of commercialized education increase the need for a strong brand and reputation with regard to e-learning (in addition to a strong general brand). Brand building can be</p>	<p>- systematization and activation of communications with regard to novel and successful e-learning practices</p>

		<p>supported by some internationally recognized endorsement of quality.</p> <p>Feedback systems should also explicitly cover aspects of e-learning, if this has been made a strategic priority status in the institution.</p>	<ul style="list-style-type: none"> - redefinition of feedback systems to include relevant e-learning aspects - visibility in international forums
Culture	<ul style="list-style-type: none"> • Collaboration • Open sharing of knowledge and best practices • Trust 	<p>Collaboration, and open sharing of knowledge and best practices enables organizational learning. Instead of an individualistic approach to teaching development, more emphasis should be given to shared expertise and shared leadership. Open sharing and collaboration require strong trust among the academic staff.</p> <p>An organization should provide systematic mechanisms for collaborative sharing of best practices, so as to spread awareness of what is being developed in the organization, and how. Participation in these forums should be supported and promoted throughout an organization.</p>	<ul style="list-style-type: none"> - active nurturing and promotion of collaborative working practices by the managers - enabling and promotion of sharing best practices and knowledge - definition of policies for the development of open educational resources, and implementation of the new practices
Networks	<ul style="list-style-type: none"> • Operational networks for sharing and creating tangible goods, such as courses and services, and knowledge • Strategic partnerships 	<p>The importance of networking is increasing, and different kinds of value chains are being established to produce new learning and teaching opportunities more effectively and efficiently.</p>	<ul style="list-style-type: none"> - assessment and validation of existing partnerships - assessment and validation of desired partnerships

		Through strategic partnerships, it is possible to establish access to valuable resources that are of critical importance in terms of competitive advantage.	
Organizational processes, activities and steering mechanisms	Focus of evaluation and assessment (what to look for?)	Rationale	Suggested actions
Strategic management and planning	<ul style="list-style-type: none"> • Acknowledgement of digitalization and its possibilities, threats and impacts on an institution. • Explication and communication of related aspects and goals, • Strategic understanding 	<p>Without strategic-level acknowledgement of the digitalization of higher education, or at least e-learning, the mandate for development is weak, and no organizational support can be guaranteed. Communication on the strategic level, including metrics, vastly increases the relevance of the subject, and is more likely to lead to resource allocations that focus on the specific area.</p> <p>The implementation of strategy is a change process that needs to be led and facilitated, and requires a high level of knowledge, shared leadership and expertise, and commitment. In the best cases, the change process has a positive impact on an organization's capabilities and resources in every domain. Also strategic agility is</p>	<ul style="list-style-type: none"> - careful but agile implementation of the sub-strategy - allocation of resources for the implementation/operationalization of the strategy

		required, as the socio-political environment plays a major role in the public higher education sector. The external environment may set emergent needs for change, and the planned strategy may have to be refined.	
Quality Assurance and process management	<ul style="list-style-type: none"> • Coverage of e-learning specific aspects • Capability to produce vital information for further development • Accessibility of the information; reporting of the information • Coverage of the process throughout the institution. 	<p>Quality assurance should not be merely retrospective, but also have a focus on future development. Through QA the organization should be able to produce vital information for the development of e-e-learning. Students' experience of the education should be one key metric.</p> <p>A systematic approach to QA and BPM enables the organization to learn from the state of its current operations, quality and effectiveness, and build further development on facts, not merely on intuition.</p>	<ul style="list-style-type: none"> - systematization of practices for collection and analysis of information, and assessment of processes and practices with regard to e-learning, including student experience - implementation of e-learning-specific quality audits and assessments
Curricula	<ul style="list-style-type: none"> • Curriculum design in terms of enabling flexible learning paths and improving digital skills of the students 	<p>Curricula should be a manifestation of the acknowledged strategic relevance of the digitalization of higher education. They should enable and promote flexible learning paths – to provide the students with a variety of possibilities for carrying out their studies. The development of the students' digital skills should also be explicit in the curricula.</p>	<ul style="list-style-type: none"> - explicit communication of the different possible learning paths on the curriculum level, including MOOCs and courses of other HEIs - definition and communication of digital skills development on the curriculum level

		Formal acknowledgment and acceptance of open educational resources, such as MOOCs, as an integral part of the curriculum is an example of how curricula can enable flexible learning outside the organization's common course structure and schedules.	
Investment planning and evaluation	<ul style="list-style-type: none"> • Strategic alignment of the investment plans • Alignment of evaluation criteria with the strategy • Focus of the resource allocations 	<p>Investment plans and evaluation criteria should be in alignment with strategy. Strategically-focused investment plans aim at wide-scale improvement of learning and teaching, and R&D, rather than focusing narrowly on administrative development.</p> <p>A balance should exist between improvement of administrative processes and creation of novel learning and teaching opportunities. The preferences of the organization's management team are actualized in the evaluation of the plans.</p>	<ul style="list-style-type: none"> - redefinition of evaluation and investment allocation principles and practices: giving more emphasis to development of learning and teaching, and R&D than to administrative development - implementation of practices to support the production of ambitious but realistic learning and teaching development initiatives at grassroots community level - establishment of collaborative mechanisms for the concrete planning of development initiatives between different degree programs and/or other organizational units
IT project portfolio management	<ul style="list-style-type: none"> • Capability for efficient and strategy-based portfolio 	The contents of the IT project portfolio embody the development priorities of the	- see above

	<ul style="list-style-type: none"> • Balance between administrative development and e-learning development 	<p>institution, and as such, concretizes the strategic alignment itself.</p> <p>Efficient and effective IT project portfolio management enables the organization to manage and plan its related resources in advance and more coherently.</p>	
Enterprise Architecture management	<ul style="list-style-type: none"> • Utilization and utility of EA for e-learning development • EA's influence on development 	<p>Enterprise Architecture should not constrain innovation and courageous development. It should provide a framework and a set of principles to guide the business-IT development, but the organization needs to take care that it does not act as a curb on creativeness. The importance is more critical in administrative architecture development.</p>	<ul style="list-style-type: none"> - definition of e-learning architecture, and development plans aligned with it: concerns mainly the institutional education technologies - improving the coherence of the current e-learning architecture with regards to institution-owned technologies and systems
Value chain management	<ul style="list-style-type: none"> • Capability and efficiency of VCM to create and sustain strategically relevant networks for creation and development of learning resources, or shared ICT-support services 	<p>Value chain management capability increases dramatically as an organization establishes and joins value constellations through which learning resources and shared services are being produced.</p>	<ul style="list-style-type: none"> - implementation of more systematic approaches to value chain management, with people with experience in and knowledge of VCM
Production	<ul style="list-style-type: none"> • Efficiency and effectiveness in producing learning resources: modules, courses, content, or degree programs 	<p>Producing novel e-learning solutions, models and applications may demand plenty of resources. Instead of producing everything within the institution, another possibility is utilization of open educational resources and active management of suppliers. Utilization of OERs should be regarded as a potential alternative approach.</p>	<ul style="list-style-type: none"> - establishment of cooperative production partnerships - establishment of systematic utilization of open educational resources

R&D	<ul style="list-style-type: none"> Impact, volume and quality of research related to e-learning, and more widely - to the digitalization of higher education 	<p>Research, development and innovation activities may produce vital assets for an organization and for a wider community as well. The capabilities of the R&D domain affect the quality of the activity and related outputs. Through high quality research, it is also possible to promote the organization's status with regards to e-learning.</p>	<p>- establishment and activation of e-learning-related research activities</p>
Systems administration and ICT-support	<ul style="list-style-type: none"> Capacity, availability, effectiveness and quality of the support, from the staff and the students' perspectives 	<p>Systems administration is vital in order to ensure stable and up to date information systems environment. ICT-support should be guaranteed to all personnel and students. The importance of well-functioning and effective ICT-support is great in a digitalized environment of education. The support should be accessible and available to all, in timely manner, and it should be capable to serve with e-learning specific issues as well.</p>	<p>- with regards to helpdesk-support (ICT-support), the development of the support personnel's capability to solve and consult the staff and the students with e-learning specific issues, not just general technology use, would improve the organizational capability in enabling higher quality and more efficient utilizations and implementations of e-learning technologies in learning and teaching.</p>
Personnel e-learning support and training	<ul style="list-style-type: none"> Quality, versatility, efficiency, sufficiency 	<p>Personnel skills training with regard to e-learning should include both the technological aspects and the different pedagogic aspects. Education technology and different digitalized learning environments together with strong capabilities among e-learning practitioners may turn out to be vital in terms of</p>	<p>- activation of personnel participation in e-learning-related training (<i>management's role is crucial</i>)</p> <p>- investments in utilizing special top expertise from outside of the organization for providing in e-learning training</p>

		<p>competitive advantage and positive student experience.</p> <p>In the optimal situation, where sharing of expertise is generally and successfully practiced, peer support may turn out to be the most efficient form of support. Besides this, the academic staff – the educational designers – should be provided with institutionalized support, covering education technology and related pedagogic issues. Instruments should be provided which help the designers in their work of designing and implementing high-quality digitalized learning experiences.</p>	<p>- scaling up of support resources related to e-learning</p> <p>- activation of collaboration between e-learning support and pedagogic experts: shared expertise</p>
Human resource planning and recruitment	<ul style="list-style-type: none"> • Capability to integrate human resource planning and development with strategic goals • Connection to annual planning • The situation of the recruitment process with regard to long-term goals for development of e-learning; • Development discussions and their utility in providing information for related skills development 	<p>Through careful human resource planning and development, including recruitment, the existing skill base of an organization can be improved. If e-learning is acknowledged and approved on the strategic level, HR practices should incorporate e-learning-related aspects. This means that in recruitment procedures and in the evaluation of current skills, these aspects should be given considerable emphasis.</p>	<p>- improvement of learning evaluations to include e-learning pedagogy aspects</p> <p>- reporting and systematic analysis of the status of e-learning-related skills, and improvement accordingly</p> <p>- refinement of recruitment policy</p>

Library services	<ul style="list-style-type: none"> • Capacity, availability, effectiveness and quality of support for digital information literacy • Sufficiency and currency of the digitalized materials and databases available to students. 	<p>Library services have a key role in making relevant digitalized content available to students and staff. In addition, library personnel can play an important role in supporting the development of digital information literacy skills among both students and academic staff.</p>	<ul style="list-style-type: none"> - validation of the current data bases, if not done already - deeper cooperation between vocational teacher education and library services in the planning of personnel training for e-learning development - investigation of possibilities for acquiring databases of video-based learning materials
Procurement management	<ul style="list-style-type: none"> • Efficiency of the procurement process • Impact of the procurement process on the development of e-learning 	<p>Procurements can function as a tool for strategic acquisitions, and provide support in the search for potential partners in the field of education technology. In addition, procurements must be handled in a manner that does not violate legislation, making the role of procurement management very important in this sense as well.</p>	<ul style="list-style-type: none"> - figuring out a more strategic approach to supplier management
Student and customer involvement	<ul style="list-style-type: none"> • Level of involvement of students and customers in e-learning development 	<p>Students should be recognized as partners for development. They should be given the opportunity to actually take part in developing the organization, since they greatly appreciate being able to participate in bringing about change. The students also represent the most important group – the users of education services.</p> <p>As the role of paying customers increases in the public education sector, the importance of customer involvement in</p>	<ul style="list-style-type: none"> - establishment of living lab pedagogic approaches throughout the organization - scaling up the resources accordingly - explicit integration of internal living lab functions on the curriculum level

		development is increasing as well. The involvement of customers can take place through participatory design processes.	
Strategies and policies	<ul style="list-style-type: none"> How strategies and policies enable, promote and steer development towards desired goals 	Strategies and policies provide a structure and mandate for development. They should be used to promote development, and not for compliance purposes.	- investigation of current policies; identification of possible refinement needs; implementation of such refinements
Dynamic capabilities	Focus of evaluation and assessment	Rationale	Suggested actions
Dynamic capabilities	<ul style="list-style-type: none"> Capability to combine, modify and expand tangible and intangible resources and business processes; using the dynamic capabilities to react to changes in the environment, internal and external 	In a rapidly changing environment, it is vital for an organization to be able to modify its resource base, processes and practices effectively, in order to maintain and improve its competitive status. An organization with high level dynamic capabilities is able to develop itself efficiently and rapidly. Examples of how dynamic capability can manifest itself are: excellent change management, excellent skills development activities, continuous evaluation and excellent strategic awareness of the internal and external environment, and high innovativeness.	<ul style="list-style-type: none"> establishment of mechanisms for fast piloting of novel technologies improvement of managers' strategic awareness implementation of LEAN methods for development

Table 28. Management's Framework for Strategizing Digitalization of Learning and Teaching.

4.1.1 Criteria for strategic planning and development of education technology

To complement the proposed framework presented in Table 29, a set of criteria for assessing institutional capabilities related to strategic planning and development of education technology (ET) has been devised as an output of the research. These criteria have been defined on the basis of Peppard & Ward's (2004) definition of IS capability requirements. Links have also been made to the different phases of this research process and the subjects covered in them.

The criteria have been defined due to the fact that this dissertation and the research it covers focus *mainly* on institutional strategic development and related resources with regard to e-learning in a higher education institution, in which the planning of education technology has a vital enabling role. I name these capabilities as ET (*education technology*) capabilities.

Table 29. Criteria for Strategic Planning and Development of Education Technology.

ET capability requirements	Definitions
Understanding how education technology and open digital resources impact on education	<ul style="list-style-type: none"> • awareness of how education technology, online learning and open learning resources may affect the future of a HEI • acknowledgement of these opportunities, or threats
Identifying new strategic opportunities with regard to novel, more flexible and versatile approaches to digitalized learning	<ul style="list-style-type: none"> • capability to address the opportunities provided by the internal and external environment • capability to assess strategically relevant organizational resources
Assessing education technology innovations	<ul style="list-style-type: none"> • capability to investigate and study different education technology innovations, and how they impact on learning outcomes and the student experience
Deriving new technology-enabled education and business models	<ul style="list-style-type: none"> • capability to design new models for studying and teaching – refinement of curriculum and related organizational processes • capability to create business models for technology-supported vendible education
Prioritizing investment opportunities	<ul style="list-style-type: none"> • capability and ambition to invest in development of strategically relevant education technology

Managing change with regard to digitalization of learning and teaching	<ul style="list-style-type: none"> • capability to plan and manage the process of change towards high-level digitalization of learning and teaching • capability to engage and involve the staff and the students in the change process • capability to influence motivation and attitudes • capability to create knowledge communities that support the operationalization of the change
Managing education technology vendors	<ul style="list-style-type: none"> • capability to create and sustain partnerships with key vendors • awareness of vendors in the market
Exploiting investments in education technology	<ul style="list-style-type: none"> • capability to utilize the full potential of investments in ET • capability to spread the potential to a larger group
Ensuring appropriate usage of education technology	<ul style="list-style-type: none"> • capability to utilize education technology in a manner that provides the best possible learning outcomes and student experiences • capability to provide personnel and students with training and support for using education technology
Management of education technology projects	<ul style="list-style-type: none"> • capability to carry out projects effectively and efficiently • capability to disseminate the outputs • capability to abandon failing projects

4.2 Practical implications of the local impact of the research process

In developmental terms, one of the key practical outputs that can be said to have been influenced by this research process is the 5-year sub-strategy on digitalization of teaching and learning which the case study institution has formulated for the years 2015-20. The research process has undeniably provided a strong impetus for a more strategic approach to and a clearer strategic acknowledgement of digitalization of higher education. This is a bold statement, perhaps even a biased one, but it comes from a practitioner with deep involvement in various

areas of development in the institution which has been the focal point of this entire research process.

During the different research phases – and in the intervals between them – discussions related to the need for strategy definition came up constantly. For example, in research phase one, the strategic viewpoint was heavily emphasized in the results. Research phase two concluded that there is a need for more systematic and more holistic approaches to the institutional development of higher-quality online learning. Research phase three focused on student involvement in development, and posited that students can be valuable and even essential resources for developing the institution. Research phase four investigated issues connected with IT development proposals, and recommended a more balanced IT project portfolio. All these – and many other – aspects are covered in the new sub-strategy for 2015 – 2020. The information and knowledge gained through this research have provided a rationale for planning the strategy, and revealed its timeliness. When operationalized, the strategy will have an effect on all the different issues covered during the research: the tangible resources, the intangible resources, the organizational capabilities and processes.

Research phase five was carried out after the formulation of the five-year sub-strategy. It nevertheless complements the strategic approach, by providing a better understanding of the need for development of strategically relevant resources and capabilities, which will have a direct relation to the efficient operationalization of the sub-strategy.

Despite the implications outlined above, it is important to acknowledge that the formulation of the sub-strategy has been motivated by many other factors as well. Nevertheless, there is no denying that the research undertaken has functioned as one of the inputs for all the development aspects.

The case study conducted for research phase one has had an essential role in the development of the institution. This influence is due not merely to the fact that the study raised the prominence of the strategic viewpoint, but also because its holistic approach to processes and practices brought a variety of different subjects into professional discussions in the institution – including such topics as, for example, support, incentives, investments, technology, and knowledge management.

The research process has also had some influence on increasing resource awareness in the steering domain of the case study institution. Furthermore, it has improved awareness of digitalization in the higher education sector, and raised the status in the institution of development related to digitalization. Enhanced capabilities have been concretized as improvement of knowledge, innovative instruments to support improvement and development, locally novel and useful methods for steering the development, and an increase in student involvement in the development of the institution.

5. FINAL WORDS

The sub-strategy on digitalization of learning and teaching (TAMK 2014c) was formulated to strengthen the mandate for organizational change management and change execution, by explicitly communicating the desired and approved path and related goals. Changes will not be easy or rapid to execute, but they are desperately needed nevertheless. Therefore, the question should not be whether we are willing or want to change. We should rather be asking how fast and through which actions we can execute the changes needed to facilitate the institution's evolution into an organization fit for the digitalized era.

The on-going problem for the Finnish higher education sector is that no genuine competitive environment exists, so the existence - even of unfit institutions - is not under threat. The roots of this problem lie in the history of Finnish education - the principles on which it was built and which underlie its provision. Despite this historical background, managing a higher education institution as a competitive organization in the given sector will likely lead to greater success in the future. The worst case scenario would be to remain satisfied with the *status quo* and merely maintain competitive parity – at best – in the sector. Digitalization presents great threats but also opportunities for creating a bright future. In the end, the internal resources and capabilities of the institution will define how these opportunities can be exploited and threats countered.

Even if the sector were to be forever publicly funded and controlled at the government level, a more analytical and strategic competitive approach would definitely benefit the whole sector. And who knows, perhaps someday this more rigorous approach may become essential to the very survival of individual HEIs in truly competitive markets for education - in Finland and internationally as well. At least where vendible education is concerned, this competitive market is already reality.

5.1 Further research suggestions

In the area of capability research, the digitalization of higher education provides plenty of research opportunities now and for the future. One key challenge of the future will be the creation and management of higher education value chain networks and constellations. There are currently active initiatives at the national level, in which cooperation with partners from the higher education sector is being investigated, with support from the Ministry of Culture and Education. Besides these investigations, digitalization of education has recently seen a tremendous rise in political agendas as well.

Given the networked nature of future operations, great emphasis needs to be placed on the capability to manage value chain networks. These advances in the field of higher education will most likely be replicated at other education levels as well, as a lot of pressures exist to improve cost efficiency and at the same time ensure quality and accessibility of general education, particularly in rural areas of Finland. Digitalization presents plenty of threats but also opportunities for democratizing education even more than is currently the case. In terms

of effectiveness, networked operations will most likely be the future of higher education, but also of other education sectors, too. This would mean that educational resources would be designed and developed collaboratively in networks, which would be carefully built on specific competences and would involve integration of resources. Through networking it is possible to acquire capabilities and resources that would otherwise be unreachable. As such value chain networks become more and more prevalent, related research is desperately needed in the higher education context and in other education contexts as well.

Another interesting local action research initiative might focus on higher education in the city region, and examine the possibility of creating a shared center of excellence for collaborative research and development of future learning. The focus of this kind of initiative should be on exploring different possible forms of organization, finding the best possible operational structures, and identifying relevant services and related capability requirements. Such an initiative should also investigate how to ensure flexibility, high quality, and continuous development of learning, learning environments, innovative education technologies and related knowledge. In addition, it should work out how to share and sell the acquired expertise effectively and efficiently.

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APPENDIX 1 – VRIO-analysis interview themes

Tangible Resources	
Financial resources	<ul style="list-style-type: none"> • Capacity and capability to invest on learning environment digitalization (physical) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Capacity and capability to invest on technology development <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
Physical environment	<ul style="list-style-type: none"> • Facilities (current facilities with regards to technology and physical learning environment integration) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
Technological environment	<ul style="list-style-type: none"> • Learning environments and education technology (LMS, SoME, CMS, videotech etc.) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • ICT-tools and systems (communication, administrative systems, stability, security) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • IT-infrastructure (coherency of infrastructure, stability) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
Intangible Resources	
Human resources	<ul style="list-style-type: none"> • Experience and capabilities (current state; sufficiency with regards to the development of e-learning) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Managerial skills (managers' ability to recognize relevance for the development, ability to promote the development, commitment to shared goals, ability to plan human resource development, ability to recruit in align with the strategy, interpersonal relationships between managers) <ul style="list-style-type: none"> ○ V, R, I, O

	<ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Motivation and attitudes (motivation for e-learning development and experiment) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Personal networks (personnel's personal professional networks) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • R&D and innovation skills (capacity to make high quality applications, creativeness, capacity to plan projects, capacity to execute projects efficiently and disseminate the results in the organization) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
Incentives	<ul style="list-style-type: none"> • Incentives/incentive policies to promote development and innovation <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
Reputation	<ul style="list-style-type: none"> • Brand (public status with regards to e-learning and flexible learning paths) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Reputation among students for quality (status among the student population with regards to flexible learning) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Reputation among partners (status with regards to digitalised learning and teaching, pedagogy) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Reputation among customers <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:

<p>Culture</p>	<ul style="list-style-type: none"> • Collaboration (cultural capacity to promote collaboration between the academic staff, between the management and personnel, between the academic staff and administrative staff) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Open sharing of knowledge and best practices (cultural capacity for open sharing of experiences, best practices, knowledge, ideas etc.) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Trust (trust in personnel, autonomy, trust in management) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
<p>Networks</p>	<ul style="list-style-type: none"> • Operational networks for sharing and creating tangible goods, such as courses and services, and knowledge (value, productivity, benefits) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3: • Strategic partnerships (status of strategic partnerships; value, productivity, benefits) <ul style="list-style-type: none"> ○ V, R, I, O <ul style="list-style-type: none"> ▪ Narrative TAMK: ▪ Narrative Tampere 3:
Organizational processes, activities and steering mechanisms	
<ul style="list-style-type: none"> • Strategic management and planning process (influence on the development, explication and communication of digitalization of education in the strategic level, understanding, participation of personnel in the strategy process) • Quality assurance process (coverage of e-learning specific aspects, capability to produce vital information, coverage of the QA throughout the institution) • Reporting (e-learning specific information, utility and reporting of the information, accessibility of the information) • Research (impact, volume and quality of research related to the area) • Project portfolio management (capability for efficient and strategy based portfolio, investment balance between administrative development and core function development) • Enterprise Architecture management (capability to utilize EA for e-learning development, EA's influence on development) • Production (efficiency to produce learning resources; modules, courses, content, even degree programmes) • Systems administration and ICT-support (capacity, effectiveness, quality of service) • Human resource planning and recruitment (capability to integrate human resource planning and development with strategic goals; connection to annual planning, status of 	

the recruitment process with regards to long term goals, development discussions and their utility in providing information for development)

- Personnel e-learning support and training (quality, versatility, efficiency, sufficiency)
- Student involvement (utilization of students in e-learning development, within internal projects and externally funded R&D projects)
- Value Chain Management (capability and efficiency of VCM to create and sustain strategically relevant networks for creation of learning resources, for shared ICT-services)
- Policies (policies for development; how policies enable, promote and steer the development; sufficiency)
- Procurement management (procurement process's efficiency and impact on the development)

Organizational Dynamic Capabilities

- Capacity to combine, modify and expand tangible and intangible resources, using the organization's processes and capabilities to react to changes in the environment, internal and external

Articles 1 and 2 aren't published in TamPub. The fulltext version of the thesis can be seen as printed in Tampere university library.

Attachment 3

Article 3 (in Finnish)

JOHDANTO

Mielenkiintoinen näkökulma opiskelijoiden osallistamiseen on korkeakoulun toiminnan kehittäminen ja se, miten opiskelijoita hyödynnetään muutoksen suunnittelijoina ja toteuttajina. Osallistava ja aktivoiva oppiminen ja toisaalta osallistava organisaation kehittäminen ovat toisiaan täydentäviä elementtejä opetussuunnitelmien operationalisoinnissa. Korkeakouluorganisaation kehittämiseen osallistuminen tarjoaa aitoja työelämän kehittämiskokemuksia, mahdollisuuden vaikuttaa muutoksen sekä kehittää kompetensseja, joista on hyötyä opintojen jälkeenkin. Samalla korkeakouluorganisaatio hyötyy opiskelijoiden osaamisesta ja panoksesta kehittämiseen. Erityisesti Iso-Britanniassa opiskelijoiden osallistaminen korkeakouluorganisaation kehittämistoimintaan on ollut viime vuosina yhä enemmän tutkittu ja keskustelua herättänyt aihe. Paikallisilla laadunvarmistusviranomaisilla on ollut merkittävä rooli toimintatapojen ja -kulttuurien muutoksen käynnistämisessä.

Artikkelini keskittyy opiskelijan osallisuuteen ja osallistumiseen oman korkeakoulun kehittämiseen. Tutkimuksen tuloksissa avaan yhteen opiskelijoiden toteuttamaan toimintatutkimukselliseen kehittämisprojektiin osallistuneiden opiskelijoiden näkemyksiä ja kokemuksia oman korkeakoulunsa pedagogiseen kehittämiseen osallistumisesta. Kokemukset jäsenyivät kesällä 2014 toteutuneen opiskelijavetoisen projektin ympärille. Tutkimuksen kohderyhmä on varsin pieni, joten laajempia yleistyksiä artikkelissa esitettävien tulosten pohjalta ei kannata tehdä. Tutkimus on pilotti, jota on jatkossa mahdollista ja mielekästä laajentaa.

Opiskelijat muutosagentteina

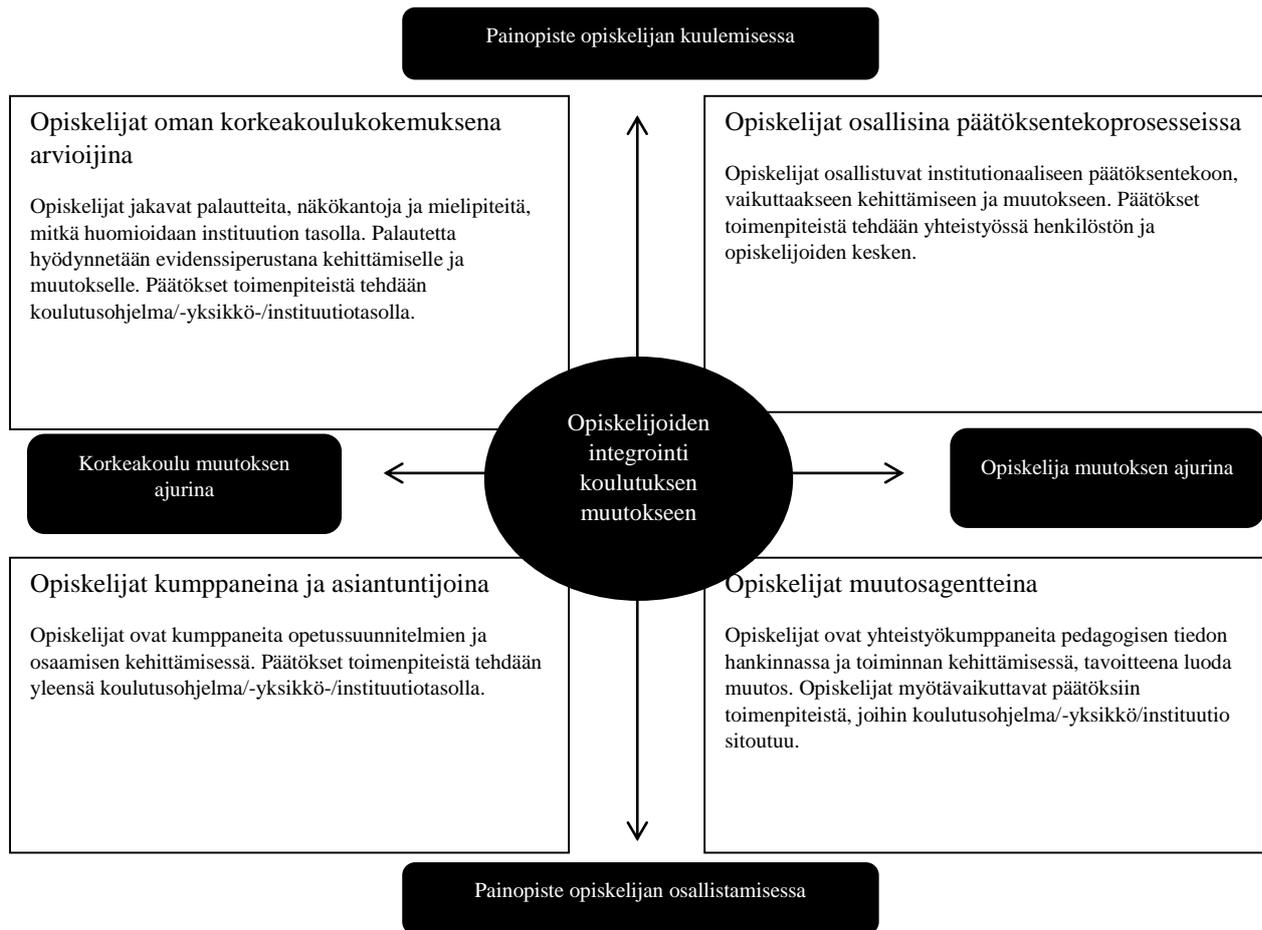
Opiskelijakokemuksen käsite (*student experience, esim. Morgan, 2012*) tulee usein esille korkeakoulujen opiskelijalähtöisestä kehittämisestä puhuttaessa ja kirjoitettaessa. Käsite on ollut viimeisten vuosien aikana runsaasti esillä, muun muassa korkeakoulujen opiskelijoille tarjottavien tukipalveluiden laatua ja kehittämistä käsittelevässä tutkimuksessa ja kirjallisuudessa. Erityisesti Iso-Britanniassa on tapahtunut selkeä paradigman muutos korkeakoulujen laadun kehittämisessä opiskelijakokemusta ja opiskelijan asiakasroolia korostaen. Korkeakoulujen välinen kilpailu opiskelijoista on keskeinen taustavaikuttaja opiskelijakokemuksen painoarvon nousulle kehittämisessä. Iso-Britanniassa tähän on osaltaan hyvin merkittävästi myötävaikuttanut kansallinen opiskelijakysely (*National Student Survey*), jossa on selvitetty viimeisen vuoden korkeakouluopiskelijoiden kokemuksia korkeakoulunsa toiminnasta lukuisilla eri osa-alueilla, kuten opetus, arvioinnit ja tarjolla oleva tuki (Douglas et al. 2008, 20). Kyselyn tuloksilla on havaittu olevan vaikutusta opiskelijoiden valintapäätöksiin tulevista korkeakouluistaan. Tässä artikkelissa esiteltävässä pilottitutkimuksessa tuodaan esille opiskelijaryhmän kokemuksia ja näkemyksiä oman korkeakoulunsa kehittämisestä asiantuntijan roolissa, eikä niinkään viitata opiskelijakokemukseen korkeakoulun toiminnasta. Näillä kahdella näkökulmalla on kuitenkin yhteys: opiskelijan mahdollisuus olla osallinen oman korkeakoulunsa kehittämiseen on yhtäältä myös mahdollisuus vaikuttaa opiskelijakokemuksen parantamiseen.

Korkeakoulujen arviointineuvoston raportissa todetaan, että Suomessa opiskelijoiden osallistaminen korkeakoulujen arviointeihin on ollut itsestäänselvyys, joka perustuu opiskelijoiden vahvaan hallinnolliseen asemaan korkeakoulutoimijoina (Tuomi 2006, 3). Opiskelijapalautteen keruu ja opiskelijoiden muodollinen edustus erilaisissa työryhmissä ja päätöksenteossa ovat vakiintuneita käytäntöjä suomalaisella korkeakoulusektorilla (mt.). Laadunhallinnassa opiskelijoiden palaute on merkittävä tietoresurssi kehittämisen tueksi. Opiskelijoiden ääntä halutaan kuunnella, ja tällä on vaikutuksensa organisaation prosessien, käytänteiden, opetusmenetelmien ja henkilöstön osaamisen kehittämiseen. Raportissa (Alaniska 2006) tuodaan esille opiskelijoiden erilaisia rooleja korkeakoulun laadunvarmistuksessa. Osallistava toimintatutkimuksellinen lähestymistapa oman korkeakoulun kehittämiseen jää kuitenkin puuttumaan.

Osallistavalla toimintatutkimuksellisella lähestymistavalla tarkoitetaan tässä artikkelissa opiskelijoiden suoraa osallistumista pedagogiseen kehittämiseen asiantuntijan ja tutkijan (*vrt. konsultti*) roolissa. Voitaneen yleistäen todeta, että opiskelijoiden suora osallistaminen konkreettiseen oman korkeakoulun kehittämiseen on varsin vähäistä. Opiskelijoille ei välttämättä tarjota paljoakaan mahdollisuuksia toimia muutoksen agentteina, suunnittelijoina ja toteuttajina. Tämä edellyttää ennen kaikkea kulttuurin ja toimintatapojen muuttamista, kuten: 1) opintojen integroimista oman korkeakoulun tutkimukselliseen sisäiseen kehittämiseen, 2) luottamuksen kasvattamista jaettuun (*opiskelija*)lähtöiseen asiantuntijuuteen ja 3) ohjauksellisten resurssien saatavuuden varmistamisen.

Iso-Britanniassa opiskelijoiden osallistaminen niin korkeakoulun laadun arviointiin kuin kehittämiseenkin on ollut ajankohtainen tutkimuksen ja keskustelun aihe viimeiset vuodet. Bovill et al. (2011) kirjoittavat, että opiskelijoita ei osallisteta tarpeeksi opetusmenetelmiä, kurseja ja opetussuunnitelmia suunniteltaessa. Opiskelijan oma kokemus opetuksesta ja oppimisesta – opiskelijapalaute – on tärkeä tietoresurssi organisaation kehittämiseksi. Opiskelijapalautteen rinnalla olisi kuitenkin mielekästä tarjota opiskelijoilla suoria vaikuttamisen mahdollisuuksia muutokseen, mikäli korkeakoulua halutaan aidosti luoda ja kehittää opiskelijakeskeisesti ja yhdessä heidän kanssaan. Bovill et al. (2011) tutkivat ja esittelevät artikkelissaan kolme erilaista lähestymistapaa opiskelijoiden osallistamiseen opetuksen kehittämisessä, yhteensä neljässä erilaisessa korkeakoulussa Yhdysvalloissa, Irlannissa ja Skotlannissa. Esimerkeissä opiskelijat toimivat konsultteina opetusmenetelmien kehittämisessä, osallistuivat kurssien suunnitteluun ja olivat osallisina opetussuunnitelmien kehittämisprosessissa.

University of Exeterissä (*Iso-Britannia*) tutkittiin opiskelijoiden osallistamista ja kehitettiin toimintatutkimuksellinen opiskelijalähtöinen kehittämisen toimintamalli, joka mahdollistaa opiskelijoiden suoran ja aktiivisen osallistumisen organisaation kehittämiseen asiantuntijoina ja tutkijoina (*action research initiative*). Vaikka kyseissä yliopistossa opiskelijapalautteilla on ollut tärkeä rooli ja opiskelijoiden kanssa on tehty yhteistyötä, puutteeksi tunnistettiin opiskelijoiden suoran osallistamisen puuttuminen: opiskelijoille ei annettu riittävästi mahdollisuuksia osallistua ja vaikuttaa muutoksen suunnitteluun ja toteuttamiseen (Dunne 2011, 4 – 5). Dunne et al. (2011, 16 – 18) määrittelivät mallin, joka kuvaa opiskelijoiden osallistumista muutokseen eri näkökulmista ja erilaisin painopistein (KUVIO 1.).



KUVIO 1. Opiskelijoiden roolit korkeakoulun kehittämisessä (Dunne et al. 2011, 17, suom. Haukijärvi 2014).

Dunne et al. (2011) kehittämä malli jäsentää hyvin neljää opiskelijan osallistumisen ulottuvuutta. Opiskelijoiden kokemukset ja palaute on tärkeä osa korkeakoulun toiminnan arviointi. Palautetta kerätään myös korkeakoulun tukipalveluista, ei ainoastaan opinnoista. Kokonaisvaltaisempi opiskelijan äänen kuuleminen ilmentää opiskelijakokemuksen merkityksellisyyden tunnustamista korkeakoulun hallinnossa ja kokonaislaadun kehittämisessä. Opiskelijoiden muodollinen osallistuminen päätöksentekoprosesseihin on suomalaisella korkeakoulusektorilla vakiintunut toimintatapa. Kaksi opiskelijoiden osallistamista painottavaa ulottuvuutta, opiskelijat muutosagentteina sekä opiskelijat kumppaneina ja asiantuntijoina, ohjaavat tarkastelemaan korkeakoulun kehittämistä tuoreista näkökulmista.

Dunne et al. (2011, 30–31) tunnistivat kahdeksan osa-aluetta, jotka vaikuttavat keskeisesti onnistumiseen opiskelijavetoisessa ja -keskeisessä lähestymistavassa muutoksen suunnitteluun ja toteuttamiseen: filosofia, rakenteet, rahoitus, tuki, osaaminen, kommunikaatio, kannustimet ja pitkäjänteisyys.

Filosofian näkökulmasta keskeistä on asenteellinen muutos perinteisestä opiskelijoiden äänen korostamisesta opiskelijat aktivoivaan ja osallistavaan toimintaan, jossa opiskelijat voivat olla sekä päätöksentekijöitä että muutoksen ajureita. Taustalla on käsitys siitä, että opiskelijat toimivat vastuullisesti ja kykenevät ottamaan vastuun kehittämisestä, organisaation sitoutuminen evidenssiperustaiseen muutokseen sekä usko siihen, että muutos voidaan

toteuttaa inkrementaalisesti vaiheittain (mt., 30). *Rakenteilla* Dunne et al. (mt.) viittaavat muun muassa aikaisempiin toimintatapoihin ja strategiaan päämääriin, joissa opiskelijoiden näkökulma korostuvat. Esimerkiksi opetuksen kehittämistiimin ja opiskelijayhdistyksen (*Students' Guild*) välinen yhteistyö oli tiivistä, joka helpotti korkeakoulun kehittämisestä kiinnostuneiden löytämisessä ja rekrytoinnissa. Lisäksi organisaation koulutusstrategiassa opiskelijat olivat keskiössä, ja strategia tuki uudenlaisten lähestymistapojen soveltamista. *Rahoituksen* avulla pilotille pystyttiin takaamaan riittävä tuki, ja se nähtiin myös organisaation sitoutumisena asiaan. Rahoitus kohdentui muun muassa vasta valmistuneen projektikoordinaattorin palkkaan sekä konferenssimatkoihin, joissa tarkoituksena oli uuden tiedon hankkiminen kehittämisen tarpeisiin.

Asiantuntijuudella Dunne et al. (2011, 30) viittaavat opetuksen kehittämisen ammattilaisten osaamiseen. Opiskelijat saivat tärkeää tukea työlleen näiltä asiantuntijoilta, joiden osaamista olivat muun muassa muutosjohtaminen, strateginen suunnittelu ja pedagoginen tutkimus. *Tuki* koettiin tärkeäksi motivaation ylläpitämiseksi, projektien etenemisen varmistamiseksi ja oikeanlaisten menetelmien varmistamiseksi. Lisäksi opiskelijoille tarjottiin apua raporttien kirjoittamiseen ja aineistojen analysointiin. *Kannustimista* tärkeimmäksi opiskelijat kokivat mahdollisuuden tehdä yhteistyötä henkilöstön kanssa sekä osallistua päätöksentekoon vertaisena ja asiantuntijana. Osalle erityisen merkityksellistä oli nähdä todellisen muutoksen tapahtuvan heidän työnsä avulla, osaa motivoi asiaomistajuus, vastuu ja mahdollisuus vaikuttamiseen, osaa osallistumisen ja asiantuntijuuden kehittymisen näkyminen ansioluettelossa. *Kommunikoinnissa* tärkeintä on ollut projektin näkyvyyden varmistaminen ja tulosten levittäminen. Projekteissa toteutettujen tapaustutkimusten avulla tutkimuslöydökset ja niiden pohjalta tehdyt muutosehdotukset olivat formaaleja, joka koettiin tärkeäksi evidenssiperusteisuutta korostavassa kehittämisessä, niin henkilöstön kuin opiskelijoiden osalta. *Pitkäjänteisyys* konkretisoituu projektien toteutuksen kautta kehittämissuosituksina ja toimenpidesuunnitelmina. Suuri osa projektien tuloksista on implementoitu käytäntöihin ja niiden vaikuttavuutta arvioidaan suunnitelmallisesti. (mt., 31).

Opiskelijoiden suora osallistaminen kehittämiseen ei sinällään ole uusi toimintamalli: esimerkiksi ammattikorkeakoulujen ulkoisesti rahoitetuissa TKI-hankkeissa opiskelijat ovat tärkeä osaamisresurssi. On kuitenkin tarkoituksenmukaista erotella toisistaan ammattikorkeakoulun yhden ydintehtävän (TKI) toteuttaminen yhdessä opiskelijoiden kanssa sekä oman korkeakoulun toimintatutkimuksellinen *opiskelijalähtöinen* kehittämistyö, jossa korostuu opiskelijalähtöisyyden syventäminen ja sitä kautta parantuneen opiskelijakokemuksen tavoittelu.

OPISKELIJAPROJEKTIT TAMK:N SISÄISESSÄ KEHITTÄMISESSÄ

Tampereen ammattikorkeakoulussa pedagogista kehittämistä ja pedagogiikan TKI-hankkeita, toiminnanohjausta, laadunhallintaa, e-oppimisen kehittämistä ja ammatillista opettajankoulutusta koordinoi kehittämissyksikkö. Kehittämissyksikössä on käynnistetty opiskelijoiden living lab -toimintamalli, jonka tarkoituksena on tarjota opiskelijoille mahdollisuus korkeakoulunsa kehittämiseen projektiluonteisuutta ja toimintatutkimuksellisuutta korostaen. Ideologisena lähtökohtana on, että opiskelijat ovat keskeinen asiantuntijaresurssi oman korkeakoulunsa kehittämiseen ja tätä kehittämistä tulee tehdä yhdessä jaettuun johtajuuteen ja jaettuun asiantuntijuuteen perustuen. Kahden edellä mainitun käsitteen tarkastelussa opiskelijoita ei rajata määrittelyn ulkopuolelle.

Pääosin kehittämisprojektit kohdentuvat pedagogisen kehittämisen alueelle, mutta tarkoituksena on laajentaa toimintaa systemaattisesti myös muihin sisältöalueisiin, joilla on yhteys sisäiseen kehittämiseen. Projekteissa opiskelijat tuottavat informaatiota, ratkaisumalleja ja todellisia konstruktioita. Keskeiset toimintaa ohjaavat kontekstisidonnaiset viitekehykset ovat: opetussuunnitelmaperiaatteet, koulutusohjelmien opetussuunnitelmat ja organisaation strategia. Opetussuunnitelmaperiaatteissa määritellään kehys korkeakoulun pedagogiikalle: asiantuntijuus rakentuu *tietämisestä, tekemisestä ja olemisesta*. Koulutusohjelmakohtaiset opetussuunnitelmat toisaalta määrittelevät opiskelijan mahdolliset oppimispolkuvariaatiot ja niiden sisällöt. On selvää, että kehittämisen – myös opiskelijakeskeisessä sisäisen kehittämisen living labissa – tulee tukea organisaation strategisten päämäärien tavoittelua, projektien tulee perustua työskentely- ja oppimismenetelmiin, jotka kehittävät tiedollisia ja taidollisia valmiuksia sekä edistävät ammattimaista asiantuntijana ja työyhteisön jäsenenä olemista.

Yhteistyö koulutusohjelmien kanssa on ollut toiminnan kannalta keskeistä, niin opiskelijaresurssin rekrytoinnissa kuin opintopistemäärittelyjen osalta. Opiskelijat kerryttävät opintopisteitään projekteissa. Kesän 2014 aikana TAMK:n sisäisen kehittämisen living labissa toteutettiin useita opiskelijavetoisia projekteja, joista yksi valittiin Case-projektiksi, johon osallistuneiden opiskelijoiden kokemuksia tämän artikkelin käsittelemässä pilottitutkimuksessa selvitettiin. Kaikki opiskelijaprojektit liittyivät opetuksen toteutusmuotojen kehittämiseen ja olivat konteksteiltaan uusien opetussuunnitelmien linjausten ja organisaation strategian mukaisia.

TUTKIMUS

Tämän pilottitutkimuksen tavoitteena on herättää paikallisesti keskustelua siitä, millainen vastuu ja rooli opiskelijoille voitaisiin antaa korkeakoulunsa kehittämisessä, korostaen aktiivista osallistumista asiantuntijan ja kehittäjän roolissa, kuitenkin unohtamatta perinteistä opiskelijan ääntä korostavaa laadunhallinnallista näkökulmaa. Tutkimuksen tavoitteena on avata opiskelijoiden kokemuksia ja näkemyksiä uudenlaisesta tavasta vaikuttaa ja osallistua oman korkeakoulunsa kehittämiseen.

Koska tutkimus on luonteeltaan pilottitutkimus ja sen varsinainen kohderyhmä rajoittuu ainoastaan kolmeen opiskelijaan, on tavoitteena ainoastaan löytää yhtymäkohtia edellä esitelyihin viitekehyksiin, erityisesti opiskelijat muutosagentteina -viitekehukseen, jossa empiirinen asetelma on samankaltainen tämän pilottitutkimuksen tausta-asetelman kanssa. Tässä tutkimuksessa tutkittava ilmiö rajautuu opiskelijoiden osallistamiseen asiantuntijoina organisaation kehittämistyöhön ja erityisesti heidän kokemuksiinsa siitä verrattuna perinteiseen opiskelijan ääntä korostavaan toimintamalliin.

Opiskelijoiden toteuttaman projektin pääpiirteet esitellään seuraavaksi, jotta lukijalle muodostuisi käsitys opiskelijaprojektin toiminnan luonteesta, tavoitteista ja toteutuksesta. Tämä on merkityksellistä arvioitaessa artikkelin käsittelemän pilottitutkimuksen tuloksien validiteettia ja suhdetta tutkittavan ilmiön ja tutkimuskysymysten välillä.

Opiskelijaprojektin kuvaus

Opiskelijaprojektin tarkoituksena oli kartoittaa kolmen suurimman MOOC-palveluntarjoajan kurssitarjontaa suhteessa kahden TAMK:n englanninkielisen koulutusohjelman opetussuunnitelmiin sekä selvittää TAMK:n englanninkielisissä koulutusohjelmissa opiskelevien opiskelijoiden käsityksiä, näkemyksiä, toiveita ja epäilyksiä verkko-opetukseen ja erityisesti MOOC’ien systemaattiseen hyödyntämiseen liittyen. Opiskelijat toimivat itsenäisesti ryhmänä, vastaten itse muun muassa ryhmän jäsenten vastuunjaosta, kuten projektipäällikkyydestä. Projekti toteutettiin osana opetussuunnitelman kuuluvia opintoja, eli opiskelijat saivat tehdystä työstä opintopisteet, joiden määrään vaikutti tehdyt työmäärät.

Selvityksen pohjalta opiskelijoiden tehtävänä oli luoda toiminnan kehittämissuhteita, jotka sisältyivät luovutettavaan projektiraporttiin ja jotka esiteltiin projektin päätöstilaisuudessa, johon osallistui korkeakouluorganisaation kehittämisestä ja opetuksesta vastaavia asiantuntijoita. Raportti ja tulokset ylittivät tilaajan odotukset. Tuotokset on jaettu laajemmalle asiantuntijajoukolle ja tulokset tullaan esittelemään myös korkeakouluorganisaation johtoryhmätasolla. Tutkimusprojektia tullaan jatkamaan ammatillisen opettajankoulutuksen opiskelijaryhmän toimesta, tavoitteena syventää ja laajentaa ilmiön tutkimusta yhteistyössä kehittämissuhteiden asiantuntijoiden kanssa.

Tutkimuskysymykset ja aineistonkeruu

Aineisto kerättiin teemahaastattelussa, joka toteutettiin living lab -projektin päätyttyä. Haastattelu kesti noin 40 minuuttia, ja se nauhoitettiin kokonaisuudessaan. Kohderyhmä koostui kolmesta sisäisen kehittämisen living lab -projektiin osallistuneesta International Business -koulutusohjelman opiskelijasta, jotka olivat opinnoissaan 3. ja 4. vuoden opiskelijoita. Kyseiset opiskelijat valikoituvat kohderyhmäksi, koska heidän toteuttamansa living lab -projekti sopi teemaltaan parhaiten organisaatiossa ajankohtaiseen opetussuunnitelmauudistuksen yhteenvedon, johon liittyvänä toimeksiantona myös tämä artikkeli kirjoitettiin. Opiskelijoilla ei ollut aikaisempaa kokemusta korkeakoulunsa sisäisen kehittämisen living lab -projekteista. Kokemukset opiskelijan osallistamisesta kehittämiseen rajautuivat perinteisiin laadunhallinnan institutionalisoituneisiin toimintakäytänteisiin, kuten opintojaksopalautteisiin. Haastattelun teemoitus rakentui alla olevien tutkimuskysymysten varaan:

1. Millaista lisäarvoa sisäisen kehittämisen opiskelijalähtöinen toimintamalli tuottaa opiskelijalle ja millaisena toimintamalli ja sen merkitys koetaan verrattuna perinteiseen opiskelijan ääntä korostavaan toimintamalliin?
2. Millaiset kannustimet motivoivat osallistumaan projekteihin ja suoriutumaan niistä hyvin?

Aineiston analysointi ja tulokset

Aineiston analyysi toteutettiin teemoittelemalla litteroitu aineisto. Analyysissä pääteemoja tunnistettiin yhteensä kolme: 1) opiskelijan ääni vs. opiskelijat muutosagentteina, 2) kannustimet ja 3) onnistumisen edellytykset ja haasteet. Pääteema 3. nousi esiin vasta aineiston analyysivaiheessa: teemaa ei määritelty tutkimuskysymysten määrittelyvaiheessa eikä haastattelun teeman suunnittelussa. Taulukossa 1 yhteenvedo aineiston lopullisesta teemoittelusta.

TAULUKKO 1. Aineiston teemoittelu.

Pääteemat	Alateemat
1. Opiskelijan ääni vs. opiskelijat muutosagentteina	1.1 Avoimuus ja läpinäkyvyys
	1.2 Merkitys
	1.3 Vaikuttavuus
2. Kannustimet	2.1 Palkitseminen
	2.2 Aineettomat hyödyt
3. Onnistumisen edellytykset ja haasteet	3.1 Tuki ja ohjaus
	3.2 Luottamus ja vastuullisuus

Seuraavissa kappaleissa käydään tarkemmin läpi näitä teemoja opiskelijoiden haastattelusitaattien avulla.

1. Opiskelijan ääni vs. opiskelijat muutosagentteina

Molempien toimintamallien tarkoituksena on kehittää korkeakoulun toimintaa laadukkaammaksi, ja ne täydentävät toisiaan. Koska tutkimuksessa haluttiin selvittää opiskelijoiden mahdollisesti saamaa lisäarvoa toimintatutkimuksellisesta mallista, oli tarkoituksenmukaista, että näiden kahden eri toimintamallin välisiä eroja tarkasteltiin kriittisesti.

1.1 Avoimuus ja läpinäkyvyys

Opiskelijat kritisoivat opiskelijan ääntä korostavan perinteisen opintojaksopalautteen avoimuutta ja läpinäkyvyyttä. Palautteen vaikuttavuuden läpinäkyvyys oli seikka, joka koettiin ongelmalliseksi. Kommentteissa ilmeni epävarmuutta ja epätietoisuutta siitä, mikä oman palautteen merkitys ja vaikuttavuus todellisuudessa on.

“...I don't really know if the teacher is looking at the feedback... I don't know what my feedback is going to do...”

Sisäisen kehittämisen living lab -toimintamalli koettiin mielekkäämpänä tästä näkökulmasta, koska siinä lähtökohtaisesti työn tilaajat ovat aidosti motivoituneita saamaan kehittämislle pohjatietoa opiskelijoilta.

“...the projects I do, the reports I write and presentations that I give, I know the people who are involved in the change, are there for my presentation, are going to read my report – at least the abstract. So I know there is going to be something, based on my work...”

1.2 Vaikuttavuus

Opiskelijoiden kommenteissa tuli esille toimintatutkimuksellisen osallistavan toimintamallin vaikuttavuuden potentiaalinen laajuus. Koska living lab:n tehtävänä on tuottaa tietoa, malleja ja konstruktioita, jotka hyödyttävät koko korkeakouluorganisaatiota, on luontevaa, että toteutetuilla projekteilla tuetaan koko organisaation läpäiseviä muutoksia. Opiskelijat arvostivat myös mahdollisuutta saada todellisia kokemuksia organisaation kehittämistä, ja ymmärrystä toimintaprosesseista, jotka vaikuttavat korkeakouluorganisaation kehittämiseen.

“You also can think of broader spectrum of studies. Like here with our project of MOOCs, they can be implemented in like in like every degree programme.”

“...students can get real life experience...the whole business process in action, and it could be very valuable to see how it works, instead of some theory studies.”

Opiskelijan ääntä korostuvan opintojaksopalautteen ongelmaiseksi opiskelijat kokivat vaikuttavuuden pienen mittakaavaan verrattuna toimintatutkimukselliseen osallistavaan toimintamalliin. Aikaisempien kokemusten perusteella opintojaksoille tehdyt muutokset ovat olleet hyvin pieniä, eikä merkittäviä muutoksia, kuten tavoitteiden muuttaminen tai koko metodisen lähestymistavan muuttaminen ole juuri tehty. Toisaalta toimintatutkimuksellisen osallistavan mallin vahvuudeksi koettiin, että siinä opiskelijat voivat itse olla muuttamassa lähestymistapoja opetukseen laaja-alaisestikin.

“...giving feedback of a course, is being subjective to this one teacher, this one course. We can't speak about the whole business studies at the same time.”

“When you have a traditional feedback system, the changes that they do afterwards are quite small. They don't change the whole objectives and study implementations. And here WE can actually change the methods of teaching.”

Yhteenveto pääteemasta 1

Tämän pääteeman osalta yhtymäkohdat Dunne et al. (2011) työhön liittyvät pääasiassa heidän esittelemäänsä viitekehykseen – opiskelijat muutosagentteina. Perinteisen toimintamallin ja opiskelijat muutosagentteina -toimintamallin välinen vertailu oli tässä tutkimuksessa ja sen pääteemassa 1. keskiössä.

2. Kannustimet ja merkitys

Kannustinten osalta oli tarkoituksena ensisijaisesti selvittää rahallisen kompensaation ja opintopisteiden merkitystä motivaatiotekijänä osallistumiselle. Aineistosta nousi kuitenkin esille myös muita hyötyjä, jotka opiskelijat kokivat motivaation myönteisesti vaikuttavina, niin projektiin osallistumiselle kuin projektissa suoriutumiseen.

2.1 Rahallinen palkitseminen

Opiskelijat kokivat rahallisen palkkion olevan ennen kaikkea osoitus siitä, että korkeakouluorganisaatio arvostaa heidän osaamistaan, ja toisaalta osoittaa, että kyseessä on organisaation kannalta relevantti toimeksianto, jolta edellytetään tuloksia.

“...Tamk is investing on me, it makes me feel like Tamk is taking me seriously.”

“...it’s not just another research using students’ voice, but also shows that Tamk actually cares about these subjects we are researching.”

Haasteena nykytilanteessa on, että opiskelijoiden rahallisiin kannustimiin on varsin niukat resurssit. Tärkeää olisi kyetä palkitsemaan opiskelijaryhmiä hyvästä työstä, ja toisaalta palkkiomahdollisuus helpottaisi myös opiskelijoiden rekrytointia living lab:n projekteihin.

2.2 Aineettomat hyödyt

Tässä alateemassa keskeiseksi motivaatiotekijäksi nousi osallistumisen merkitys ammatilliseen kehittymiseen ja ansiotuneisuuteen asiantuntijana ja kehittäjänä. Opintopisteiden merkitys jäi ennako-odotuksia vähäisemmäksi. Työn edetessä havaittiin, että osallistuminen tarjoaa sellaisia aineettomia hyötyjä, joita ei alkuvaiheessa välttämättä osattu ennakoida. Tämä on rohkaisevaa toimintamallin ylläpitäjille ja kehittäjille, sillä keskeisenä tavoitteena sisäisen kehittämisen living lab -projekteissa on ollut tukea opetussuunnitelmaperiaatteiden mukaista ammattilaisuuden kehittymistä osana korkeakouluorganisaation kehittämistä. Opintopisteiden merkitystä ei kuitenkaan ole syytä väheksyä, vaikka niiden rooli aineistossa jäikin vähäiseksi, sillä toimintamallin onnistuminen on riippuvainen siitä, miten se pystytään integroimaan osaksi eri koulutusohjelmien opetussuunnitelmien toteuttamista.

“I’m not so much after the credits...for me, it is interesting to see how the results will be implemented in the future. And if they did, say in our case, implement the moocs, that is huge promotion to me.”

“...the value for the students is even greater if Tamk implements the change...then I could link them to my CV.”

“And when the work is implemented, I can tell my future employers that I had an important role in changing my educational institution.”

Opiskelijat kokivat tyytyväisyyttä, vastuullisuutta ja ylpeyden tunnetta osallisuudestaan kehittämiseen. Toisaalta samalla negatiivisena asiana koettiin, että suunnitellut muutokset konkretisoituvat hitaasti, jolloin osallistujat eivät välttämättä pääse itse hyötymään niistä. Tästä huolimatta tulevaisuuden opiskelijoiden mahdollisesti saama hyöty muutoksista koettiin merkitykselliseksi.

“It is important to be able to be part of this kind of projects that help change the direction my educational institution is going...it will give me satisfaction as a student that I was part of change that I wanted in my institution...”

“...makes me proud makes me happy but kind of makes me sad cause I couldn’t get the better education institution, the future generation will get the better

institution that I wanted...not going to see any of those changes because it's a long process...“

“I think it is also a great responsibility to represent the students.”

Yhtenä konkreettisena etuna toimintamallissa koettiin todellinen mahdollisuus kehittää opiskelijan omaa ymmärrystä korkeakoulun toiminnasta ja pedagogisesta kehittämisestä, ja toisaalta henkilöstön ymmärrystä opiskelijoiden toiveista, tarpeista ja näkökulmista. Työllä koettiin olevan mahdollista vaikuttaa opiskelijoiden ja henkilöstön asenteisiin, ja että vuorovaikutuksella on mahdollista luoda jaettua ymmärrystä käsiteltävistä asioista ja muutostarpeista.

“...students' attitudes can be changed by staff and staff attitudes can be changed by students...Both of them could see the other point of view and probably understand it better.”

Yhteenveto pääteemasta 2

Analyysin perusteella voidaan todeta, että tutkimusryhmä koki tärkeinä kannustimina samankaltaisia asioita, joita Dunne et al. (2011) tekemässä tutkimuksessa tuotiin esille. Joskin rahallinen kannustin sai tässä tutkimuksessa merkittävämmän roolin aineistossa motivaation lähteenä. Tähän varmasti osaltaan vaikutti, että tutkittavilta kysyttiin myös rahallisen kannustimen merkitystä motivaatiotekijänä. Tutkimusten yhtymäkohtana ovat opiskelijoiden kokemat hyödyt osallisuudesta todellisen muutoksen toteuttamiseen asiantuntijan roolissa. Tutkimuksen aineistossa on selkeä yhtymäkohta Dunne et al (2011) esittelemään menestystekijään ”Kannustimet”, sillä aineistosta tulee esille toimintamallin merkityksellisyys muutokseen vaikuttamisen näkökulmasta. Yhteenvetona voidaan todeta, että vaikuttamisen mahdollisuudet ja vaikuttavuuden potentiaali koetaan tärkeiksi motivaatiotekijöiksi.

3. Projekteissa onnistumisen edellytykset ja haasteet

Aineistosta nousi esille opiskelijoiden välisen luottamuksen ja vastuullisuuden sekä organisaation asiantuntijoilta saatavan tuen ja ohjauksen merkityksellisyys.

3.1 Tuki ja ohjaus

Tärkeäksi onnistumisen menestystekijäksi koettiin riittävä ohjaus, jolla varmistettaisiin, että projektien tavoitteet ja tarkoitus on linjassa organisaation tavoitteiden kanssa. Riskiksi volyymin mahdollisesti kasvaessa tunnistettiin, että useiden opiskelijaryhmien ohjaus ja työn laadunhallinta olisi haasteellista, ja että ilman aktiivista ohjausta opiskelijoiden toimintaan saattaisi vaikuttaa asenteellisuus ja puolueellisuus, jolloin työn tulosten hyödynnettävyys kärsisi.

“...if students have these projects in their curriculum, we probably need a lot of projects...it's hard to maintain their quality. And probably not even the quality but the value itself.”

“...if we have too many students doing too many things with change...the likeminded students focus on what they want to change...people who have a different opinion will go to different directions. If the researchers are biased, they will do research that is biased.”

“...it’s going to be difficult for the administration to decide what changes are necessary.”

Living lab -projektien operatiivisen toteuttamisen aikana tärkeää on opiskelijoiden vuorovaikutus työn tilaajan kanssa. Tältä osin systemaattinen tapaamiskäytäntö tukee edelläkin mainittua projektien ohjausta alun perin määriteltyyn tavoitteeseen. Lisäksi tavoitteen, tarkoituksen ja työn etenemisvaiheiden määrittely tunnistettiin tärkeiksi onnistumisen edellytyksiksi.

“...could be helpful to schedule more meetings with the customer.”

“...we had quite a clear definition and objectives, so we didn’t need so much contact.”

3.2 Luottamus ja vastuullisuus

Tutkimuksen kannalta mielenkiintoisena ja varsin relevanttina ilmiönä voidaan pitää opiskelijoiden keskinäisen luottamuksen merkitystä. Ryhmän kommentteissa tuli esille vastuullisuuteen liittyviä riskitekijöitä: opiskelijat pitivät mahdollisena, että osa osallistuvista opiskelijoista ei sitoudu työhön. Tämä korostuu erityisesti alla olevissa kommentteissa, joissa analysoidaan kyseistä ilmiötä, mutta toisaalta mainitaan, että enemmistö opiskelijoista kuitenkin tekee parhaansa ja ajattelee etuaan pitkällä aikajänteellä.

“...if you are going to take the easy way out in these projects, you are probably going to take the easy way out in the work life as well.”

“But I guess that is what you get when you take on students...there are going to be some bad apples. Majority of the students in this level is like thinking about their work life, work experience they are going to have in the future, they are probably going to work hard and try their best to get the results.”

Haastateltavien kesken oli näkemuseroja siitä, onko projekteissa mahdollista välttää tehtäviä ja suoriutua helpolla.

“...they could make it easy and everyone could suffer in the end.”

“I don’t think they could make it easy, like after 3 months of research, someone is going to see the results, someone is going to see the results and see if work done was enough or not.”

Kommenteissa ilmeni myös epäuskoa siihen, että korkeakoulun asiantuntijat todella hyödyntäisivät työn tuloksia: opiskelijat olivat olleet työn toimeksiantovaiheessa skeptisiä oman työnsä tulevien tulosten merkityksestä ja tulosten hyödyntämisestä organisaation kehittämisessä.

“...you don't really expect, at least I didn't, that you would use our materials, that we would do the work and you would use it.”

Toisaalta skeptisyys katosi, kun opiskelijat huomasivat, että heidän työnsä tuloksista oltiin aidosti kiinnostuneita ja he pääsivät vuoropuheluun korkeakouluorganisaation asiantuntijoiden kanssa kehittämisen tulevaisuudesta.

Yhteenveto pääteemasta 3

Edellä analysoidut tulokset ovat osin samansuuntaisia Dunne et al. (2011) esittämien tulosten kanssa asiantuntijuuteen, tukeen ja ohjaukseen liittyen. Aineistossa ei tosin tullut esille metodisen tuen (tutkimusmenetelmät) merkittävyyttä onnistumisen edellytyksenä, kuten Dunne et al. (2011) esittelemissä tuloksissa. Ylipäättään organisaation asiantuntijoiden rooli jäi tässä tutkimuksessa ja aineistossa vähäiseksi. Tämä johtunee siitä, että haastattelusuunnitelmassa ja -teemoittelussa ei ollut tarkoituksena löytää tietoa kyseiseen teemaan liittyen. Aineistosta on kuitenkin tulkittavissa, että organisaation täytyy kyetä hallitsemaan ja ohjaamaan projekteja oikeaan suuntaan, ja että projektin aikana vuorovaikutus organisaation asiantuntijan kanssa on hyödyllistä. Tämä tukee Dunne et al. (2011) esittämiä tuloksia.

YHTEENVETO

Opiskelijoiden ääntä korostavat perinteiset toimintamallit ovat vakiintuneet suomalaiselle korkeakoulusektorille. Opiskelijat muutosagentteina -näkökulma tarjoaa kuitenkin perinteisiä toimintamalleja täydentävän lähestymistavan korkeakoulun kehittämiseen, painottaen opiskelijan suoraa osallistamista muutoksen suunnitteluun ja toteutukseen sekä korostaen opiskelijoiden roolia muutoksen ajureina (vrt. Kuvio 1.). Tämän pilottitutkimuksen taustalla on pyrkimys edistää opiskelijoiden osallistamista sisäiseen kehittämiseen, ja integroida living lab -toimintamallia kiinteäksi osaksi opetussuunnitelmien toteuttamista.

Tutkimuksen tuloksilla on yhtymäkohtia ja yhtäläisyyksiä Dunne et al. (2011) esittelemän viitekehysten ja heidän esittelemiensä tulosten – onnistumisen edellytykset – kanssa. Mainittakoon, että tässä tutkimuksessa keskityttiin vain osaan sellaisia osa-alueita, jotka Dunne et al. (2011) toivat esille omassa työssään. Tämän pilottitutkimuksen perusteella voidaan tehdä vain oletuksia sisäisen kehittämisen living lab -toimintamallin merkityksestä ja hyödyllisyydestä laajemmalle opiskelijajoukolle osana opintojen toteuttamista ja osana korkeakoulun kehittämistä, olivat kyseessä sitten hallinnolliset prosessit, henkilöstön osaaminen, käytettävät teknologiat, kurssien kehittäminen tai opetussuunnitelmien toteutustavat. Tulokset ovat siis suuntaa antavia, mutta auttavat ja rohkaisevat toimintamallin ylläpitäjiä ja kehittäjiä jatkamaan työtään opiskelijoiden osallistamisen edistämiseksi.

Keskeistä on edistää aktiivista vuorovaikutusta opiskelijoiden kanssa, tukea heitä projekteissa, tarjota mielekkäitä kannustimia, kehittää toiminnan läpinäkyvyyttä ja tarjota toiminnallisia mahdollisuuksia vaikuttaa suuntaan, johon korkeakoulu kehittyy. Tulosten perusteella opiskelijat arvostavat ennen kaikkea oman työn vaikuttavuutta ja merkityksen tunnustamista ja ovat motivoituneita toimimaan muutosagentteina, kunhan riittävät tukimekanismit ovat saatavilla ja kuormitus on tasapainossa hyötyjen ja kannustimien kanssa. Pilottitutkimus antaa viitteitä myös siitä, että toimintatutkimuksellinen living lab:n osallistava toimintatapa koetaan

merkityksellisemmäksi kuin perinteinen opiskelijan ääntä korostava toimintatapa, kuten opintojaksopalautteet. Olennaista on, että opiskelijat voivat luottaa ja todeta panoksellaan olevan konkreettista merkitystä, muuten kokemus jää negatiiviseksi, oli kyseessä kumpi toimintatapa tahansa. Opiskelijoille näyttäisi olevan merkityksellistä todentaa oman työn vaikuttavuus korkeakoulussaan. Tulosten perusteella keskeinen motivaatiotekijä on oman ammattilaisuuden kehittyminen ja työn vaikutusten potentiaalinen kattavuus ja realisoituminen. Onnistumisen kannalta keskeistä on riittävä tuen, kuormittavuuden ja kannustimien tasapaino sekä opiskelijoidenvälinen ja opiskelijoiden ja henkilöstön välinen luottamus.

Tulevaisuutta ajatellen on toivottavaa, että rakenteita ja toimintakulttuuria luodaan, ylläpidetään ja kehitetään sellaiseksi, että opetussuunnitelmien toteutus ja sisäisen kehittämisen living lab -toiminta olisivat mahdollisimman vahvasti integroituja. Sisäisen kehittämisen living lab:n tulisi olla institutionalisoitunut osa koulutusohjelmien opetussuunnitelmia. Volyymien kasvaessa syntyy kuitenkin myös paineita toimintamallin skaalautuvuudelle, jolloin muun muassa henkilöstöresursointiin ja palkitsemiseen liittyviä haasteita pitäisi pystyä ratkaisemaan.

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