

Chapter 15

Leveraging Universities Through IT Governance

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15.1 The Problem

European universities are today confronted by major change, largely as a result of the process of standardization of European education systems. The process, which was initiated at the Sorbonne in 1998 and subsequently expanded in the Bologna Declaration and the Prague and Berlin Communiqués, serves the following primary objectives:

- creation of a two-cycle degree system,
- introduction of a credits system,
- modularization of study programs,
- increased student mobility, as well as
- new quality assurance measures (European Commission 2010, online).

In combination with inadequate government funding and increased reporting requirements, these developments influence today's universities in their positioning strategies. Against this background, universities are facing the fundamental challenge of having to attract excellent students, teachers, and researchers, as well as business partners, and society in general. In this context the deployment of information and communication technologies in support of teaching, research, and administrative processes assumes great significance. In the last few years, institutions of higher education have been transformed into “entrepreneurial universities” (Etzkowitz et al. 2000), with a third pillar added to the traditional focus on

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teaching and research. This third pillar—commercial success—requires universities, like businesses, to employ modern technologies to position themselves on the marketplace.¹

The Internet university, I am firmly convinced, is the technical innovation that will do more to change universities than any other invention since the introduction of the printing press by Gutenberg. (Ritter 1999, p. 102)

Since the development of the first calculating machine by Konrad Zuse in the 1930s, the development of computing has been closely linked to universities and their needs. A case in point is the Z22, the first machine to be developed to handle complex calculations. Since those days the world has seen a variety of innovations developed in and around universities in the field of information and communication technologies (ICT)² with the primary aim of supporting university research. Such university innovations were also of interest to the corporate world. Since the market launch of the Xerox Alto,³ for example, they have made a significant contribution to greater efficiency in everyday office work (office management systems) and to electronic support and control for business processes (business automation). Nor should one forget ICT-supported developments in teaching (eLearning), which have greatly changed the effective range of today's universities. The Alma Mater is increasingly becoming an Alma Mater Virtualis, a designation that lends expression to the addition of a new distribution channel for the universities' existing teaching offering and to the increasing digitization of university processes.

..., the alma mater will survive by offering a lower education quality but will be confronted with global competition from the academic and corporate sectors. The traditional university can evolve to a kind of "alma mater virtualis/multimedialis" by creating a learning and community platform for their students and developing a library of online courses. (Seufert 2008, p. 117)

15.2 Framework Conditions

In view of the cost and complexity of IT systems, such investments presuppose thorough coordination and harmonization with the goals and strategies of the university concerned, especially in view of the need for innovation and process optimization, and the effective allocation of scarce resources. The main considerations

¹ The belief that economic agendas are assuming a fundamental role at universities is not undisputed, as shown by Brooks (2005).

² The *Internet* developed out of the ARPANET, which was set up at the end of the 1960s as a project run by the Advanced Research Project Agency (ARPA) of the US Department of Defense. It was designed as a network linking universities and research facilities in order to make efficient use of limited computing capacities, first in the USA and subsequently worldwide.

The authors of the *Google* idea, Larry Page and Sergey Brin met at Stanford University in 1995 and developed the first prototype of what is now a major listed corporation.

³ The Xerox Alto was the first home computer with a graphic user interface.

are listed on the official webpage for eLearning at the European Union's DG Education and Culture. The site also offers the following summary of one of the most important investigations it has commissioned on the subject of ICT and universities:

From individual initiative to university culture: For most universities a primary challenge is to translate ICT away from individual initiatives into becoming a component of mainstream education, and this is impeded by a combination of the absence of a coherent and comprehensive management approach to ICT integration with a degree of resistance to change in the university culture. (PLS Ramboll Management 2004, online)

Against this background, the role, image, and self-image of university IT departments are changing; university management must now find the middle ground between criticism of the overzealous and premature deployment of IT as formulated by Carr in his three core rules for IT investments (Carr 2003, p. 48) and visionary forecasts of the digitization of our environment (Florida 2007, p. 59 ff) in order to successfully integrate their IT departments in their strategic and operative processes.

At the same time the heads of IT departments must play an active role in universities' decision making and implementation processes. These requirements are strongly driven by a number of factors: the growing expectations of clients, i.e., students, with regard to service offerings, increased scope for adjustment to the needs of the market, enhanced flexibility deriving from increased competition between universities, rapid change with regard to the relevant legislation, and a growing need for cooperation with corporate and research partners as a path to third-party funding.

According to the above-mentioned study, there are three main drivers for more IT in universities: the internationalization and globalization of the education market, growing demands on the part of students who take the use of IT systems in private life for granted, and the universities' need to improve in terms of quality and efficiency in both administration and teaching (PLS Ramboll Management 2004, online). Teichler (2007, p. 23), too, sees internationalization and the professionalization of university management as the main trends of the last few decades with the greatest influence on changing university structures.

Figure 15.1 shows the different expectations of students, faculty, administrative and research staffs, and business partners. These expectations derive from the fact that the groups involved all have experience with extra-mural IT solutions and have corresponding expectations of university ITS.

The Vice-Chancellor of the Technical University of Berlin formulated her expectations of campus management systems as follows:

The changes in the university scene in recent years reflect the trend towards the integration of various sectors of the university that previously worked largely independently. The need for integration derives from the expectations of students and faculty for access to numerous services on a self-service basis, as in everyday life, so as to have more time for study and research. Implementation of an integrated service offering, however, presents the universities with various technical and organizational challenges. (Gutheil 2007)

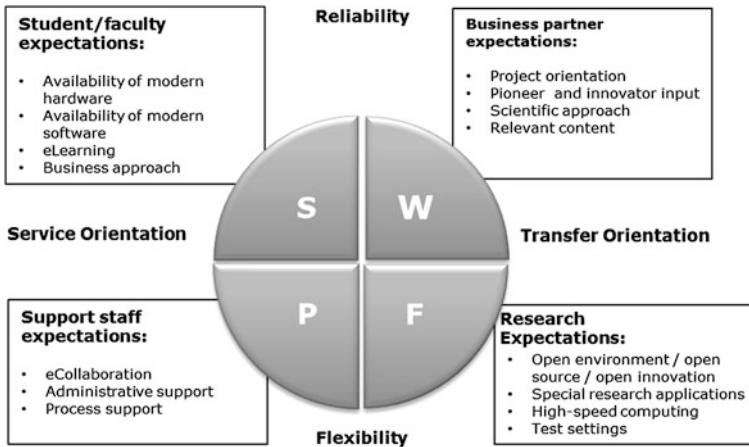


Fig. 15.1 Factors influencing the digitization of universities

Another driving factor is the growing competition between universities and the developing university market. This aspect is a source of major changes and additions to the functions of university IT departments, as active communications and information services play a minor role in a non-competitive market.⁴ One of the effects of this factor is the need for structured and standardized data and information management for purposes of data analysis, while data presentation and management in the Internet or Intranet also play a role. In a competitive market, internal university information is also relevant for sourcing and performing structured searches of external information (benchmarks).

A third factor can be found in society's expectations with regard to the further integration of business activities in the university context, as reflected in the growth of integrated projects and joint activities. For university IT departments, this above all involves the need to support collaboration between external and internal actors. Joint data management, authorization rules, investments, and access to infrastructure are challenges that need be addressed in this context.

The last major factor to be considered is internationalization and the need for greater collaboration in the use of research infrastructures. This presupposes the integration of external research and development partners in university and/or research activities. In addition, internationalization is driving user expectations with regard to the multilingual character of IT systems, training for visitors on existing systems, and also the tendency to accept international standards in many

⁴ In the following, university IT departments are referred to as "university IT services" (university ITS).

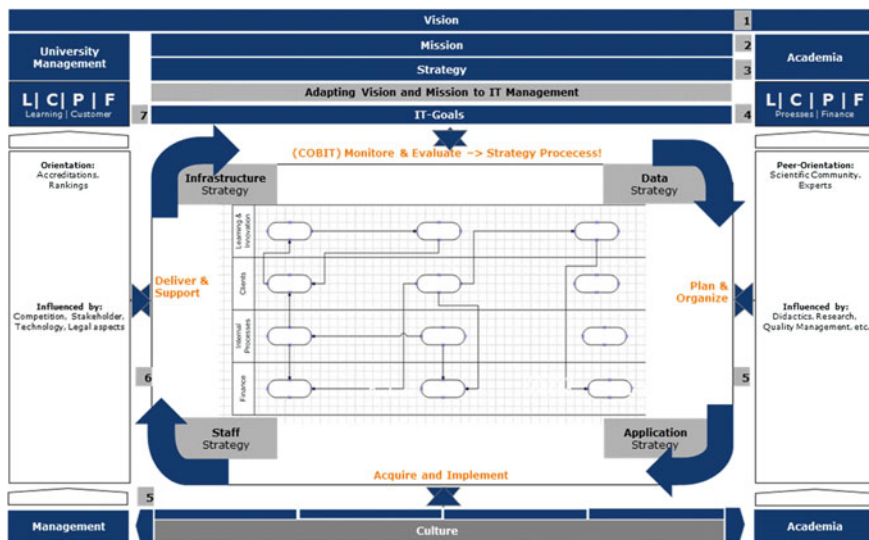


Fig. 15.2 University IT governance model (Mirski 2010, p. 243)

spheres of daily university life. Internationalization also impacts the distributed used of IT infrastructures, as in the case of grid computing.⁵

All these factors are particularly relevant in the university context, although corporate IT departments are facing challenges of an equal magnitude, if not of the same character. The main source of debate on the subject of IT departments is the high level of capital spending on information and communication technologies and hence their effective deployment. In the literature, the term ‘IT governance’ is now in general use. IT governance describes the integration of IT departments in corporate strategy with the backing of the relevant models and methods. IT governance is derived from the corporate governance philosophy and is targeted at the optimum deployment of IT for the overall success of the company. There are two outstanding institutions working on the theory and practice of IT governance, namely the Sloan School of Management at the Massachusetts Institute of Technology (MIT) with its Center for Information Systems Research (CISR) headed by Professor Peter Weil, and the IT Governance Institute in the UK. Weil’s clear definition of the thinking behind IT governance is as follows: “IT governance reflects broader corporate governance principles while focussing on the management and use of IT to achieve corporate performance goals” (Weill 2004, p. 4).

Figure 15.2 shows the aggregated services that are generally to be provided by university ITS plus a further aggregation of four key decision-making factors or

⁵ The term ‘grid’ was coined in the mid 1990s to denote a proposed distributed computing structure for advanced science and engineering. Foster (2001, p. 1).

service groups required for management and integration in university strategies. With external and internal factors influencing the operative and strategic implementation of IT strategy, four items are actively implemented in line with the COBIT® reference model:

- Monitoring & Evaluation
- Planning & Organization
- Acquisition & Implementation
- Delivery & Support.

This reference model, which was developed by Information Systems Audit and Control Association (ISACA), focusses primarily on upgrading the value chain and is targeted at senior management (Hansmann 2009, p. 26).

The purpose of this paper is to show that interaction between university management and university IT departments is essential for optimum results for universities. A model describing this interaction is to be developed and will be proposed. It combines new and familiar items in a joint approach to a university IT governance process.

15.3 The Impact Model

An IT department that simply waits until somebody else decides something loses respect and recognition and customer satisfaction. That's not the way it works. (Interview, IT manager 2010)

The IT governance model presented here has been developed from Hinterhuber's strategic management model, which provides the frame. It takes account of the need for integration in universities' strategic management processes, as well as international service organization standards, namely ITIL, and IT implementation in projects and controlling COBIT. The impact model incorporates the dual leadership idea in universities (academic and management) with the reference and peer aspects that are relevant for the implementation. It shows the procedures and effects of strategy processes from the vision of the university to the implementation of IT governance within the university ITS department, and its feedback and integration in the strategy process. The model enables universities to organize their individual activities and uses of information and communication technologies to form a complete and logical whole, and to establish meaningful relations between the individual components. This is equally relevant for university management bodies, which often lack the overview to recognize the potential and also the risk factors of IT, and for heads of university IT departments, who may lack insight into the strategic management of universities. The power of the model and its potential applications derives from the use of the terminologies and concepts employed by both parties in an integrated presentation that on the one hand offers a

clearer understanding and on the other is a source of specific approaches and procedures designed to facilitate the necessary implementation of IT governance in universities.

15.3.1 The Impact Model for IT Governance in Universities

Through the potential provided by modern data processing, simulation and digitization, information and communication technologies have also brought fundamental change to many fields of research. (...) A modern IT infrastructure must guarantee management of the research results generated and provide any time/any place access to data and services. (Oberhuemer 2006, p. 33)

The IT governance model for universities provides an integrated picture of the main aspects involved in successful IT governance with the goal of shaping the strategy process and the strategy development and implementation processes needed for an effective IT service department.

Implementation of IT governance starts by formulating the following items: first, the university's vision, second, its more specific policy, and third, the strategies for the university's various fields of action. Since—regardless of the university's formal organization—governing the university must of necessity involve an academic approach on the one hand and a management approach on the other, this dialectic is represented in the model by the pillars on the left and right. For all major decisions, it is necessary to integrate the two sides and their respective arguments, a process that can be handled via various bodies. What is important for the coherence and success of IT governance is an unequivocal formulation—with the backing of as many players as possible—of the university's vision and fundamental values. At this point it should be mentioned once again that basic values like trust or openness can generate very specific IT decisions and implementations, which may either have to be taken in the individual case—and there can be hundreds of such cases—or, and ideally, which can be derived from the university's vision and policies. Trust as a fundamental value, for example, can be reflected in various authorization management decisions (for data access), which would need to be included in the data strategy.

Once the strategies have been formulated by university management, preferably with the involvement of the heads of university ITS, it is essential to develop the university's IT policy and create the corresponding operating framework. The binding definition and review of these objectives is a sine qua non for operative implementation in keeping with a policy of continuous development and improvement.

As a tool for evaluating progress made, use could be made of a strategy map as proposed by Kaplan and Norton, as that combines the four aspects of a balanced performance review with a presentation showing the meaningful links and relationships between the individual strategy elements.

Ultimately the effects of this procedure will have an influence on the university culture as the basis for change management and an expression of the integration of IT governance at the level of university management and Academia.

Coming from different academic and national traditions, the university appears to be arriving at a common entrepreneurial format in the late 20th century. (Etzkowitz et al. 2000, p. 313)

According to Stratman, universities are distinct organizations that clearly differ from profit-oriented enterprises and also seem to have (too) little in common with purely administrative bodies. If, in the light of increasingly scarce resources, we need to take measures to increase efficiency and effectiveness, and thus improve the university's competitive position, there is still the question of the areas in which this would be most promising and of how the necessary adaptations or changes can be handled, all the more so as, according to Stratman, this does not involve maintenance of a 'trivial machine' but rather is embedded in a complex process of organizational development (Stratmann 2007). His finding is also confirmed in this study, and it sheds light on the reorganization of university IT service departments and their potential. IT reference models have been found to be generally suitable for this purpose and are correspondingly appreciated at the level of IT management. Their application in universities, however, is considered difficult, if not impossible, especially since most European university ITS departments have bureaucratic structures, which must be changed at a higher than departmental level if the measure are to be effective.

The main objective and finding of the underlying investigation relates first of all to the structuring, reflection, and adaptation for implementation in the university environment of the IT management solutions employed in trade and industry in the field of IT governance. This was performed with the help of a questionnaire—with the support of most of the heads of university IT departments in Austria—plus related expert interviews with the department heads. In a triangulation approach, the results were summarized and their relevance presented in the form of a model.

This work was not performed, however, in order to produce another building block for the 'industrialization' of universities. On the contrary: universities are far more than institutions of education and research whose processes can—or must—be 'healed' with the help of modern management methods. As this paper shows, the optimization of existing processes through the introduction of IT governance can help to greatly facilitate daily working and also strengthen the competitive position of the university involved. And competitiveness can relate to a combination of many different aspects, such as excellence in teaching, excellence in research, excellence in knowledge transfer to the business community, excellence in management and administration, enhancing the brand value of the university's image, etc.

This paper offers a structured picture of the complexity of the functions of university ITS; it proposes a model based on current standards and also adapted to the specificities of universities, and—in the framework of strategic management—it makes a contribution to the integration of IT departments in university

structures. In addition to the theoretical basis, the model has the support of empirical research. It is clear, however, that the findings generated and the model developed need to be adapted to the university concerned and its specific situation, “(...) if we accept that universal best paths for organization are not available to universities” (Wissel 2007, p. 11).

Nevertheless, an evaluation of the empirical findings shows that use of solutions employed in trade and industry—like a service desk for the more effective management of customer enquiries can generate clear improvements in terms of the IT offerings, bearing in mind that a university culture with basic values based on freedom and individuality, tends to prevent the unreflected introduction of such standards.

At all events, the integration of IT departments in the university strategy can be considered a promising solution, as the investigation shows, because it is likely to have positive effects in terms of structural improvements, quality improvements, and innovation.

Increased standardization of university processes is now the order of the day. But, as this investigation shows, the simple transfer of standards and processes that have proved successful in the business world is not necessarily the answer; that solution rarely delivers the desired results.

This paper focusses the challenges confronting university ITS departments and in response proposes a stronger degree of standardization and adaptation of university IT structures to those of the business community. The various processes—some modified, some new—are designed to deliver the motivation, when professionally deployed, to empower the universities to concentrate on those tasks that go beyond the daily round.

However, such structural harmonization—*isomorphisms*—are no guarantee that structures will actually be improved, and they must always be subjected to careful scrutiny. Lean and sustainable IT support for universities must be based on a coherent overall concept that should never be subjected to experiment or the premature acceptance of external standards.

In view of today’s wide range of applications in the field of information and communication technology, and the diversity of solutions available for implementation, the new role of university IT departments additionally proposed in this paper must involve a consultant function, too.

At this point the following criticisms should also be mentioned:

- Duration of the investigation:
- the investigation was conducted over a 4-year period, in which the various steps—from study of the literature to the empirical research and evaluation of the results—were realized.
- Small sample size: as the number of universities in Austria is limited, individual interviews were performed by way of compensation. Extending the investigation to include other countries would certainly round off the picture obtained.

According to Wissel’s working hypothesis, the diverse expectations of society in terms of education, research, and science in the modern context are expressed in

organizational utopias. In the current discourse, there is first of all the multiversity, second the virtual university, and third the ascetic utopia. The multiversity can be seen as a phenomenon of the growing society with its increasing tendency to scientification. The university is assuming more and more functions as a learning organization. On the other hand, we also have the virtual university, which no longer needs to learn because it is lean and flexible, i.e., it is network-based and virtual. “The tendency is for faculty to no longer be part of the organization but to be located out on the marketplace; scientists constitute a market where knowledge is bought. The organization buys knowledge on that market and sells it on the education market” (Wissel 2007, p. 304).

This classification cannot of course fail to impact the organization and also the self-image of universities and their central service facilities. The core activity of a department at a multiversity may be based on a much less centralized approach and be less economical in terms of resources than that of a virtual university, whose core competence relates to the management function. And there may also be a difference with regard to the need for or the role of IT solutions, whose power in fact lies in networking and the visualization of organizations. The fundamental hypothesis of this investigation was the need to see IT services as a way of increasing the efficiency, effectiveness, and innovative strength of universities. On that basis a model was designed which is targeted at the implementation of a functioning and coherent system that enables the heads of IT on the one hand and university management on the other to work together with the objective of achieving the university’s strategic goals with limited resources. The sparing use of resources need not be the main focus of university development, however, even though that was felt to be a central element and source of motivation for the interviewed heads of IT, although it was not explicitly queried, which might possibly have led to other and more profound findings with regard to the factors involved. At all events, the model in itself is shaped by this background situation.

A qualitative study involving heads of university IT departments in Austria, which was performed as part of one of the author’s doctoral dissertation, shows that they do not have an unequivocal view of IT governance, but they do associate it with concepts such as added value, reputation, and professionalism. They additionally associate the implementation of IT governance with items like management ratios and their application in the context of the balanced scorecard, and also—and this is particularly interesting—with better communications. With regard to organizational recommendations for improved IT governance, the interviewees speak of the need to develop personal relations with the decision makers in advance of the measures to be taken, to create a help desk, and to establish a steering committee or IT platform for departmental heads to present proposals and give them thorough reflection. It was found that the university’s Chief Information Officer has a major role to play and a decisive influence on the anchoring and integration of university IT services in university strategy.

15.4 Summary

This paper, which is based on one of the author's doctoral dissertation, shows that interaction between university management and university IT departments is essential for optimum results for the university deriving from the use of information and communication technologies. A model describing this interaction was developed and proposed in the dissertation. It combines new and familiar items in a joint approach to university IT governance and shows that strategic and operative aspects must be implemented hand in hand in order to generate added value for universities through the deployment of information and communication technologies.

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