

Information Technology Infrastructure Library Introduction in the Higher Education Sector - Exploration of the Use of ITIL at European Universities

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Keywords

Information Technology Infrastructure Library, ITIL, ITIL in Universities

1. EXECUTIVE SUMMARY

As customer orientation together with standardisation of IT processes has become an important competitive factor not only business decides to introduce IT Service Management (ITSM) in their operations. Also higher education environment is expected to introduce process-oriented solutions and cover increased demand for IT Governance, audit and control. This continuous development from technology to customer orientation - influenced by the fact that universities depend on activities associated with creating, using and sharing information - has an impact on enhancing competitiveness of the university. In order to attract new students as well as faculty staff to enhance the competitive advantages of a higher education institution, these organisations implement innovative IT systems at campuses as well as they decide to implement process-orientated ITSM.

1.1. Objective

The main objective of this paper is to discuss the current adoption status of the IT Infrastructure Library (ITIL) or rather ITSM at European universities. The importance of ITSM frameworks, with special emphasis on the ITIL framework, is becoming internationally popular and will constantly grow. As a consequence, the idea of introducing the ITSM concept and ITIL framework not only lets the higher education sector identify, streamline and standardise IT processes but also allows to save costs and remain a modern institution attracting researchers and students.

We analyse the level of ITSM adoption at several higher education institutions in Europe. The main questions are connected to the description of the status quo of ITSM implementation as well as the examination whether European universities are willing to standardise their service management processes and to implement the ITIL framework. The data for the purpose of this paper was gathered in form of a qualitative study. A sample of five European universities was analysed - the data was collected with the use of telephone interviews conducted with employees responsible for IT. We focus on the level of ITSM implementation as well as the process and customer orientation of IT services at the chosen universities. Moreover, particular attention is paid to the development of application of ITIL in the evaluated organisations.

1.2. Conclusions

The interviews we conducted as the first explorative study on this topic show that ITIL is mainly introduced in larger higher education institutions in Europe. In several institutions ITIL implementation projects have been started, but they are at a very initial stage. However, it seems that the country in which the institution is located does not have an influence on the fact whether the institution is introducing ITIL. But the interviews also show that the implementation of ITIL is a long-term project hindered by many factors including human factors. Finally it can be indicated that European higher education institutions are willing to professionalise their IT service provision. However, further research is needed to examine whether this will be fulfilled and if the ITIL implementation projects will be successful.

2. IT SERVICE MANAGEMENT AND IT INFRASTRUCTURE LIBRARY

Due to the fact that the development of state-of-the-art technologies has been very strong in the last decades, the usage of information technology (IT) and information systems (IS) has become critical for organisation operations. On the one hand the importance of the use of IS is nowadays determined by their ability to help organisations to win competitive advantage, cut costs, gain new customers as well as to protect from being outperformed. On the other hand, the importance of the quality of IT systems operation, its processes and customer orientation has been constantly increasing. IT is perceived as one of the most important aspects in an organisation, which potential is under constant development. Yet, IT management can be risky and uncertain not only due to the fact that IT objectives are neither developed nor standardised enough. (Cater-Steel, Toleman, & Tan, 2006; Edwards, Ward, & Bytheway, 1995) The current problems and aspects that constantly need to be considered by IT management can be stated as follows: (Hardy, 2002)

- fragmentation and thus, growing complexity of IT environments
- unstructured and ad hoc decision making process among IT managers leading to frustration of users
- the role of technology leverage vs. organisational flexibility in development of new business strategies
- lack of skilled IT managers
- disappointing IT service levels as well as not controllable IT costs
- marginal Return on Investment (ROI)/productivity gains on technology investments

Once stated that IT is to provide services an organisation requires to operate and develop, it should be acknowledged that IT as well as IS are to be managed consistently as a whole. Technology 'silos' hinder organisations from focussing on customer and end-user requirements. That is why service orientation is a means for communication flows improvement and, by this, enables a company to orientate their processes towards customers and end-users. (Belaire, Hernandez, & Palmer, 2005)

IT Service Management (ITSM) embodies the idea that the IT department is a service organisation that is delivering services to the business. Therefore, IT should be focused on creating and delivering IT services that provide value to the business. ITSM is focused on systematically providing valuable IT services to the business. (Belaire et al., 2005) The idea of introducing the ITSM concept not only lets higher education sector identify, streamline and standardise IT processes but also allows to save costs and remain a modern institution attracting researchers and students. (Bick & Börgmann, 2008)

For the implementation of the concept of ITSM, often process frameworks are used. The IT Infrastructure Library (ITIL) framework is the most used framework and is considered as a de-facto standard in the area of ITSM. It is a generic, vendor-neutral framework for the implementation of IT processes. It is a guideline referring to several best practices in the domain of IT management. As such, it describes consolidated findings, models and architectures coming from practical experiences, and can serve as a guideline to the setup and operation of a professional ITSM. According to its very general structure ITIL can be assigned to any organisation. Overall characteristics of the ITIL framework is to 'adopt and adapt' (ITpreneurs Campus, n.d.) processes, which means that an organisation, that decides to introduce the framework, can determine how and which ITIL levels are to be implemented. According to the fact that the aim of this article is to analyse the level of ITIL adoption in higher education institutions we will not further describe the ITIL framework but refer to the common literature about ITIL. (E.g., Cartlidge et al., 2007; Hochstein, Tamm, & Brenner, 2005; OGC, 2007)

3. ITIL USAGE IN THE HIGHER EDUCATION SECTOR

3.1. General Aspects

Creating, using and sharing information are among the most important university prerequisites for teaching, learning and carrying out research projects. Sustaining high quality information, effective operational control as well as defining the strategic direction requires a responsive and scalable way of delivering IT services. The IT in a large university is deployed practically in every part of its func-

tioning. However, IT at universities covers much more than just managing infrastructure and its processes - as stated in "TCU Environmental Scan" (n.d.) the focus of IT is increasingly put on the content, created or managed with the use of the technology, as well as the customers who use the IT tools. In other words, IT deployed at higher education institutions should contribute to efficient use of existing resources as well as improve the understanding of how the service is provided. (Fletcher & Peasley, n.d.) The need for improvement of the IT service provision at higher education institutions is triggered by different reasons. Firstly, the improvement is connected to growing administrative burden caused by the Bologna process introduced at European higher education institutions as well as an increasing number of students. At the same time, increased competition among higher education institutions as well as growing students' expectations in terms of better service provision are intensifying the pressure for change at universities. As IT has become a critical factor, higher education institutions have to ensure that investments in IT infrastructure are constantly viable. (Göcks & Kuper, 2007; University of Canterbury, n.d.)

University IT infrastructures usually consist of a large number of different systems. Therefore one can state that the management of IT service provision is particularly required at higher education institutions. However, IT management at the university is often uncoordinated and occurs both at central administration and at faculty (department) level. (Updergrove & Wishon, 2003) There are still a number of universities and colleges where IT infrastructure is not supervised by IT managers or even is not managed at all. As a result a number of computer stations placed at different faculties are often controlled not by central IT unit, but by faculty members with little or no IT administration experience or training. What is more, such situation creates a conflict in competition for IT resources between central and local IT service providers etc. (Global Learning Innovations, 2007) The reason for this lies in the historically grown IT infrastructure of higher education institutions as well as the independency of the academic departments. In the context of ITIL implementation a major obstacle lies in decentralised IT infrastructure management at the university, which could hinder e.g., user support service once ITIL is implemented.

In higher education institutions, IT is deployed in practically every field of operations and helps them to stay competitive. The most important benefits of the introduction an ITSM framework like ITIL are connected to the enhancement of reliability, value and effectiveness of core processes within an organisation. In terms of general benefits that are connected to the introduction of ITIL, the following aspects can be raised: (Cartlidge et al., 2007; Hochstein et al., 2005; Tseng, 2007)

- client/service orientation that leads to improved customer satisfaction, higher IT service quality as well as increased business profits and revenue
- efficiency and cost reduction due to standardisation, optimisation of processes, process automation, reduced rework, lost time reduction, as well as improved usage of resources and their enhanced management
- transparency and comparability as well as effective problem avoidance through process documentation and monitoring
- saved reaction time of the management as well as improved time to market for new products and services
- increased user and customer satisfaction with IT services
- improved decision making and optimised risk

Internal structures and processes existing at the universities are different from those defined in the business as e.g., the criteria as well as the managers' power and roles are more complex, rollover of top managers is more frequent and greater creation of incentives for effective and efficient performance is more difficult. (Liu & Ridley, 2005) In order an ITSM deployment could be successful, several issues that characterise university functioning have to be taken into consideration. Firstly, customers at universities are often not willing to search for vendors with a better price-performance ratio on the market. Secondly, the strong decentralised, little co-ordinated university IT services are often managed by faculties. Moreover, poor service orientation results in the fact that the current ITSM practice is largely unstructured. (Wannemacher, 2007) Though, the specialty of the field of higher education should be taken into account in order to deploy the advantages of service orientation. For this, several prerequisites should be considered: (Dey & Sobhan, 2007)

- identification of educational needs and available resources at the institutions - low staffing level should not dissuade the institution from adopting available best practices
- in order to accept central IT standards improved communication between central and departmental IT groups as well as IT personnel, top management and other stakeholders is essential
- technical support for IS planning and designing should be a core act of improvement process
- service performance measurement should be implemented
- code of conducts/ethics for learning, teaching R&D and administration should be introduced to ensure successful implementation
- as often universities are not in a position of generating sufficient fund for framework implementation, heavy financing (e.g. subsidies) as well as well defined provision of budget is advised
- if needed, university projection of enough justifications and necessary modifications to statutes, ordinances and acts are to be taken

3.2. Methodology of the Conducted Empirical Study

As stated above, the aim of the performed empirical study was to analyse the level of ITSM adoption at European higher education institutions. For that, we conducted five in-depth interviews with employees in the IT departments of European higher education institutions. The survey was conducted in Portugal, Poland, Sweden and Great Britain. All interviews were, according to the long distance, telephone interviews. They were recorded digitally and later transcribed in order to analyse them in detail. To guarantee anonymity to the five interviewees, we use the terms 'Interviewee A', etc. instead of using their names.

3.3. Description and Analysis of Outcomes Gained

The following descriptions are based upon the various aspects we covered in the interviews. Each section is followed by a short analysis.

Level of university IT adoption

University A is a rather small private university. It has one IT department, which is responsible for providing different IT services. University B is located in different cities that are up to 100 kilometres away from each other. This impacts the complexity of IT infrastructure and the way in which the IT service is provided. B has four divisions that support IT services. In parallel to the central IT department there are local IT staff hired at the faculties. University C has 12 campuses and 15 IT units. Each unit handles similar processes, but implements their own standards. Additionally, there is one IT unit which supports central matters, e.g., email and administrative services. University D is a campus of a private international business school. It has one IT department at the campus that offers thorough IT services for students and staff. Each faculty at each campus hires additional employees who support IT operations.

One can find similarities in the way how IT organisation at the big universities B, C and E is developed. They have a central IT department that takes care of the central university matters as well as faculty IT staff that is responsible for local IT service provision. In turn, at smaller universities like A and D one can find only one IT department, which is responsible for the overall IT service provision. Therefore, one can indicate that the number of students has an impact on how the management of IT service provision is organised at the analysed universities.

Identification of institutional IT department stakeholder groups

In most of the universities the interviewees identify students as well as staff as the core stakeholder groups of the IT department. The interviewees divide the staff into academics and administrative employees. Additionally, interviewee C lists alumni as a group served by the IT department. Interviewees A, C and D identify students as the most important group served by the IT department. The stakeholder groups are clearly defined at every analysed university.

University vs. IT department strategy

In terms of alignment of the IT strategy to the overall university strategy one can observe many differences between questioned universities. Three out of the five interviewees (B, C, E) state that IT strategy is implemented and followed by the IT department. Interviewee D does not clearly state that the IT department has any specific long-term IT strategy. In turn, as far as university A is concerned, the IT strategy is not introduced here.

According to the alignment of IT and university strategy, at university C the IT board has formulated a strategic document together with university authorities. At universities B and E no university strategy is developed; therefore, one cannot speak of any alignment. At university B the autonomy of faculties is high. However, an overall IT strategy is implemented. In turn, interviewee E underlines the importance of university strategy in preparing an IT strategy and agrees to the fact that such document should be created at his university.

Non-existence of the IT strategy at university D might be connected to the small size of the campus as well as the dependence of the university on headquarters' decisions. As for universities B and E, the alignment of the IT strategy with university's strategy does not take place due to the fact that both universities do not have any university strategy. Such insufficient communication between IT department and top management might hinder proper IT service framework introduction.

Standardisation and customer orientation of IT processes handling

In terms of standardisation of IT processes, we firstly asked whether the universities had a helpdesk. Two institutions (C and E) have implemented helpdesks. Interviewee E claims that the introduction of a helpdesk, only for the staff, that occurred two years ago, served as a first step towards customer orientation of the IT department. In turn, interviewee C claims that the university has several helpdesks, divided according to their customers (staff, students) and among the different IS they support. Besides, interviewee C reports, in the future all helpdesks are planned to be consolidated into one helpdesk system.

As far as university B is concerned, the registration for the courses as well as the internet registration for prospective students is run with the use of standardised IT processes. Moreover, processes used to remote local networks as well as management system are also standardised. Interviewee B adds that in order to standardise further processes in the future, the university plans to implement a campus management system.

As far as standardisation is concerned, at all universities some part of IT processes follow certain templates. However, most universities plan to improve their process performance and implement new IT projects. One can also state that customer orientation towards staff rather to students is more often to find at larger universities. This might be caused by the fact that administration at large universities is intensively developed and requires IT support in the first place. The analysis leads to the statement that, although IT departments are able to identify their stakeholder groups, they provide customer orientated IT service only to some of the groups.

The level of ITIL implementation at the universities

Concerning the implementation of the ITIL framework, three universities (B, C, E) have decided to introduce the framework. At every of the stated universities the ITIL implementation projects are at different initial stages.

Although ITIL has not been implemented at university B yet, the university authorities have already decided to implement the framework in the future. According to the interviewee the ITIL framework will be redesigned for the purpose of the university - for now, the interviewee is about to prepare the documentation of the ITIL implementation.

The IT department of university C is about to establish the ITIL framework at the university. According to the interviewee it was decided to implement version 2 of the framework. However, parts of version 3 as well as the ISO 20000 framework will also be implemented. Moreover, it is important to add that likewise university B at university C ITIL is going to be adapted to the requirements of the organisation.

According to interviewee E the university is at an initial stage of ITIL implementation. IT staff is currently under ITIL foundation training scheme, some of the IT employees have already obtained the ITIL Foundation Certificate. There is a helpdesk already introduced at the university, further steps

will cover implementation of configuration management database; the processes incident and change management are also going to be implemented.

As stated by interviewee D the reasons for not implementing ITIL at the university lie mostly in the small size of the campus as well as the lack of the need to “implement anything more advanced”. As far as university A is concerned the institution neither have nor intends to implement the ITIL framework - the interviewee does not give any reasons for such status quo.

One can observe that ITIL implementation at three universities, although in its initial stage, has already impacted customer orientation described in the previous section. However, as far as implementation of ITIL in smaller organisations is concerned, ‘just-do-it’ approach described by interviewee D serves as an important reason for not introducing the ITIL framework.

Reasons for ITIL introduction

At the analysed universities B, C and E ITIL is set up or is going to be implemented. Interviewee B underlines the need of constant improvement of the level of service provided by the IT department. Moreover, improvement of the university’s competitiveness is also mentioned as the reason for the introduction of ITIL at university B. As far as university E is concerned, the reason for ITIL introduction lies in the improvement of the quality of the IT services due to the fact that the university has constantly been growing and the amount of customers of the IT department is increasing. In turn, interviewee C mentions the need for “good ideas” introduced by the implementation of a new framework as the main reason for the ITIL introduction. He claims that: firstly, ITIL gives an opportunity to provide an insight into “how things are working”. Secondly, once ITIL is implemented the IT staff “makes sure that things are done in the way they should be done.”

Comparing the reasons for ITIL introduction such aspects as customer satisfaction improvement, optimisation of processes etc. mentioned by the interviewees confirm the theoretical arguments of this topic. In turn, cost reduction as a reason for ITIL implementation is not discussed by any of the interviewees.

Concurrent process frameworks implemented at the university

In terms of process frameworks concurrent to ITIL two out of three institutions (C and E) have decided to introduce other frameworks as well. At university C CobiT, ISO 17799 and ISO 20000 standards are implemented. As far as university E is concerned, the IT department plans either to implement a framework in project management or to create a project management framework suited for the purposes of the university and based on existing standards.

Concurrent process framework implementation at the presented universities covers different functions in IT management. Implementation of such frameworks as CobiT, ISO 17799 is often combined with the implementation of ITIL - the example of university C confirms this tendency.

IT outsourcing

As far as the IT outsourcing of IT services is concerned, only university D has decided to perform all activities in-house. As interviewee D states the reason lies in the hands-on approach of the IT department employees as well as the easiness of maintenance and support of the running systems. On contrary, at university B the decision to outsource the SAP system implementation has been made due to the fact that university staff does not possess the knowledge that would allow them to implement such a complex system. However, except for the SAP implementation, all the other IT activities are run in-house. Interviewee B claims that “especially in Poland, there are no business organisations which would know university requirements.” As far as university E is concerned server maintenance support is outsourced due to the fact that the staff “cannot process such kind of knowledge in our [IT department] team.” In turn, interesting outsourcing practices in form of cooperation between universities can be found at university C. The university has signed agreements due to which other universities run some processes for university C, which in turn runs other processes indicated in the agreement. As interviewee C stated, this form of outsourcing to expert parties is planned to be extended by the universities in the future. As far as university A is concerned except for printing there are no other IT services outsourced.

Lack of specific knowledge as well as cost cutting are identified as the most important reasons for IT outsourcing. In turn, the reason for the lack of outsourcing activities at university D lies again in the fact that the campus is not big enough and the IT department is able to manage all services themselves.

Key difficulties faced by the IT departments

The purpose of this section was to find out what are the main problems of the implementation of ITIL, or other ITSM frameworks. At those universities which have implemented neither ITIL nor any other framework, the interviewees were asked to list general problems of IT service provision.

Two interviewees (C and E) claim that the greatest difficulty in ITIL implementation is the staff reluctance to the change of processes. As far as the difficulties in IT service provision at university D are concerned, the number of “impractical and unnecessary” requests from the staff is the biggest problem. In terms of handling the IT infrastructure the interviewee does not find any difficulties. Likewise interviewee D, interviewee A does not see any difficulties in IT service provision at their university. As far as university B is concerned, the interviewee lists problems such as the lack of IT specialists who prefer to work in business sector as well as the lack of money at the university.

The problems with the implementation of new IT solutions or provision of IT services are mostly connected to the human factor. In these terms the obstacles reported by the interviewees cover the problems also concerned in the common literature about ITIL implementation and other change initiatives. In turn, problems highlighted by interviewee B are more connected to the overall situation on the Polish market rather than to the drawbacks connected to the IT service provision as such.

Co-operation between IT departments of different universities

All of the analysed universities are co-operating with other higher education institutions in terms of sharing their IT best practices. Apart from IT outsourcing at university B the staff of the IT department regularly attends meetings with representatives of other Nordic universities. Similarly to university C, the representatives of university A also take part in meetings with other universities. In sharing best practices at both analysed universities in Poland, interviewee B as well as interviewee E inform about regular meetings organised for the Polish public universities. As far as university D is concerned, sharing of best practices takes place on an international level. However, the knowledge is not shared externally but with the main campus in France.

Knowledge sharing between higher education institutions is a standard at every of the analysed universities. The exchange is performed on a country or regional level. Such policy can not only let university IT professionals consult their steps in the progress of projects evolution but also allows them to get new ideas from staff employed at other universities.

IT performance measurement

IT performance measurement serves as a key component of strategic planning and comes down to assessment of intangible benefits that arise from IT initiatives taken up in an organisation. According to the interviewees, universities C and D have introduced measurements at their institutions. At university C, all customers of the IT department are questioned once a year. At university D the students are questioned at the beginning and at the end of their studies. It is important to add that apart from reasons such as learning from customer feedback in order to make improvements (as stated by interviewee D) the IT department staff also wants to find out whether their customers are convinced about the fact that the IT department can improve the level of service provision (interviewee C). As far as the IT performance measurement at university E is concerned, the interviewee claims that the IT department has decided to measure customer satisfaction. The measurement is going to be implemented before the major changes in the IT infrastructure are introduced at the university. The measurement of customer satisfaction is planned to be repeated after the implementation every year.

IT performance measurement is a very important topic covered by the main ITIL guidelines. As the ITIL implementation at the chosen universities has not been finished yet, it might be also a cause why IT performance measurement has not been implemented so far. However, the lack of performance measurement will disable the IT departments to analyse the improvement process before and after the ITIL implementation.

Adoption of Service Level Agreements (SLA)

As far as the signing of SLA is concerned, only university C has signed such document in terms of the external service. In turn, interviewee E claims that a SLA is going to be signed, but as such a step requires change in the university organisation and is extremely time-consuming, the introduction of SLA might take time. The rest of the analysed universities have not signed any SLA.

The adoption of SLA is an important precondition of the alignment of IT services with organisation's strategy as well as a central incentive leading to the success of service management. Therefore, one might assume that as long as the SLA are not introduced at the analysed universities, the value of the IT service might be impeded.

4. CONCLUSIONS

The importance of ITSM, respectively ITIL, in a higher education institution cannot be underestimated. Analysis of the reasons as well as potential outcomes of the implementation of the framework confirms that ITIL can serve as a basis for improvement of the competitiveness of the university. It seems that the flexibility of the ITIL framework as well as the possibility to adjust it to higher education institutions makes the ITIL framework perfectly suitable for the introduction at such institutions. The significance of ITSM frameworks, with a special emphasis to the ITIL framework, is becoming internationally popular and will constantly grow. Our qualitative study described in this paper shows that three out of five universities already started an implementation of the ITIL framework, although they are at a very initial stage of development. The outcomes of the study clearly show that ITIL is mostly adapted at large universities, and it seems that the country in which the institution is located does not have any influence on the fact whether the university authorities decide to introduce ITIL.

The most important reasons for the implementation - such as the constant improvement of IT service provision or enhancement of competitiveness - not only impact significantly the university IT strategy but also are to let the universities achieve their overall strategic plans. However, the interviews have shown that the implementation projects are long-term projects hindered by many factors, especially human factors. Thus, there are a number of obstacles that need to be tackled by the IT department as well as the university authorities so that the ITIL implementation can be successful.

Besides, one can state that the departments at the analysed universities lead a policy of global introduction of IT strategy. Different IT projects are developed in order to enhance other aspects of IT service. However, in the same time one can argue that the lack of alignment between the IT and university strategy at some universities might be an important obstacle that could hinder the management of IT projects as well as impede the ITIL implementation or even lead to an improper introduction. On balance, it is important to add that the prerequisites of the ITSM framework introduction such as standardisation and customer orientation have to be addressed by the university IT departments more extensive as nowadays those aspects are not thoroughly managed.

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