

Digital Transformation and the Changing Role of Student Administrators: A Case Study

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ABSTRACT

Information and communication technology is at the core of administrative work and it has a significant influence on work and on the work environment. This paper presents a study designed at understanding the digital transformation of student administration at a large university. Through quantitative and qualitative data, different aspects of the digital workplace are highlighted. The study is part of the preparation for a new student information system that will radically change the work processes of student administrators. The current state of the transformation is described with help of the demand-control-support theory. Results indicate that motivational factors score less well than hygiene factors. The paper concludes by discussing possible strategies for increased resilience during the transition to a new student information system.

INTRODUCTION

Rapidly increasing use of computer systems in all sectors of work life has had significant influences on efficiency and flexibility in organisations, as well as on the nature of individual employees' work - often positive, but sometimes also negative. Unfortunately, the increased use of computers in work life has had undesirable side effects in terms of health. At the same time as computers have entered the workplace, occupational health problems have reached an alarming level. As computers are increasingly used in working life, the number of health concerns and reports of negative effects on users' health have steadily increased. In the public sector, sick-rates are consistently high - over 10% in some organisations and for certain groups. This is part of a general trend in Sweden, where sick-rates and the costs of sick pay and rehabilitation have increased dramatically since the early 1990s. The problems are caused by multiple interrelated factors including job pressure, poor workplace design, repetitive work and poor work posture, and poor social support. Inadequate IT systems with poor *usability* are significant contributors, despite several years of research efforts, and efforts from unions to increase the attention paid to these issues.

In an increasingly competitive higher education environment, Student Affairs is of strategic importance to universities (Porterfield & Whitt, 2016). Student Affairs include a number of activities and many of them are focused on face-to-face contact with students, such as career advice or counselling. Student Affairs also rely on ICT (Cabellon & Payne-Kirchmeier, 2016). Here,

the student information systems (SIS) is important. A SIS is a complex system in itself but it is also a critical part of every university's information architecture. At the same time there is a general transformation of office work, caused by a complex interplay between new technology, globalisation and demography. Information and communication technology (ICT) is becoming a defining factor of the workplace. Well functioning ICT is necessary in order to provide an attractive workplace.

This paper presents a study related to student administrative work at Uppsala University, and the digital work environment of student administrators. We will first give some background to the study. Then we will shortly present the theoretical background as well as the methods used. Next, we will then point to some of the results from the study of the digital work environment of student administrators, and conclude with a discussion of some possible implications for managers.

BACKGROUND

Sweden is in the process of replacing its national student information system Ladok (see Brorsson & Ringeborn, 2008 for an overview of the current system). The project is one of the larger public ICT developments in Sweden, with a budget around 50 million Euro. The implementation began in late 2016 and will continue throughout 2018. Apart from the completely new code base, one major aspect of the new Ladok is an increasing amount of self-service, to be performed by teachers and students, radically changing the current work processes in student administration. The new Ladok will be used by all students in Swedish higher education as well as academic and administrative staff - totalling around 400 000 students and 50 000 staff (2015). The system is very much the backbone of Swedish higher education. On a national level the system is integrated with systems for student enrolment and handling financial aid to students. On the university level it is increasingly becoming a critical part of each university's ICT infrastructure. Here, the usage spans from authentication to integration with various learning management systems (LMS).

The student information system is managed by a national consortium, which owns the project that develops the new system. The development project is also responsible for the overall national implementation plan. Yet, given the scope of the project a significant part of the implementation rests on each university and each department within the respective universities. This includes the more formal aspects such as validating the migration of data as well as system integrations on the university level. Finally, it includes the redesign of administrative work processes and the development of training programs and new support structures at the respective universities.

Uppsala University is one of the largest universities in Sweden with approximately 6500 academic and administrative staff and around 35000 students, almost all of whom will be affected by the new Ladok system. At Uppsala University there has been a large project preparing for the implementation (scheduled for 2018). The university has also been planning to implement a new LMS and rebuild the student portal. Thus, the university will experience massive changes in the ICT infrastructure for both teaching and student administration. Not surprisingly, it has been high on the university's agenda to achieve a successful implementation.

In order to support the local implementation project an auxiliary project was formed with our research group. We are working in the field of human-computer interaction, with experience of other large-scale implementations in public organisations. The collaboration was based on the concept of action research (Hayes, 2011). This, in the tradition our research group adheres to, requires involvement that might be foreign to other research traditions. In action research there is thus a double aim of doing research and supporting change processes (McKay and Marshall, 2001).

The benefit of this approach for research is that it often provides access to on-going projects and the complexities of systems development in the quickly changing field of ICT.

The auxiliary project included a number of activities such as coaching the project team on both individual and group level. The strategically most important effort were a number of vision seminars conducted in 2014, aiming at creating a unified vision for the future student administrative work (Lind et al, 2016). The idea behind this is that by first creating the vision-with people actually doing the work-it becomes possible to try to adapt the system to the business rather than the other way around. The vision seminars resulted in a vision that is now guiding the local implementation project and the process itself has been an important effort in getting acceptance for the inevitable change that is coming. Importantly, the seminars also included the perspective of the students themselves.

This paper presents another part of the collaboration in the form of a study of the digital transformation of student administration, as an input to the implementation project. The aim was to allow a follow up and possible continuously monitoring of the effects of the new SIS on the digital work environment of student administrators. As a consequence, it hints at some areas that might be of strategic importance for an organisation wishing to improve organizational resilience during major ICT implementations. In the next section we present the theoretical background and methods used for the study.

THEORY AND METHOD

The overall idea for this study has been to capture the relation between ICT and well being at work. The theoretical framework for this paper is that of healthy work, as developed by Karasek & Theorell (1999). This theory is an extension of Karasek's *demand-control* theory, with the addition of *support* as a third dimension. In short, the demand-control-support theory states that healthy work can be understood as a combination of three dimensions: The demands placed on the worker, the control the worker has over his or her work and the support that the worker gets in the workplace. If control and support is perceived as high, the worker can tackle quite a high demand as well. The lower the demands, the less critical are support and control. If demand is high, but support and control remain low there is an increasing risk of job strain, burnout and other negative health impacts. Thus, looking for indicators of these dimensions is important when studying the work situation of a given group.

In our interpretations of the results we also make use of the Herzberg's motivation-hygiene theory. This theory states that there are certain factors at work that cause job satisfaction (motivation factors), while a separate set of factors cause dissatisfaction (hygiene factors). Examples of motivation factors are responsibility, recognition, opportunity to do something meaningful, involvement in decision making. Examples of hygiene factors are job security, salary, work conditions and vacations.

For this study, empirical data was collected in the following ways. Data from the university's HR-system as well as SIS was used to build a quantitative understanding of the structure of the university's student administration. Six semi-structured interviews of about an hour each were conducted with student administrators. A survey was distributed to the university's 322 student administrators (defined as users with high access rights in the SIS). The survey was available online and unique links were distributed to via e-mail, it was open late November-early December 2016 with a response rate of 54%. The results have been presented at a seminar with some 70 representatives and in connection with this additional feedback were collected.

Student administrators form a heterogeneous group. About half of the respondents have titles more or less equal to that of “student administrator”. But there were some forty different titles in the group, hinting at rather diverse tasks above and beyond those of student administration. Some work full time with student administration while others do this part time, in combination with other administrative tasks including HR or finance. Gender balance is uneven, as the large majority are female.

There are also important organisational differences. The departments within the university belong to one of three divisions: science, medicine and humanities. These divisions have their own administrative regulations. Furthermore, the size of the departments varies from quite small to very large and with increasing size, administrative resources increase both qualitatively (specialization) and quantitatively (colleagues). Finally, student administration is also influenced by how the teaching is predominantly organised, either in shorter courses or in long study programs.

The interviews included questions on background and work, with a focus on demand, control and support. The respondents were found through a combination of recommendations and announcements in relevant channels. The interviews also provided a two general hypothesis that we hoped to try through the survey. In short these were the mediating effects of experience and professional networks on the experience of the digital work tools.

The survey was based on three established survey tools: the System Usability Scale (SUS) (Brooke, 2013), as well as tools from TCO (UsersAwards) and Prevent (IT-stress Survey). The first is an internationally well known tool while the two latter are publically available tools that have high visibility in Sweden. Another paper discusses these aspects on a more detailed level (Nauwerck et. al. forthcoming). Here we will focus on the main results, which are presented in the next section, combining findings from the data collection, the interviews as well as the survey.

RESULTS

The most important result from the study relate to the changing role of student administrators, as an effect of an on-going digital transformation. ICT has been an important part of student administration for a long time now. Yet, it was also clear that the scale of this transformation was not understood by the rest of the organisation, and that the image of a student administrator is still associated with paper shuffling and simple routine work. Student administrators experience that their colleagues in general and managers in particular do not understand what they do, especially in relation to ICT. From the interviews, for example, it was evident that learning how to work as a student administrator takes at least two years of experience since some work procedures are yearly. Evidence from job adverts indicate that this understanding is not well articulated, beyond “familiarity with the office suite and previous experience of the university’s ICT systems”.

To fulfil their work, the student administrators rely on a large number of ICT-systems (normally around 10-15), the SIS being just one of them, albeit the most important. Many work processes rely on more than one system and there is often limited integration between the systems. When one system is used, for example, it can be necessary to work on a separate spread sheet to parse data in ways that the system cannot do.

Overall the ICT systems do support work, and many student administrators testify to their value. Some student administrators who have some years of experience also reflect on the progress and improvements made in many ICT systems. In fact more than one states that the system portfolio right now is in a mature and productive state. This can be said to be reflected by the overall System Usability Scale (SUS) score results from the survey, which was 63/100 (68/100 is suggested

to be a normal SUS score). As the SUS score is just an indication, we will now drill down a bit further and look at the dimensions of demand, control and support.

Demand, Control and Support

In the following we use the dimensions of demand, control and support from Karasek and Theorell (1999) and concepts from Herzberg's motivation-hygiene theory as frameworks to structure the results. In total there were more than 80 questions in the survey, table 1 gives an indication of some of the major trends related to demand, control and support:

Dimension	Statement	Positive responses
SUPPORT	Users participate actively when new ICT is introduced	54 %
	I have the knowledge I need to manage my ICT	79 %
	The support I get is sufficient	95 %
CONTROL	My ICT systems do not overly constrain my work	56 %
	My ICT systems make my work more predictable	79 %
	I can manage my ICT systems	95 %
DEMAND	I can respond promptly to requests arising from the systems	36 %
	The amount of information I receive is acceptable	65 %
	I can respond to teachers and students	95 %

Table 1. Nine questions relating to the three dimensions. Answers have been grouped together as percentage of positive responses. The original questions were in Swedish.

The most important observation to be made is that for each dimension the result varies. Our interpretation is that the higher values are for what can be called hygiene factors for each dimension. Conversely, what can be defined as motivational factors get lower scores. Next, we will elaborate on the three dimensions in more detail. It should be noted that the framework mainly serves a cognitive purpose here, in reality there is much more overlap and interaction between various aspects.

Demand

The student administrators are committed to service, supporting both students and teachers. Demand for quick responses is high from both groups. Student administration is often dependent on formal deadlines, often related to formal decisions (for course registration etc.) which puts much stress on the administrators. A large majority of the student administration work is oriented towards these deadlines. One team of administrators had even produced a chart to explain the sheer number of deadlines to their colleagues. Even though there are deadlines throughout the semester there is also a cyclic pattern with extra high demand on the administrators in certain periods, such as the start of each semester.

Control

Control relates to the overall decision latitude-or autonomy-the administrators feel they have over their work-and to what extent ICT constrains this.

The survey covers various aspects of control, including autonomy, computer competence and predictability. There is some disagreement regarding the level of autonomy the systems support. Nevertheless, there is an overall consensus among the respondents that they can manage their ICT tools (with everyday tools scoring higher than those less frequently used). Predictability, finally, also follows a normal distribution but with slightly higher values at the negative end of the scale, compared to the positive. Contributing positively to control is the sense that student administrators have a rather unique position working closely with teachers and students but also the central administration. Experience is also important for a sense of control. The relatively low status of student administration (compared to research) contributes negatively and can also be a factor influencing social support.

Support

When it comes to the dimension of support, there are a number of sources. The interview respondents rate the support from the university's central SIS team very high. The support is described as very dedicated and competent. Management support is discussed in the interviews though not in the survey. All departments have a head of the department but the interviews indicate that the student administrative work is rather invisible and not always seen as important. This can somewhat be countered at larger departments where the administrators form teams, sometimes even with some kind of team leader or chief administrator. This is seldom an option in small departments, though.

Some student administrators participate in formal and/or informal professional networks. These are regarded as very important as they are a source of best practices, inspiration and contacts with colleagues in similar roles (the ones at the same department often have different roles). Finally, in some cases the support from partners/spouses is mentioned as important, especially when the partner has some kind of ICT background, and can provide a second opinion to the internal support organisation of the university.

While most projects and systems have some kind of user groups the results are somewhat mixed when it comes to participation in development projects.

DISCUSSION

In summary, the results present a complex image of the current state of student administration. What is currently functioning well are what can be called hygiene factors (functionality, support etc.) whereas there is room for improvement when it comes to motivational factors (such as being seen, learning, collaborating etc.). Interestingly enough, this may well change as an effect of the large-scale implementations that will occur over the next few years. The possible reason for this is that a change processes will usually follow some kind of J-curve, that is there will be a loss of productivity before processes are running smoothly again, as in Figure 1 below.

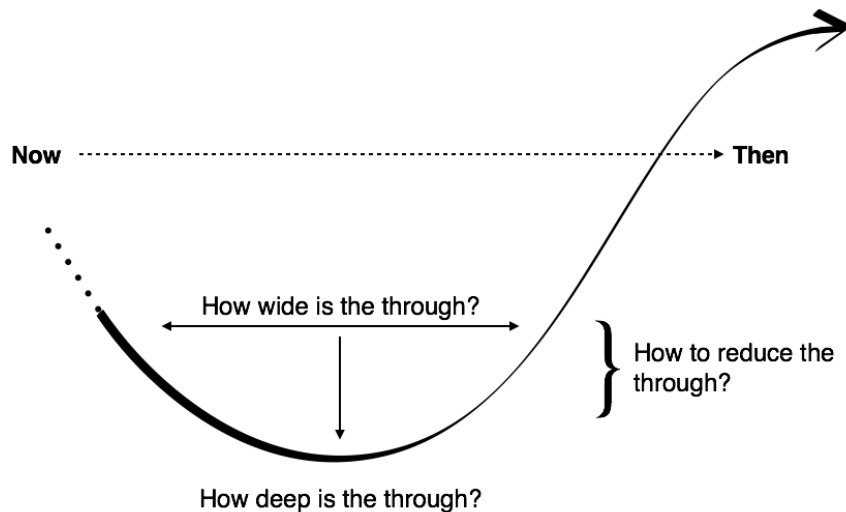


Figure 1. A generic change curve. Rather than a linear progression there will usually be a loss of productivity followed by a recovery period. How wide and deep the through will be varies and one challenge during change is to reduce the through. The idea of the change curve originates in Kübler-Ross' (1970) theory of grief.

It is quite possible that during the implementation the hygiene factors will come under pressure (bugs, less support resources etc.). This might to some extent be compensated if motivational factors are promoted. A well-managed change might result in just that, a sense of being seen and being an active part in the transformation.

IMPLICATIONS FOR MANAGERS

We conclude with a few action items for managers who wish to support the digital transformation of student administration. While generalized, they should of course be adapted to the local context on the basis of local studies. Indeed, this should be a prerequisite for ICT enabled change: always maintain a strong user perspective through both participation and metrics.

Acknowledge the Changing Role of Student Administrators

The most important implication for managers is to acknowledge the changing role of the student administrators. As the digital transformation is well under way this is of general importance, but it is of course critical during large scale changes such as when implementing a new SIS. For managers outside ICT this understanding would also include improving their general digital literacy (Kolomitz & Cabellon, 2016).

Understand the Value of Work Experience

Work experience is important in study administrative work, and given the complexity of today's student administration it takes time to build this experience. The cyclic nature of student administration means that some tasks will be new the first year and indeed it seems to take more than a couple of years to even become confident with the basic procedures. While new staff will in some ways be more computer savvy than the generation that is retiring, they will not be fully productive their first year. This will probably also have impacts on satisfaction rates during changes, as experience seem to counter some of the negative perceptions of the current ICT systems. Possible strategies here include planned recruitments, allowing for more informal and formal training.

Promote Networks and Structures

Informal and formal professional networks as well as organisational structures are important for overall resilience. Networks provide more of an ad hoc support. For day-to-day working, a team sharing the work is key. Many departments already have administrative teams but some do not and this might prove to be a risk. As this mainly is the case within smaller departments one solution could be cross-departmental collaborations, on a more formal and continuous level than what can be achieved through networks alone. Related to the previous point it is also important to include the less experienced in networks, as well as finding ways to include those who are outside of the networks.

Support the Support

The student administrators clearly view central support as important and in this case the support is understood as very good as well. Yet, there are indications that a high level of support can also be seen as a luxury well above good enough support and thus subject to cost cutting. As the ratio between support and administrators is 3:100 (counting high) it is not the most costly part of the overall student administration. On the contrary, there is an obvious risk that reduced support levels might propagate through the system, which will eventually be noticeable by the far larger numbers of teachers and students using the future SIS. Still, there are more strategies to strengthen the support organisation than just expanding the central administration. Alternate strategies might include strengthening collaboration between various levels, promoting super users etc.

FUTURE WORK

The study presented in this paper has given interesting insights, and a number of new areas to study have emerged. One area would be to look at the wider job situation and the work environment including measures relating to job satisfaction and job strain. Another would be to investigate the views on student administration of managers, teachers and students (to some extent this was included in the vision seminars though). Finally, the relation between various organisational structures, professional networks and student administrators would be interesting to examine more closely.

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