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## STRATEGIES OF TECHNOLOGY USAGE IN LIFELONG LEARNING PROGRAMS

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### **Lifelong e-learning**

Through the change from industrial to information society, knowledge has become one of the most valuable resources. The half-life of knowledge decreases continuously, which has a strong impact on education policy. Individuals have to learn lifelong [1]. For graduates and professionals, institutions of higher education offer many possibilities of academic continuing education. Besides research and academic teaching, this task field has already been established as an equal main task at German institutions of higher education [2]. The use of digital media within this field provides a lot of advantages towards traditional in-class-training. Because of the time- and place-independence of digital education it is possible to reach new target groups, like full-time employees or heavily place bounded persons [3]. Interactive media and the internet can deliver advantages for learning processes: they make learning more efficient and support a more motivational and successful way of learning – as far as they are used sensible [4]. Furthermore there is an unused advantage of motivation behind using digital media to improve learning and teaching [5]. *But how are digital technologies used in education programs at institutions of higher education?* This article examines the use of digital technologies in the field of continuing education at Saxon institutions of higher education. Saxony is a state within Germany with different institutions of higher education – e. g. from small institutions with less than 1000 student until institutions with more than 30.000 students – and with a very good e-learning infrastructure. Through this in almost all institutions of higher education in Saxony the basic requirements were created for a sustainable implementation of e-learning in academic teaching and academic continuing education [6].

In 2013 all academic continuing education programs at Saxon institutions of higher education have been analyzed to get an overview about the status quo of digital media usage within such programs [7]. The results of the program analysis (N = 404) show, that there are 345 part-time programs but surprisingly only 54 media based programs among all academic continuing education programs. This makes it interesting to ask the stakeholders of these programs, which media they use and which intentions are behind this use (strategies) to get to know the real status quo and to support stakeholders adequately. To get a detailed picture regarding

media use, however, it is necessary to examine individual offers or stakeholders. This objective provides the starting point of an online survey, focusing the following questions:

- Which technologies are used in academic continuing education programs?
- What are the strategic reasons for using technologies?

Furthermore we are interested in the different e-learning strategies between public and private institutions or universities and universities of applied sciences. *Do institutional affiliation and the position of the respondents or the educational program have influence on the reasons for the use of internet technologies? If yes, which one?* By knowing these differences, the support for stakeholders can become more equal and help to fix lacks to improve the use of internet technologies.

### Methodology approach

As mentioned above the study should help to answer questions about the *internet technologies* stakeholders use in their academic continuing education programs. The online survey was sent to 631 persons, who participate in the field of continuing education at Saxon institutions of higher education. To find out why stakeholders use internet technologies they got a list of eleven strategies. Each internet technology opens different kinds of possibilities. Based on our own research and experiences with supporting projects of academic continuing education, we worked out eleven strategies of using internet technologies [8]. They got the possibility to agree on a scale from *very important* to *not important* with the opportunity to give a *don't know*-answer. For the analysis of the strategies, 150 data sets have been used. This are 86.7 percent of the cleaned data set ( $n = 173$ ). The 23 missing data sets are eliminated by a list-preclusion of missing values. In this case it is the best method, because after the preclusion still all variables are quantitative equal and the data set is with 150 big enough for all necessary tests.

### Empirical findings

In the following we present the striking results of the online survey. At first we have a look on the different kinds of internet technologies, which stakeholders use and their way of using them in their academic continuing education programs.

#### *Internet Technologies*

First of all, we wanted to find out which internet technologies are used in different education programs. Figure 1 shows the different kinds of internet technologies and their use within the programs.

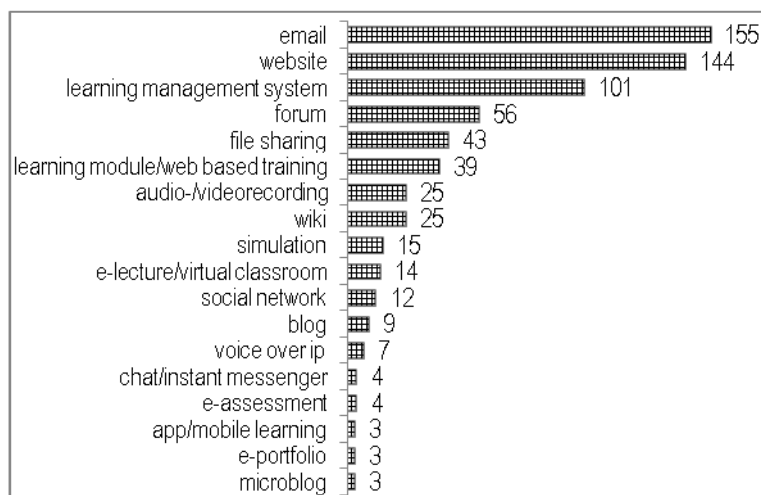


Figure 3. Frequency of using internet technologies (n = 173, multiple selection possible)

Surprisingly not all (155 of 173) use emails. 144 programs have their own website and 101 use a learning management system. The remaining technologies are used by less than one third of the programs. It is not possible, to equate email and website with e-learning. These are often used for purely administrative purposes. For us, e-learning means, that technologies are used in educational processes to follow pedagogical considerations. For what purpose technologies have been used cannot be concluded, however, it can be stated that about 60% of the respondents use technologies that have didactic added values. It also became clear that innovative technologies (e.g. e-portfolio, e-assessment) are rarely used in the area of academic continuing education.

### **Strategies of technology use**

In the findings the relevance of the individual objects are obvious. In the second step of the analysis key factors behind the items should be identified, in order to examine their relations with other variables. For this purpose a factor analysis has been performed (see Table 1).

The results of the factor analysis allow the following illustrations to make the common variables better visible. Three different main strategies of technology usage have been identified:

- *Institution (factor 1)*: Focus on resources, strategies and capacities of the institution. Technologies are used to follow institutional strategies, to save resources or expand capacities.
- *Participants (factor 2)*: The participant focus makes stakeholders concentrating on the participant needs. Nowadays every individual has to learn lifelong, for which reason time- and place-independent learning becomes more and more essential. Internet technologies are used to allow flexible learning or individualise academic continuing education programs.
- *Visibility (factor 3)*: Focus on the educational market. Technologies are used to improve opportunities of marketing activities, which implies addressing new target

groups or improving the image and visibility of academic continuing education programs.

Table 1: Three-factor-solution of E-Learning strategies (n = 150)

item-variable	item	component		
		1	2	3
v_9I1	reach new target groups			.767
v_9I2	enlarge the amount of participants	.720		
v_9I3	save resources (money, staff, time)	.662		
v_9I4	expand didactical possibilities	.798		
v_9I5	follow institutional strategies	.560		
v_9I6	respond to participants needs		.722	
v_9I7	permit time- and place- independent-learning		.805	
v_9I8	respond to individual needs		.572	
v_9I9	improve image			.775
v_9I10	better reuse contents		.678	
v_9I11	trial new ideas	.832		

The three main strategies have been analysed in the context of different characteristics of the subjects. In this way, it is possible to find out, if attributes like institutional affiliation have impacts on using technologies in academic continuing education programs. The statistical research has been performed by a variance analysis (ANOVA), with the three main strategies as dependent and person-based attributes as independent variables. In the following some striking findings are presented.

*Strategies in the context of institutional affiliations*

We suppose that different strategies are also influenced by the belonging of programs to a university or university of applied sciences. In Germany are 143 universities of applied sciences and 105 universities [2]. We suppose differences concerning the strategies pursued by universities of applied sciences and universities, because they have different organizational, administrative and didactical structures. Universities of applied sciences offer shorter studies, more practical and less scientific input. Figure 2 shows the relation between these different affiliations.

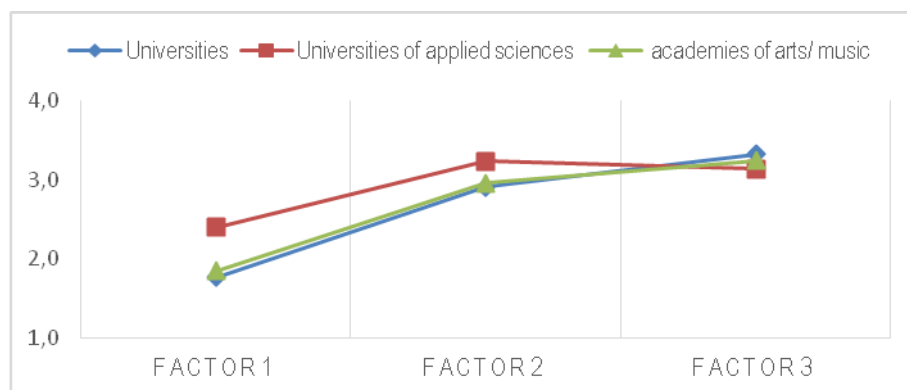


Figure 2. Relation between strategies and different affiliations (n = 150)

The graphic illustrates the relation between strategies and institutional affiliation. It is clear that marketing issues (factor 3) are very important for all participants, regardless of which institution they work for. It is also visible, that factor 1 (institution) and factor 2 (participants) are much more relevant for members from universities of applied sciences. As the statistical analysis shows the differences among the groups according factors 1 are highly significant (0.000).

In Germany, institutions of higher education are mostly financed by public funding. It is interesting to see, whether there are differences concerning their pursued strategies via the use of internet technologies, because private depends in contrast to public institutions very much on tuitions. Internet technologies are probably used to attract potential students. The following Figure 3 is showing this differences.

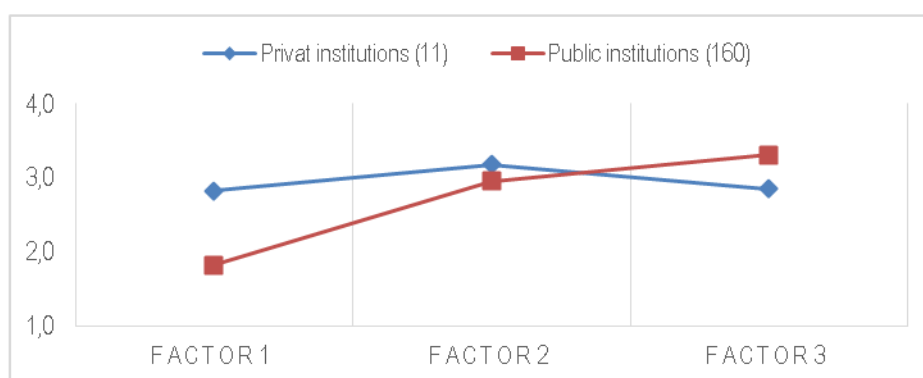


Figure 3. Relation between strategies and different institutions (n = 150)

As Figure 3 illustrates the importance of the strategies differs in dependence of the financing. The comparison of private and public institutions shows, that private institutions are stronger focused on institutional goals. It is essential for these to deal efficient with resources or to increase teaching capacities. These differences within factor 1 are highly significant (0.000). No significant differences could be found in the other categories.

#### *Strategies in the context of education programs*

Academic continuing education programs have different internal structures, curricular aims and lead to different academic degrees. We distinguished study programs, certificate programs and educational modules. Modules are the smallest unit. They usually include a few days and lead to a confirmation of participation. A certificate is based on a performance of the participant e.g. an exam with a positive result. Mostly such certificate programs include different educational modules. If it is a full study program, than the participants reach an academic degree (bachelor or master). One point of interest was to find out, if and in what extend the strategies of using internet technologies. Figure 4 presents these differences.

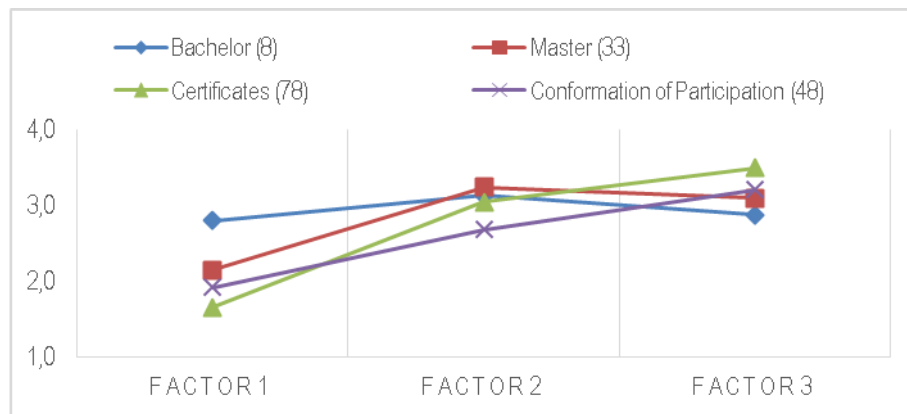


Figure 4. Relation between strategies and different programs (n = 150)

As Figure 4 indicates, institutional aims (factor 1) and participant focus (factor 2) are more relevant for study programs, no matter if they lead to bachelor or master degrees. Marketing purposes (factor 3) are mostly focused by certificate programs. As we could proof by an ANOVA, all findings are highly significant (factor 1 = 0.000; factor 2 = 0.002; factor 3 = 0.010).

#### *Strategies in the context of professional positions*

Does the reason for using internet technologies in academic continuing programs depends on the professional position of the involved people? To answer that question, the three factors have been set into a relation to the academic degree of the propositi via ANOVA. We distinguished professors, postdocs, master graduates and bachelor graduates as visible in the following figure 5.

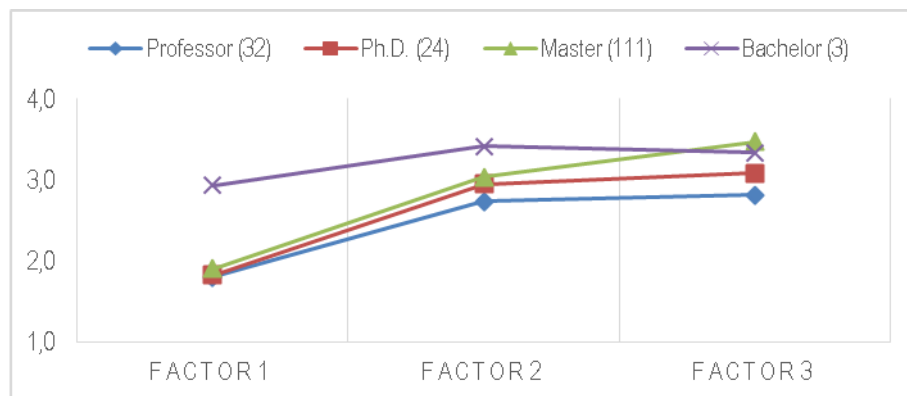


Figure 5. Relation between strategies and different professional positions

As Figure 5 illustrates, propositi with bachelor degrees have a strong tendency to follow institutional aims (factor 1), while the other groups assess these category very low. Because of the small number of bachelor graduates, these differences are not statistically significant. But in contrast, the analysis has shown significant differences in factor 3 (0.000). Marketing orientation plays a minor role for professors than for the other propositi. The sensitivity for marketing themes seems indirectly proportional to the level of scientific qualification.

## Discussion

For the interpretation of the empirical findings the following methodological restrictions has to be considered:

1. The results are in the thematically background of academic continuing education. This section of data is limited to Germany and cannot be transferred to the global context of academic continuing education.
2. There could be a selective influence because of the method online-survey. It may be the case that internet technology savvy people are more capable to answer the questionnaire.
3. Consequently there can be a tendency to extreme values on questionnaires. This seems especially problematic for the comparing of public and private institutions, because the last one has with nine a much smaller sample.

What conclusions can be drawn from the findings? How can the findings be interpreted in the context of higher education development? First, it can be stated that the use of internet technologies in academic continuing education is motivated by a number of strategic objectives. With the online survey three objectives, which focus respectively different contexts, could be identified: the institution (factor 1), the participants and their learning process (factor 2) and the education market (factor 3). The weighting of the objectives is in relation to professional characteristics of the persons involved in programs of academic continuing education. By using statistical methods (e.g. ANOVA) these relations were examined and explained in detail (see above). But what are the possible reasons behind these differences? Subsequently, the findings will be interpreted in the light of current discourses on higher education development.

- It became clear that members of universities of applied sciences put more weight on institutional aims than the other groups (universities, art schools). The reasons for this may be the career path of this group and institutional characteristics of this institution type. Staff turnover is significantly lower at universities of applied sciences than in other academic institutions. In addition, these institutions are smaller than universities and have lower financial resources. Therefore members of universities of applied sciences are forced to cooperate, which in turn leads to a higher degree of social involvement and identification with institutional strategies.
- Members of private institutions have weighted institutional aims more heavily than their colleagues from public institutions. Possible reasons for this are the specifics of private institutions. Due to the lack of public funding, these institutions are more strategic oriented, e. g. the increase of turnover. Since it requires the economic-financial survival of these organizations, strategic objectives are communicated to the single institutional members, and thus have identity-building and action-controlling effects.
- The objectives of using internet technologies also vary according to the type of education program. While people who are involved in study programs pursue

institutional objectives, marketing objectives play an important role for single modules (e. g webinars) or certificate programs. The differences in factor 1 are hardly surprising, since study programs are subject to many institutional requirements, e.g. for accreditation. In contrast to that, single courses or modules are often booked by participants to solve current problems at work, so these must be very strongly geared to the needs of the market.

- The findings have shown that people with lower academic qualifications (master or bachelor degree) intend much stronger to increase the visibility of education programs by using internet technologies than their colleagues with high qualifications (professors/postdocs). Possible reasons for this might be found in the characteristics of scientific career. Reputation is the currency of scientists [9]. Therefore, the increase of the visibility especially at the beginning of the academic career is essential for young scientists. The findings suggest therefore, that young scientists instrumentalize internet technologies to increase their scientific reputation.

The presented ideas should be considered as suggestions for interpretation. Detailed, scientifically reliable statements concerning the relations between the objectives of using internet technologies in academic continuing education programs and the personal characteristics of involved people cannot be derived from this data base. Therefore, further studies are necessary, for example in the form of qualitative interviews with various stakeholders.

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