

ARE WE READY TO DISTANCE LEARNING? EXPERIENCES OF DISTANCE LEARNING IN OPERATIONS AND SUPPLY CHAIN MANAGEMENT-FOCUSED HIGHER EDUCATION

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Abstract

The importance of e-learning and blended learning in higher education in Hungary has significantly increased in recent years. Students use a variety of online platforms with more or less weight in their studies, in addition to traditional classroom learning. Yet, the world, all walks of life, including, of course, higher education, have been shaken by a series of restrictions on the coronavirus sweeping Europe from the end of winter 2019/2020, including the suspension of traditional contact-based education. In Hungary, the transition to distance learning became necessary in just over a week due to the closure of universities. How did this affect the students? How is the knowledge acquired through distance learning assessed in the operations and supply chain management education? How strong and how weak was this new distance learning system developed for extreme reasons? In our research, we sought answers to the above questions. To this end, we asked our undergraduate and graduate students at Corvinus University of Budapest about our Operations Management (BSc) and Supply Chain Management-focused (MSc) courses (approximately 360 students). In addition to questionnaire research, we compared the student results achieved in previous years to determine whether there is a significant difference between the results of the last semester and those converted to distance learning. According to our hypothesis, distance learning challenged students to independently understand and master the theoretical curriculum. Still, they were more forced to apply a practical perspective in case studies and problem-solving.

Key words: distance learning, higher education, operations management, supply chain management, Covid-19

1. INTRODUCTION

The global processes of the 21st century have brought change to economic actors in almost every part of the world. Universities are no exception. The reform of classical academic education began long before the appearance of the coronavirus worldwide, including in Hungary. The change first and foremost required the right medium to work in the hitherto unknown online space. One of the reasons for the development of e-learning was probably the appearance of the world wide web (Tastle et al., 2005). After the creation of the online space, it became possible to place part or all of the education conducted in the traditional framework in a digital place through different platforms (Alexander & Golja, 2007; Coates et al., 2005). In the case of practice-oriented courses, the question may arise that close cooperation, personal presence-based skills and competencies (teamwork, cooperation skills, communication skills, organisational skills (Pató, 2006), organisational and time management skills, the courses developing the ability to apply conflict and stress management techniques (Keller, 1999) can be implemented via Internet platforms, or at all. The emergence of the coronavirus suddenly put higher education actors in a complicated position, and the transition from offline to online education had to be completed in a very short time. How did this affect the students? How is the knowledge acquired through distance learning assessed in the operations and supply chain management education? How strong and how weak was this new distance learning system developed for extreme reasons? In our research, we sought answers to the above questions.

The study first describes the role of distance learning in higher education; its characteristics and application possibilities are presented. This is followed by the methodology and the introduction of the questionnaire, and an analysis of the survey results.

2. LITERATURE REVIEW

2.1 Distance learning in higher education

Nowadays, e-learning is a suddenly appreciated tool in higher education (Zhou, et al., 2020), which is basically one of the milestones in the development of distance learning (Sangrà et al., 2012). It makes it possible for participants to communicate, the joint work and the sharing of information materials related to the transfer of information for those involved in education (Rhema & Miliszewska, 2012). E-learning builds on information and communication technology (ICT), it can also be seen as a tool for educational reform, but in order to function effectively, attention must be paid to appropriate adaptation (Idris et al., 2017).

Basically, we can classify the implementation forms of online education into two categories: we can talk about synchronous and asynchronous communication solutions. The combination of personal (synchronous) and text-based (asynchronous) communication solutions strongly complements higher education goals (Garrison, 2011). Synchronised online education can be seen as a tool for maintaining personal

contact, engaging students, and strengthening participation, while asynchronous education can be seen as a method that focuses on information transfer and processing (Zuti, 2018).

In the asynchronous case, students and lecturers are not in the same place in space or time, so e-learning is flexibly available, it does not require the time schedule required of the two parties together. The flow of information can often take the form of emails, shared content, and possibly written communication on social media platforms. The implementation of various learning management systems such as WebCT™, Moodle™, BlackBoard™ (Murphy et al., 2011; Alexander & Golja, 2007; Coates et al., 2005) or the currently prevalent Google Classroom™ or Microsoft Teams™ applications can also help.

The synchronised solution is more similar to classroom lessons, with a two-way communication relationship between students and faculty staff in the form of a video conference or audio conference during the course (Bernard et al, 2004). In this case, the participants are still spaced apart in space, but time independence is lost, and the scheduling of calls is a constraint on flexible scheduling. In addition to the multifunctional interfaces listed earlier, such as Google Classroom™ or Microsoft Teams™, Skype™ or even Zoom™ applications can also serve the emerging needs (Murphy et al, 2011).

2.2 Distance learning in practice-oriented education programs

At the beginning of the century, Koprowski (2000) considered soft-skills such as management, governance, or even strategic thinking to be just an emerging development direction for e-learning. As a realisation of this, it can be seen that nowadays there are also digital solutions aimed at the transfer of various competencies. In our study, we focus on operations and supply chain management-oriented courses, since the authors' educational portfolio includes such university courses on BSc and MSc levels. We surveyed students of a bachelor course in Operations and Process Management and several courses in the Supply Chain Management master's program.

According to Munkácsi & Demeter's research (2019), online methods have a poor perception among students in the Supply Chain Management programs. Regarding the reasons for this, the students drew attention to the difficulties of information transfer; however, technological problems (internet access, improper running of programs on a given device) also appear in the research (Munkácsi & Demeter, 2019). Although the research has focused mainly on classroom complementary online methods, these difficulties may also become more pronounced in a crisis situation when learning from home. In order to be successful in the courses in distance learning, the attitudes of educators may be critical in terms of motivating students, but interactions seem essential to maintain interest as well as transfer competencies (Paechter et al., 2010).

2.3 Distance learning in a crisis situation

Similar to the current coronavirus situation, higher education in Hungary did not have to cope with before, but many countries have already experienced a crisis with presumably more severe restrictions. It may be appropriate to examine Internet-based solutions for higher education implemented in war conditions in order to investigate methods that can be used in health emergencies. "Information and communication technologies are key elements in the universal response to crises, whether natural or man-made" (Rhema & Miliszewska, 2012, p. 149). Looking at the example of the Libyan war, these technologies support educational organisations in developing proper coordination to ensure continuous collaboration between students and educators (Rhema & Miliszewska, 2012). A number of challenges that make it challenging to transition to distance learning may not only be valid for less developed countries. The lack of an appropriate IT background (Internet access, proper tools) (Al-Azawei et al., 2016; Idris et al., 2017) development of an e-learning system (Zhang et al., 2004). It is therefore essential to develop a system in a crisis situation that provides a flexible environment that helps to create access to higher education, facilitates the modernisation of teaching methods, and supports learning (Rhema & Miliszewska, 2012).

3. METHODOLOGY

The rapid development of informatics and computer technology is increasingly enabling the spread of multivariate data analysis methods (Szüle, 2016) and, prior to that, the implementation of data collection. Online questionnaire data collection provides an opportunity to learn from the views of a wide audience (Wright, 2005). One of the arguments in favour of an online questionnaire is to take advantage of the Internet's ability to provide access to groups that are difficult to reach through other channels (Wellman, 1997, Wellman & Haythornthwaite, 2002). This is especially true at times of restrictions due to the Covid-19 virus.

By analysing the figures obtained from the questionnaire, the researchers may aim to identify patterns and possibly set up empirical models (Szüle, 2016). Based on the study of university students by Stark and Freishtat (2014), it can be seen that quantitative analysis of different averages, as well as questionnaire responses, may be suitable for the interpretation of student opinions. However, it is noted that no conclusions can be drawn from statistically small samples (Kehl & Rappai, 2006). To this end, it is worth reaching as many students as possible.

4. THE SAMPLE

In search of the answers to our research questions formulated earlier, we decided on the questionnaire research described in the research methodology section. In this part of the paper, the developed questionnaire and the database obtained are presented.

In compiling the questionnaire, we took into account previous questionnaire research (Tastle et al., 2005; Paechter et al., 2010) and tried to "customise" the questionnaire as much as possible for our study (operations management, logistics, supply chain management, bachelor and masters programs).

When editing the questionnaire, it was an important aim to formulate easy, quick questions (thus helping to fill them in), the measurement scale was mainly Likert scale, but where self-memory response was more important (e.g. the most advantageous or lacking factors during distance learning) we aimed not to influence them with predefined response options. The complete questionnaire can be divided into 3 major parts; the first part contains the more general, introductory questions, and then the survey is divided into additional two parts addressing undergraduate or graduate students. The reason for this is that we focused on a course taught in the spring semester, the Operations and Process Management (OPM) course. We were interested in the implementation of the course in distance learning, looking at their other educational experience gained during the semester. In the master's program, however, we addressed the Supply Chain Management masters as a whole and analysed the efficiency, success and pitfalls of implementing distance learning. Thus, we aimed to examine a compulsory undergraduate course (OPM) and four courses of SCM masters. In total, the questionnaire contained nearly 50 questions.

The target group of students in the research was notified about the content and deadline of the questionnaire through the university Moodle interface. Our students had the opportunity to complete it for a week. The target number of students in the basic period is approximately 280 people (this represents about 40% of the total number of students studying OPM), of which the number of questionnaires received was 129, which is approximately a return rate of 46%. On masters level, all students in the program were invited, the number of targeted students was 98, of which 42 questionnaires were received. The share of BSc and MSc students in the sample is in correspondence with their share in the university education, and there are 5-times more BSc than MSc students. Due to lack of data (an incorrectly completed and submitted questionnaire), one response was excluded, and finally, we have got a database of 171 answers, which is a statistically a large sample (Kehl & Rappai, 2006). The analysis of the database was performed by using the IBM SPSS 25 software.

In general, the respondents typically belong to the same age group (the proportion of young people aged 20-23 is 78%), two-thirds of the respondents are women. These are typically students who perform well or excellently (both in the spring and autumn semesters of 2019), as the proportion of those who perform well (with an average of between 3.51 and 4.50) is 54%, and the proportion of those who perform excellently is 25%. More than 50% of the responding students work part-time or full-time. Slightly more than half of the respondents do not depend on parental support at all, or only partially, and live in a similar proportion independently of their parents. In accordance with Tastle et al. (2005)'s categorisation, half of our responding students were 'traditional', and the other half was not 'traditional' student. In general, it can be said that very few of the respondents have met distance learning before, 70% of them have not received distance learning at all before the Covid-19 crisis.

5. RESULTS AND DISCUSSION

When transitioning to online education, Corvinus University of Budapest used MS Teams and Moodle uniformly. Based on the knowledge of these systems, online presentations, team works, document shares, tests, and various other methodologies have been used. Course leaders and instructors made decisions about the appropriate methods.

Since 70% of the students had no experience with distance learning, we asked how easily the transition to distance learning went, and we analysed it with cross-tabulation and tested the differences with Pearson's chi-square test. 70% of those who had any previous distance learning experience found it easy to switch, but 60% of those who had not previously received this form of education also found the switch easy. The opinion of the students was similar in terms of technological background, 70% of the previously experienced students reported a suitable technological background, 60% of the inexperienced were satisfied with the same circumstance (Chi-square test, the significant difference at 94% significance level). This refutes the results of Munkácsi& Demeter (2019), who experienced student dissatisfaction due to technological deficiencies. Overall, 58.3% of those with previous experience and 64.3% of those without experience consider the knowledge acquired through distance learning to be slightly more valuable, and only one respondent considers it worthless. For us, this means that online education can also be effective and efficient.

We asked students how they rated the spring semester as a whole. Although their answers to previous questions were favourable, so they were easily switched over, most of them had no technical problems, and they also judged the acquired knowledge favourably, their overall opinion of the last semester was medium or rather unfavourable (Table 1). Classified by education level, it can be said that the view of masters was worse than that of bachelor students.

Table 1. Overall opinion of students with different level of distance learning experience on the spring semester of 2019/20.

Opinion about the recent semester	Excellent or good	Middling	Bad or very bad	Sum
Preliminary distance learning experience				
occasional experience	29.7%	19.1%	51.2%	100%
regular experience	60%	40%	0%	100%
no experience	34.4%	33.6%	32%	100%

Source: own construction based on the survey results*, 2020

*According to Pearson's Chi-square test, the difference is significant at 99% significance level.

In order to understand this, we examined what they lacked during distance learning. The responses were categorised into the following categories: community, appropriate technology, explanation of professors, information. A considerable difference between BSc and MSc students can be found here (Table 2).

Table 2. What students missed during the distance learning in the spring semester of 2019/20

What did you lack during the distance learning in this semester?	Bachelor students	Masters students
Community	30.2%	52.8%
Appropriate technology	8.5%	2.8%
Explanation of professors	40.5%	25%
Information	20.8%	19.4%
Sum	100%	100%

Source: own construction based on the survey results*, 2020

*According to Pearson's Chi-square test, the difference is significant at 90% significance level.

All in all, we can state that during distance learning, the instructors had to step out of the traditional university teaching role and be open to the students' mental problems, listen to them, provide them with information and care. In our opinion, the reason why bachelor students would have required a much higher proportion of professor explanation and information than masters, is that in the grades, where Operations and Process Management course is taught number of students is 6-700, while in the Supply Chain Management master's program it is only 40-60. Thank this, a much more direct relationship can be established with the master's students, there is much more space for listening to them and answer their problems.

We asked students how motivated they felt during the distance learning semester compared to a traditional semester (they rated their motivation on a 5-point Likert scale, where 1 meant very motivated, 5 meant not motivated at all). Both BSc (3.31) and MSc students (3.68) felt less motivated than usual (difference of groups is not significant). As we see the reasons for the particularly low motivation of master students, we thought that it is a smaller community with specialised professional interest, where learning from each other plays an important role in classroom solutions. Hence, the lack of community (as discussed earlier) also affects their learning motivation.

We keep even more likely that there is a psychological reason for the lack of motivation and semester misjudgement since the bachelor students were explicitly satisfied with OPM course. So were the master's students with the master's courses, they rated them high on a 5-point Likert-scale (where 1 is completely satisfied, 5 is

completely dissatisfied). The OPM was rated at 1.97, the master's courses at 1.75, and 82.5% of the latter value the knowledge acquired in the given course as rather valuable (1 or 2 on a 5-point scale).

6. CONCLUSION

This semester was a particular semester not only for students but also for the instructors. One week was available at our university to develop the online version of the undergraduate and graduate courses. Although we are a student and service-oriented and the redesign of the education has been done taking into account the interests and workload of the students and professors, it could not be perfect due to the short time. Our questionnaire survey allows us to change gaps, bad practices, and understand what is really important to students in a situation like this.

We consider it an important result to confirm that online education can be just as valuable and useful as traditional education, even if the transition happens suddenly, both the students and the instructors are new to the topic and have a particular situation (restrictions).

Another significant result is that the instructor should not only teach, but it is especially important to make personal contact with the students, to care. Therefore, forms of distance learning that provide opportunities for networking (synchronised) may be more successful in a case similar to the current one. Thus, the curriculum and the quality of education are essential factors of the success of distance education but at least as important factor is the caring about students' souls.

The results of the study may be limited by the fact that we conducted the survey primarily among students of OPM course and Supply Chain Management masters courses at the Corvinus University of Budapest, and the gathered opinions do not necessarily reflect the attitudes of all university students towards distance learning in general. Another limitation is that we examined the audience of a business school, and it would be interesting to analyse the results of an institution in which, e.g. pedagogical education is underway and where the educational and psychological tools are significantly more advanced.

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