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# Online Managerial Accounting education during the COVID-19 pandemic: A case study from Poland

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## Abstract

The COVID-19 pandemic made the higher education providers give up traditional face-to-face education and change completely into distance learning. The primary objective of the study was to learn the opinions of the students majoring in Finance and Accounting at the Faculty of Management, UTP University of Science and Technology in Bydgoszcz on the Managerial Accounting (MA) course in computer laboratory taught in a form of e-learning with the use of spreadsheet. The study questions covered the effectiveness of online learning, its disadvantages and advantages, the evaluation of the skills acquired, the tutors' preparation and engagement, education quality enhancement in the second e-learning semester and suggestions in terms of the use of e-learning in post-pandemic time. The survey study involved 85 students out of all the 113 third-year B.A. students. The study results point to a very positive rating of the tutorials. More than 90% of the people consider the education method effectiveness very good or good. The results of the study are show that e-learning does not necessarily have to be less effective than traditional learning. This is yet another evidence of the advantage of an active learning over a passive learning approach.

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## 1. Introduction

A considerable increase in the availability of online education was noted already some 20 years ago [1] thanks to a fast Internet connection, which created a possibility of distance learning, both offline and online, to a growing

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percentage of the student population. Often, however, e-learning was considered to be a tool supplementary to the primary form of education [2]. Until last year, inconsiderable educational contents at Polish schools of higher education were delivered in a form of e-learning. The COVID-19 pandemic has changed that situation completely. As soon as the lockdown was introduced, the higher education providers had to give up traditional face-to-face education and change to distance learning. The teachers could choose the offline/online mode. The experience has shown that many courses were taught offline. Frequently, the tutors would only send materials-and-tasks-to-do to their students. Many students had a feeling that such a form of education is not as effective as the traditional one.

The way the students perceived e-learning complied with the results of the earlier studies revealing a common social conviction that distance learning, even if online, is worse than the traditional education in the classroom [3]. The study by Redpath [4] shows also that business education online is associated with a lower quality by most business coaches, which coincides with the opinions of some academic teachers expressed after some distance learning experience during the pandemic.

The results of the studies performed so far, to compare the effectiveness of traditional learning and e-learning and to learn how the business major students and teachers perceive the latter, are not, however, univocal [5]. Even though the earlier studies demonstrated that the students of traditional accounting courses seem more satisfied with the classes and the tutor than the online course students [6], [7] or find no difference between the two formats [8], [9], most of the recent studies indeed show an advantage of distance learning modes over face-to-face education [10], [11], [12].

The latest studies, given above, show that e-learning tutorials can successfully replace the traditional education. To maintain the education quality at the adequate level, together with the new academic year 2020/2021, many Polish higher-education providers introduced an obligation of distance learning online using e learning platforms. The obligation was also introduced at the UTP University of Science and Technology in Bydgoszcz, Poland. The authors of the article are positive that the lab tutorials in Managerial Accounting (MA) they developed and delivered to the students majoring in Finance and Accounting (F&A) at the Faculty of Management ensured the adequate quality and the expected educational outcomes. They decided to verify their conviction by asking students how they perceived the online learning proposed.

The primary objective of the empirical study was to learn the opinions of the students on the MA course in computer laboratory taught in a form of e-learning with the use of spreadsheet. The discussion of the results has been preceded by pointing to the MA education methods recommended in literature and stressing the role of the spreadsheet in it. Since the way the accounting students perceive e-learning can differ across the countries [13], the study described here supplements the applicable literature with a context of yet another country; Poland, during the COVID-19 pandemic.

## 2. Independent learning and self-learning in on-line education

Independent learning and self-learning play an important role in higher education [14], [15]. Hockings et al. [16] claim that *'Independent learning is a key feature of university education'*. The literature indicates that independent learning relies, among others, on taking responsibility for one's own learning, choosing and setting one's own objectives, deciding what, when and how to learn [17], [18], [19], [20], [21]. Independent learning places increased educational responsibility of the student for achieving of objectives [22]. At the same time, it is emphasized that the teacher plays an important role in independent learning. According to Meyer et al., *'teachers have a key part to play in enabling and supporting independent learning'*. In independent learning students understand the way they learn, however, they are also motivated to learn and to collaborate with teachers [23].

Online learning, to a greater extent than traditional education, on the one hand, forces and, on the other hand, creates opportunities for self-learning and independent learning. Referring to Burd and Buchanan [24]: *'In on-line education, the role of the teacher changes from one of authority or sage to facilitator or guide. Online learning promotes student centered, active learning in which the individual becomes largely responsible for his or her own learning while the teacher is responsible for presenting multiple opportunities for processing information and assisting students in the creation of new knowledge.'* The important role of self-learning skills is emphasized for many years [25].

Covid-19 pandemic has forced universities to change their traditional systems and to develop distance learning and e-learning activities and thus created conditions for the development of self-learning skills and independent learning.

To sum up, in the conditions of online education, the student is primarily responsible for how he or she learns, and develops the skills of independent and self-learning, including independent analyzing and solving problems, and how

he or she collaborates with the tutor. The main task of the teacher is to choose an appropriate model of teaching, organize work in online education conditions and to motivate students.

### 3. Challenges and teaching methods recommended in the Managerial Accounting education

Future employers require university accounting graduates to have the ability to become competent professionals [26]. One of the essential reasons of the changes, postulated for many years, in the tertiary education of accounting students is a changing role of accountants. Accountants '*should move away from being scorekeepers of the past to become the designers of the organisation's critical management information*' [27]. To meet the new challenges, university instructors have to choose the most appropriate teaching methods in attempting to produce accounting graduates with appropriate qualities. Some important recommendations given already in 1990 by the Accounting Education Change Commission (AECC) are as follows [28]:

1. The student should be an active participant in the learning process.
2. The student should be taught to identify and solve unstructured problems.
3. The student should learn by doing.
4. The student should learn to work in groups.
5. The student should be taught the creative use of technology.

In the context of the change in the role of the accountant, the education of the MA course, which creates many possibilities of applying the recommendations provided by AECC, becomes of special importance. The literature mostly stresses the role of active learning in accountant education [29], [26], [30], [31]. The reports by Matherly and Burney [32] show that applying the techniques and tools of active learning in MA is very well appreciated by the students who '*reported that the activities engaged them in the learning process, improved their attitude toward the class, and, most importantly, increased their perceived content knowledge of managerial accounting*'.

The changing role of accountants requires developing adequate IT skills in providing management information. The skill of the operation of accounting programs alone, used for recording the economic events and generating obligatory reports is insufficient. It is necessary to have the skills to use the software for simulations, optimisation and various advanced analyses, e.g., multidimensional analyses.

#### 3.1 The importance of a spreadsheet application in the Managerial Accountant education

The need for an accountant to acquire IT skills is triggered by the entrepreneur's commitment to various areas of business. The spreadsheets have been consistently recognized for many years as the most applicable tools for accountants in providing management information. The survey performed in 2002 by Burnett [33] showed that Excel skills were viewed as the most important technology skill by respondents. A study carried out by Welch, Madison and Welch [34] confirmed that for those who want to start their accounting career, Excel skills are top ranking of all the information system classes. In the survey performed by Tam [35], accounting experts indicated that spreadsheet is ranked number 1 of all the IT knowledge and skills and all interviews participants mentioned spreadsheet as the most commonly used and important IT tool. According to Weaver and Kulesza [36], intermediate to advanced Excel skills were among the top five skills desired by employers. Other research showed that they were considered to be '*very important*' to '*critical*' by more than 3/4 of the respondents in their job [37].

Ms Excel is considered to be a very effective tool in education process. Its application in education facilitates understanding Managerial Accounting methods. Excel-based teaching supports active learning and enables the accounting student to have a better sense of the actual work of accountants [38]. It can enhance student engagement and it is very helpful in explaining calculations [28]. Spreadsheet can also help in developing the problem-solving, analytical and technical skills. Students learn to manage data efficiently and present it effectively, leading to a better solution to the business problem [39]. The new role of accountants and the related new tasks call for the knowledge of both basic and advanced functions as well as an efficient use of auxiliary spreadsheet tools [36], [40], [41], [42].

#### 3.2 Tutorial delivery method

Frequently a graduate of business majors has no chance to get a job without the skills of using functions and spreadsheet tools [43], [44]. Excel provides powerful analytical tools for business and it is an important tool for students to learn and master [39], [45]. With that in mind, the classes in MA at the Faculty of Management, UTP, have

always been provided in the computer laboratory with the use of spreadsheet. Classes were conducted in groups of a maximum of 16 people. Each student was provided with a workplace. In the conditions of online education, the size of the groups remained unchanged.

Preparing the classes to be delivered in a form of e-learning online, the tutors tried to follow the guidelines for MA education given by accountant associations and provided for in the applicable literature. At the same time, they also tried to maintain opportunities for self-learning and independent learning. It was recognized that as for online learning, it is important for the teacher to stimulate students and for the students to share knowledge in a tutor-assisted discussion. To this end, a hybrid teaching model was selected to combine the features of the Leading/Student model and the Socratic model. In the Socratic model, knowledge is shared by the course participants as part of a discussion led and supported by the tutor, while in the Leading/Student model, the main role is played by the tutor whose task is to stimulate critical thinking [46]. It should be also emphasized that it is easier to motivate students when the knowledge imparted is useful and has implications for responsible decision making, as individuals are expected to analyze problems [47].

The tutorials were developed by the instructors having that in mind and in such a way as to ensure the engagement of the students in the learning process and to ensure feedback, which is an extremely important part of the process of education, especially for distance learning. Therefore, an active use of IT (spreadsheet and Ms Teams platform) was implemented; following the learning-by-doing approach, performing tasks unassisted; compliant with the group-work recommendation and joint interpreting of the results, and the theory for decision-making problems was applied with the use of simulation and optimisation, which aimed at encouraging the students to critical thinking as, according to, e.g., Gainor, Blin and Zheng [29], accounting educators should encourage students to critically think by requiring them to apply concepts to a specific situation or problem.

The total number of hours of MA laboratory tutorials in the 2020/2021 winter semester for the F&A major was 45 for regular programmes and 20 – for non-regular programmes. Each tutorial started with a presentation introducing the aspects to be covered. The presentations included a brief theory introduction demonstrating the application of a given spreadsheet tool for managerial accounting, its disadvantages and advantages as well as an example of the actual problem. The next part of the tutorial involved solving the tasks concerning various decision-making problems with the use of adequate Ms Excel tools. The topics covered, e.g., costing models, sales price calculation, models of planning and profit sensitivity analysis with the Scenario manager and Goal seeking tools, break-even point analysis and its graphic interpretation, optimisation problems with external and internal constraints with the Solver tool, multidimensional analyses of revenue and costs with pivot tables, developing multi-level contribution margin statements and determining the product and client profitability ranking. All the tasks were shared in adequate Ms Teams folders and for the entire semester each student enjoyed access to it.

The students were activated to a content-wise discussion, they shared their screens, entered adequate formulas and spreadsheet functions, which facilitated monitoring the progress in task-solving in real time. In that way the concentration of the students participating in the tutorials was maintained. Additionally, to verify the correctness of the task performance, the students were asked to upload them on Ms Teams platform. Due to the relatively small size of the groups, the teacher was able to control the work of the students, answer all the questions, and each student enjoyed an opportunity to present his or her solution at least several times during the semester.

In problem situations, when the student cannot manage at any task-performance stage, the student could share the screen by showing his or her spreadsheet, and the tutor pointed to what had to be corrected. Quite frequently the students used that possibility and asked for assistance or for verifying the correctness of the task performance. However, it was impossible in the situation when the students got connected using smartphones. The difficulties also occurred due to connection problems as a result of the student's low Internet connection quality. In such situations the tutor shared his or her spreadsheet and explained again how to proceed step by step to perform the task. However, it did not excuse the students from providing the answer. The tutors activated the students by asking questions both when they shared the screen with the spreadsheet and when other students did it.

According to the teachers, the tutorial delivery method facilitated the student understanding the contents and accomplishing the educational outcomes. The entire contents of the study programme were covered. To much extent, motivating the students to an active participation in classes was successful. The regular consultations facilitated explaining all the doubts and problems. According to the teachers, a good contact with students was ensured, both during online tutorials and beyond.

To confirm the positive observations of the tutors, it was decided to perform a survey study with students. The methodology and the results are presented further in the article.

#### 4. Materials and Methods

The primary objective of the empirical study was to get to know the opinions of the students on the MA laboratory tutorials delivery online with the use of spreadsheet. The specific objectives of the study have been as follows:

1. Getting to know the students' opinions on the effectiveness of the tutorial delivery and the skills acquired.
2. Indicating the advantages and disadvantages of tutorials in a form of e-learning, online.
3. Getting to know the students' opinions on the MA tutors' preparation and engagement and getting to know whether in the second semester of the pandemic the quality of education improved, as compared with the preceding semester.
4. Indicating the recommendations for applying distance learning in the future education (including some aspects of Managerial Accounting which can be successfully delivered as e-learning and those which should be taught in a traditional way).

The following research question were also asked: Does the perception of the benefits of e-learning depend on whether students are working or not?

The study was performed with the survey method and included all the third-year students majoring in F&A at the Faculty of Management, the UTP in Bydgoszcz, following regular and non-regular programmes in the winter semester, in the 2020/2021 academic year, participating in a MA laboratory course. The online survey technique was applied. The survey questionnaire covered dozen questions divided into six groups. The first-group questions concerned the general opinion and some detailed aspects on the MA tutorials. The second group covered the questions about the skills acquired, and the third one – the advantages and disadvantages of e-learning. The fourth group concerned the way the students perceived the approach of the MA educators, especially their preparation, engagement and attitude to the students, as well as tutorial quality improvement in the second semester of e-learning. The fifth-group questions aimed at providing tips about a possibility of using e-learning in IT-aided courses (like MA laboratory courses) in the future. The last group included also an open-ended question concerning the students' comments about what would make MA e-learning more efficient.

In order to answer the research question, the indications regarding the benefits of e-learning were analyzed separately for working and non-working students. The questionnaire was shared with the students in the last MA classes using *Google Forms* in February 2021 for two weeks.

#### 5. Results

The questionnaire was completed by 77 (80%) of 96 regular programme students and 8 (47%) of 17 non-regular programme students. There were 61 women and 24 men. 46% of the students are persons with a job. The results provide the students' point of view, which is of paramount importance, on distance learning they have experienced as they are the ones who can state whether e-learning was, for them, more burdensome than traditional education as well as whether e-learning led to the educational outcomes expected.

##### 5.1 General evaluation of the Managerial Accounting e-tutorials

The first group of questions provided in the questionnaire referred to the general evaluation of the tutorials. The average MA e-tutorial score was 4.44; 53% of the respondents awarded a very good grade and almost 38% - a good grade, 9.4% rated it as average, and no one rated it as poor or very poor. Detailed questions concerned the evaluation of various aspects related to the MA tutorial (Fig. 1). Almost 59% of the students claim that online MA tutorials are effective. The opposite opinion was expressed by fewer than every fourth respondent, and every fifth respondent (19%) had no opinion. According to the students, the tutorial method was sufficient to acquire the skills required. Respectively, 32% and 46% of the students definitely agree or rather agree with the statement. The students claim that e-learning enhanced their task performance self-reliance (20% definitely yes, 45% rather yes). Every third person claims that it increased an interest in the course and every fourth expresses the opposite opinion. For 42% of the respondents, the form of classes is not important from the point of view of interest in the subject. As for whether the tutorial contents could be better explained in traditional tutorials, the opinions differ. About 38% of the respondents claim that the traditional form would be better, the opposite opinion is expressed by 36% of the students. Every fourth person expresses no opinion on this subject. Almost 44% of the students indicate that in some situations, they could not, without electronic aids, understand the contents taught. Every third respondent is of the opposite opinion. 69% of the respondents claim that e-learning tutorials did not pose any difficulties in presenting the work done. Nevertheless,

every third student indicates that at least once they faced some difficulty with downloading or opening the exercise contents file. Almost 62% of the students have never encountered any such problem.

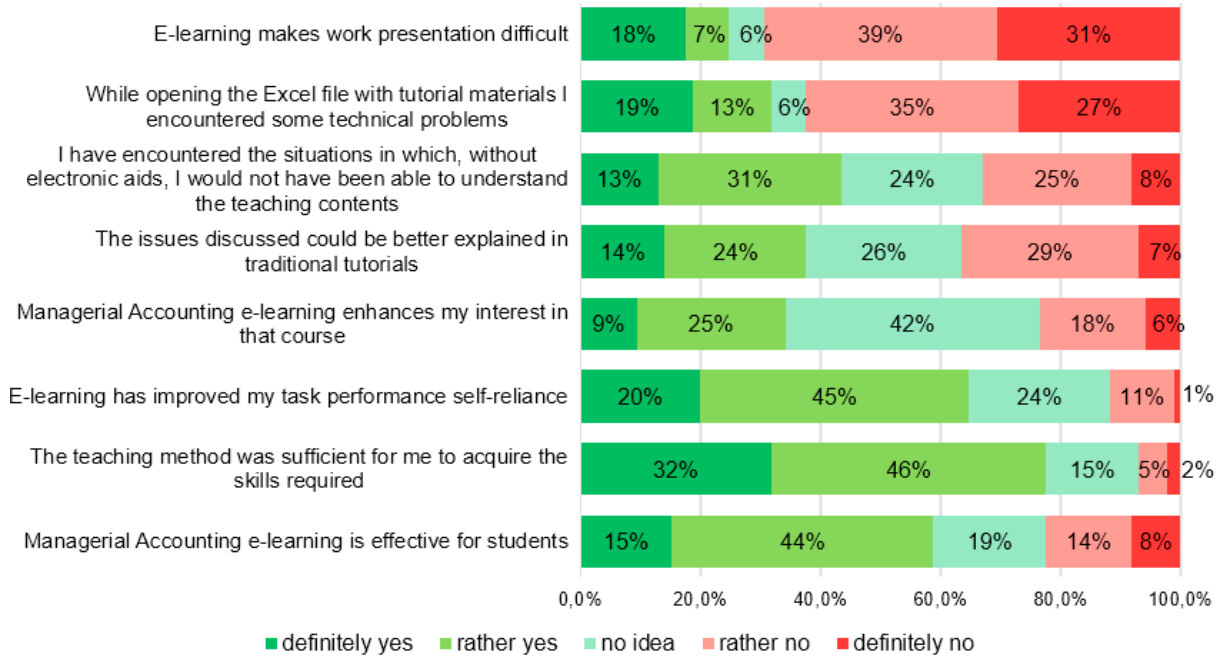


Fig. 1. Evaluation of various aspects of Managerial Accounting e-tutorials

5.2 Evaluation of the skills acquired

The next group of questions addressed the students’ evaluation of the skills acquired (Fig. 2).

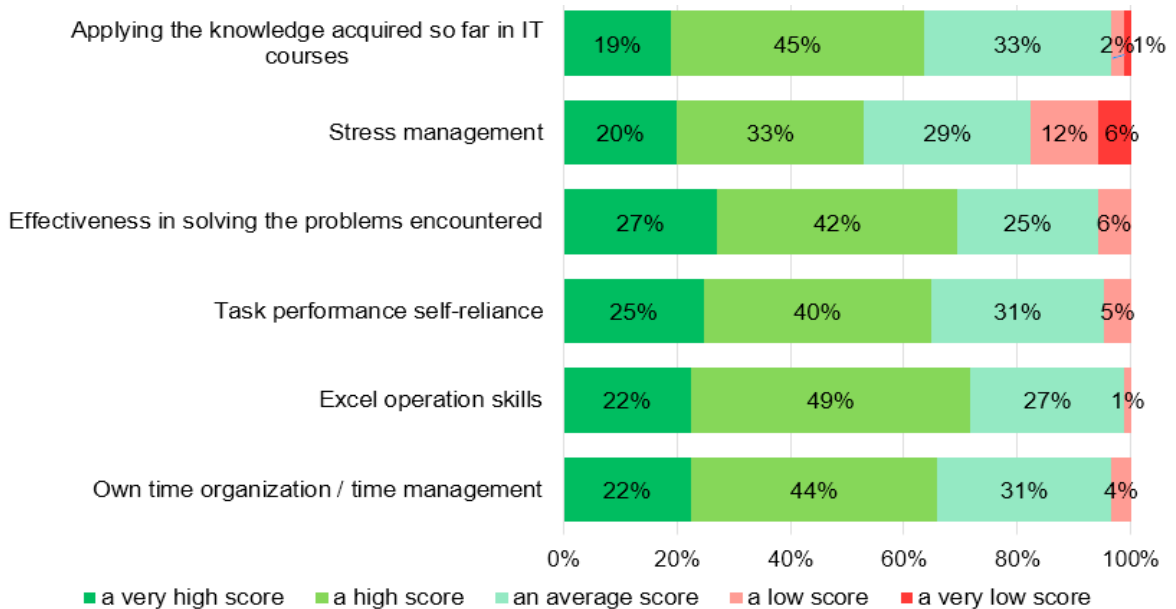
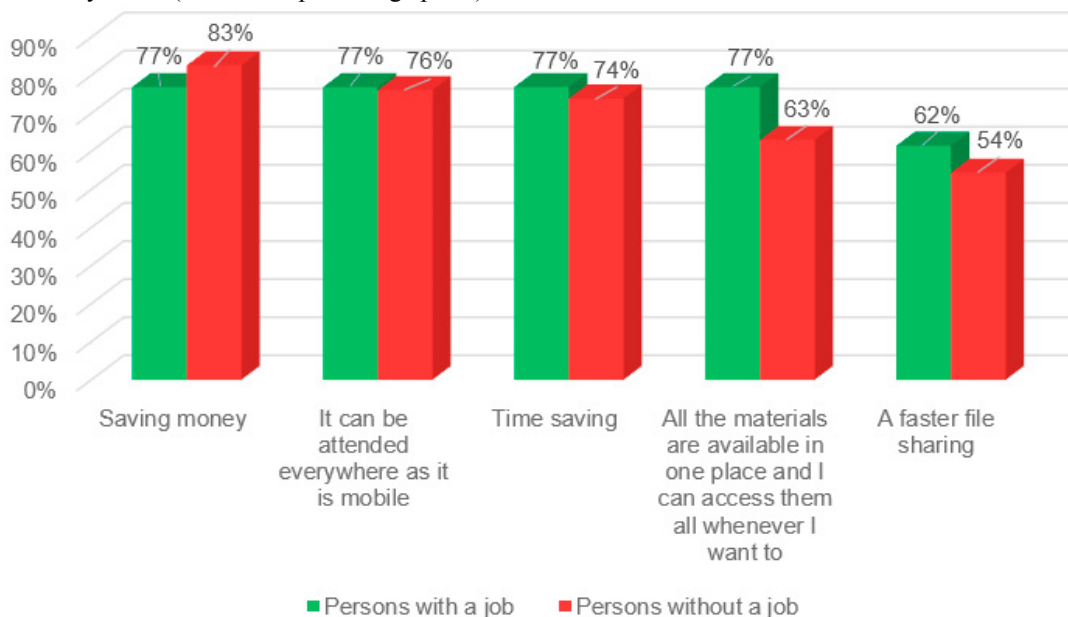


Fig. 2. Evaluation of the skills acquired by the students during Managerial Accounting e-tutorials

The Excel spreadsheet skills were considered by a vast majority of the respondents as very high or high (49% and 22% of the respondents, respectively). The time management was considered by nearly 44% of the respondents to be at a high level, and by 22% - very high. Most of the students considered the skills acquired to be high or very high both in terms of the effectiveness of solving the problems encountered (42% of high grades and 27% - very high) or applying the knowledge acquired earlier in IT courses (45% and 19%). The students consider coping with stress to be relatively the worst, while almost 6% - very bad, 12% - bad, and almost 30% - average.

### 5.3 Advantages and disadvantages of e-learning in the opinion of the students

The questions to be answered by marking more than one answer were to identify the factors the respondents consider to be advantages or difficulties with e-learning. Saving money related, e.g., with no need to rent a flat, with mobility, time saving resulting from no need to get to university, making all the materials available in one place for the entire semester or a faster file sharing, are the five most frequently indicated advantages of e-learning (80%, 77%, 75%, 69%, 58% of the responses, respectively). In order to find the answer to the first research question, the responses of working and non-working students were compared. As it is seen in Fig. 3, the differences in the percentage of the students' indications of respective advantages are not very big. With the exception of saving money, slightly more working students than non-working students indicated the benefits of e-learning, with the largest difference in the availability of teaching materials (by 14 percentage points), and the smallest – with the possibility of participating in classes from anywhere (less than a percentage point).



**Fig. 3.** Most frequently indicated e-learning benefits depending on the career status

Among the most frequently mentioned factors making e-learning most difficult were a poor Internet connection (74%), a lower concentration during tutorials (42%), a sense of isolation (no contact with other students), (42%), conditions at home unfavourable to an active participation in tutorials (40%) as well as no direct contact with the tutor (38%).

Analysing the answers to the additional questions on the comparison of traditional classroom education and e-learning, it is impossible to state which form is better in the opinion of the students (Fig. 4). And so, e.g., 51% of the students claim that e-learning MA tutorials are not a barrier to explaining the doubts as they occur and contact with the tutor, however, more than every third respondent is of the opposite opinion. Similarly, 43% of the students claim that a lack of possibility of a simultaneous control over what the students do during tutorials is not a barrier to learning, however 40% of the respondents are of the opposite opinion. Also, 44% of them claim that e-tutorials require a greater engagement, yet every third student does not agree with that statement. Nearly every second respondent (48%) also claims that e-learning requires more time, however more than every third one claims the opposite. It is



also worth highlighting that, on the one hand, most students think that in traditional learning conditions they enjoyed a better balance between private life and studying (58%), which points to the advantage of that form of education. On the other hand, e-learning facilitates the acquisition of new competences, which was appreciated by 61% of the respondents.

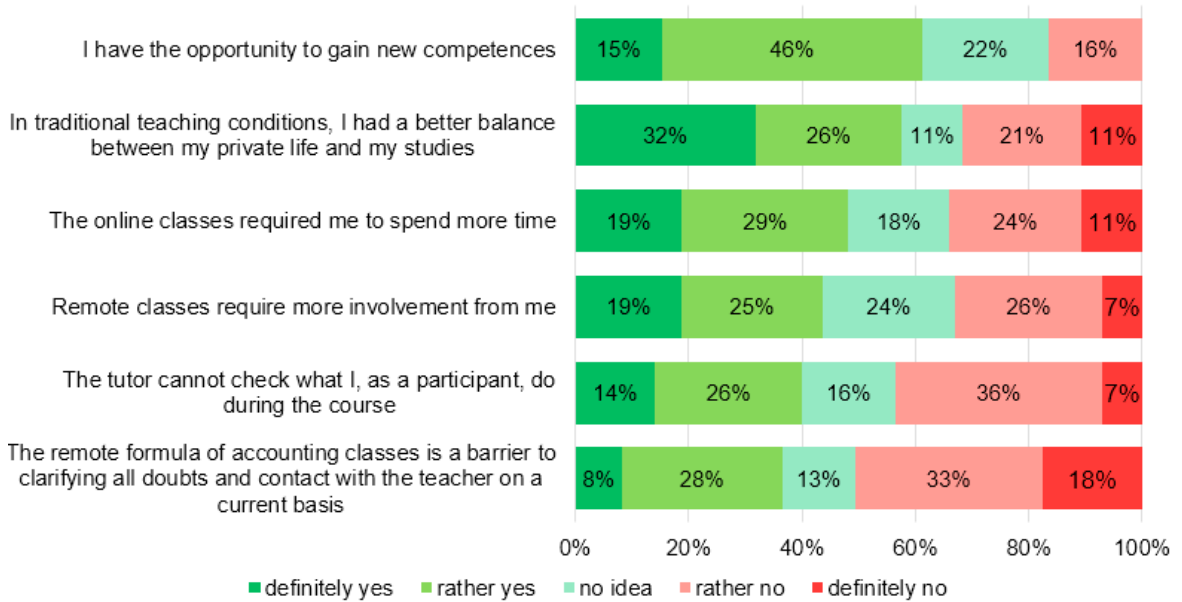


Fig. 4. Comparison of traditional classroom and e-learning education

5.4 Evaluation of the tutors and tutorial quality improvement in the second semester of e-learning

The fourth group of questions concerned the students opinions about the MA teachers. The surveyed were asked to evaluate 6 aspects of the teachers’ preparation to classes and their engagement in the teaching process (Fig. 5).

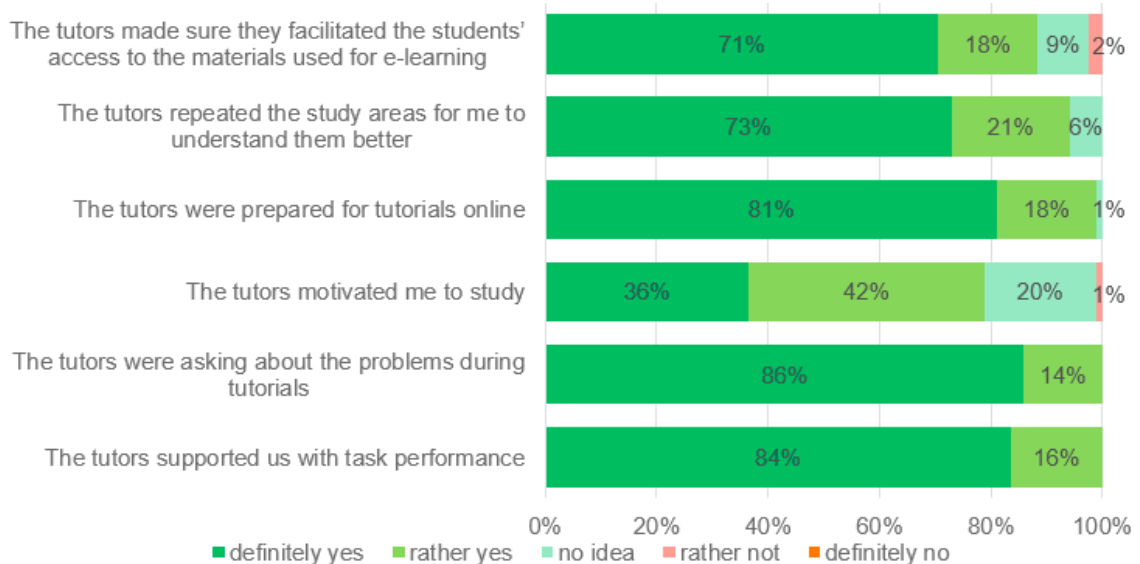


Fig. 5. Evaluation of the student-tutor relations during Managerial Accounting e-tutorials

The results show a high engagement of the tutors and a very good preparation for online classes. None of the respondents had any reservations to the tutors' preparation to online classes. Just on the contrary, as many as 99% of them claimed that the teachers were adequately prepared, of which more than 80% gave a very good grade. Most students definitely claim that the tutors supported them with task performance (84%) and asked about the problems which might appear (86%). In the opinion of most of the respondents the issues were many times repeated, which enhanced understanding (73% of the answers were definitely "yes"). 9 of 10 students appreciate that the tutors ensured the students' access to the materials used in e-learning. The respondents also indicated that, despite e-learning, they were motivated to study. 78% of the students are sure or definitely sure about it.

### 5.5 Guidelines on future MA e-learning

The fifth group of questions was to collect information on a possibility of delivering MA tutorials as e-learning in the future. The respondents claimed that e-learning should be an element supplementing a traditional form of education, which is what more than 30% of the students are definitely positive about, and 34% - rather positive about. Also, an intermediate exam in the MA course, in the opinion of every second person, should be held as e-learning. 45% of the persons express a general opinion that the IT-aided courses should be online.

As stressed in the literature review of MA education, the skill of the right use of spreadsheet to solve decision-making problems is becoming more and more important. To solve the problems of managerial accounting, there were, therefore, used specific spreadsheet tools, e.g., Solver, goal seeking, scenario manager, tables, filters and subtotals or formulas. The respondents were asked to indicate which of the issues and tools learnt in the classes could be covered online, and which – face-to-face. The results show that, in the opinion of every second person, all the aspects learnt in the MA tutorials could be online. For every fourth or every fifth person, the form of MA tutorials does not matter. Less than 25% believe that these should be traditional classes, and in the case of more advanced tools, such as Solver or Scenario manager, it is slightly more (31% and 27%, respectively).

The last question of that group was open-ended and it concerned the opinions of the students about what, in their opinion, would make e-learning MA more efficient; 31 responses were received. Almost each answer included a positive grade awarded to the tutorials. The students pointed to a satisfactory level of education, an efficient flow of the classes and a good contact with the tutors. The possible facilitations included introducing a division of the students to even smaller groups, e.g., with Ms Teams rooms, where the students could do their tasks unassisted and the tutors could simultaneously monitor the advancement of their work. In the opinion of a few people, a greater number of tasks performed unassisted, once an example is demonstrated, could help to acquire the contents discussed even more.

## 6. Discussion

The results of the study confirm that e-learning education online can be effective and enhance the students' performance and the results agree with the results of the latest studies cited in the introduction; McCarthy, Kusaila and Grasso [10] as well as Fortin et al. [11]. The effectiveness of the online MA education was considered by the students as very positive. More than 90% of them referred to it as very good or good.

One can, however, state that the results of our study agree with the results of most of the previous studies. Earlier, e.g., the reports by Gavira and Omoteso [13] demonstrated that '*learners assume a more active role. Learners are not only recipients of information, as usually happens in traditional face-to-face lectures, but they also take an active part in the learning process.*' Our study is yet another piece of evidence of the advantage of the active learning approach over the passive approach. The students highly appreciated the way the tutorials were delivered as motivating to an active participation.

Opposite to the earlier studies [6], [7], [8], [9], as well as the latest ones [11], which indicated [9] either the advantage of traditional learning over distance learning or a lack of differences between the two, our study has identified that most students grade all the aspects of delivering the tutorials as very good or good, both those concerning the skills acquired, the tutors and the unique features of distance learning which, in their opinion, brings tangible benefits.

The students confirmed that e-learning supports self-study and enhances task performance self-reliance. It coincides with the opinions expressed already more than 20 years ago by, e.g., Hiltz [48] and Maki et al. [49], who claimed that virtual forms of education improve learners' achievements and attitudes towards learning and improve learners' evaluation of their learning experience [50]. As an advantage of e-learning the students pointed to a possibility of teachers' sharing the materials and tasks to do which they could access outside the tutorials. It increases

student's engagement because students appreciate being able to choose their learning style, the pace of study, and when, and where they learn [51], [52]. More than three fourths of the students, listing the distance learning advantages, mentioned time- and money-saving and a possibility of taking part in the classes from any place thanks to the mobile application availability. The results can be considered convergent with the results reported by Fortin et al. [11], showing that the students appreciate the flexibility in managing their schedule and avoiding travel, and with the earlier studies by Reynolds, Rice and Uddin (2007), which demonstrate that student's benefits of having the possibility to choose the time and place of learning. Gavira and Omoteso [13] claim that, '*as a consequence of flexible working hours, students can combine study and paid employment*'. This is more clearly confirmed by the experiences of the teachers who encountered situations in which the student participated in the classes while, at the same time, in the workplace.

The studies by Ng [53] suggested that the students who have other essential professional and family duties benefit from e-learning most. Even though it might seem surprising, our study does not seem to confirm it. The results do not point to serious differences in the way the students with and without a job consider the advantages. We must admit, however, that in our study we did not consider the respondents' family situation.

Yet another important aspect of evaluating the MA tutorials were the students' opinions about the tutors. We are positive that a very good opinion of the students about the tutors confirms the fact that the tutor is of key importance in learning, which coincides with the opinion expressed more than 20 years ago by Volery and Lord [54]; the tutor will still play the key role in online education, although the tutor's role will become a learning catalyst and a knowledge navigator. The students appreciated, e.g., a very good communication with the teacher, also outside the online classes, and getting mobilized by questions, which, according to some [55], [56] is '*an effective way to promote active learning*'.

Our studies confirm that online learning still encounters technical problems. As an e-learning disadvantage, the students listed a sense of isolation, which coincides with the results of the earlier studies showing that e-learning tends to lead to learners' feelings of isolation [57]. The study by Gavira and Omoteso [13] showed that because in the e-learning all the contact is through the computer, the relationship between instructor and students can become impersonal and colder. In our study the students also considered the lack of an immediate contact with the tutor to be a disadvantage. Jalobeanu [58] emphasised that instructors must understand that it is their hard work and engagement that would be necessary to overcome the obstacles of e-learning. A high appreciation of the preparation, engagement and communication with tutors means that they managed to create a powerful learning environment.

Our study confirms also that the students appreciate a groupwork; when addressing the open questions, they indicate the need of using the functionalities of Ms Teams platform, which can create the rooms for student subgroups. Implementing the recommendation of the division of the tutorial groups into smaller subgroups could eliminate the lack of the interaction between the students.

## 7. Conclusions

The study shows that the students very highly appreciated the MA tutorials delivered in a form of e-learning, online. Despite having to change to distance learning, it turned out that an intermediate exam in lab tutorials can be successfully carried out online. The students received accurate instructions in terms of the time and the method of taking a test, after which, at the specific time, they were obliged to send back the sheets with the tasks. All the students taking up a lab-tutorial intermediate-exam, at the first or the second date, were awarded a positive grade. One must note, however, that the teacher did not have a full control over the process of students' task-solving, and the only condition making the student-to-student communication difficult during the intermediate exam was a limited task-solving time. The authors think that a very positive grade of the skills acquired confirms that the expected educational outcomes have been achieved.

Interestingly, the students very highly appreciated the preparation, engagement and a friendly attitude of the academic teachers, which confirms that the teacher is still, and hopefully will, in the future, play the key role in online learning.

Similarly, as in other studies, the students considered the main advantages of distance learning to include time- and money-saving as well as a possibility of participating in tutorials from any place.

Despite a common broadband Internet connection availability, the most frequently indicated e-learning disadvantage was a poor internet connection listed by as many as three fourths of the students and more than a half claimed it made an active participation in tutorials considerably difficult. An important observation is also that only

every second person indicated that it enjoyed the conditions at home favourable to learning. The disadvantages included a lower concentration during classes, a sense of isolation and a lack of the immediate contact with the tutor. In that sense it can be concluded that, in long-term, changing to distance learning can lower the quality of education. The MA lab tutorials, both face-to-face before and during e-learning pandemic, involved the use of spreadsheet. Except for a lack of the immediate contact with the tutor, online learning conditions were close to the real ones before the pandemic. It can be the reason of the opinion expressed by most of the students that e-tutorials in Managerial Accounting could be, in the future, an element supplementing the traditional form of education, be provided as e-learning and that most teaching contents can be covered in such a form.

Importantly, the students observed a considerable improvement in the quality of education in the second semester of e-classes when they were delivered online.

To sum up the conclusions of the study, it can be stated that Managerial Accounting tutorials in a form of e-learning, online, ensure the continuity of education during the COVID 19 pandemic and accomplishing the expected educational outcomes. On top, it meets the expectations of most of the students and it was appreciated by them.

## References

- Bryant, Stephanie M., Kahle, Jennifer B., Schafer, Brad A., Distance education: A review of the contemporary literature. *Issues in Accounting Education*, **2005**, 20, pp. 255–272.
- Parkinson, Alan, Chew, Lynsie, Miller, Roland, Student perceptions of e-learning components within a Masters level accounting module. *2012 2nd International Conference on Consumer Electronics, Communications and Networks (CECNet)*, April 2012, pp. 3517-3521.
- Metrejean, Eddie, Noland, Thomas., An analysis of CPA firm recruiters' perceptions of online masters of accounting degrees. *Journal of Education for Business*, **2011**, 86, pp. 25–30.
- Redpath, Lindsay, Confronting the bias against on-line learning in management education. *Academy of Management Learning & Education*, **2012**, 11, pp. 125–140.
- Morgan, John Daniel, Online versus face-to-face accounting education: A comparison of CPA exam outcomes across matched institutions. *Journal of Education for Business*, **2015**, 90(8), pp. 420-426.
- Bunn, Esther, Fischer, Mary, Marsh, Treba, Does the classroom delivery method make a difference? *American Journal of Business Education*, **2014**, 7(2), pp. 143–150.
- Chen, Clement C., Jones Keith T., Moreland, Keith A., Online accounting education versus in-class delivery: Does course level matter? *Issues in Accounting Education*, **2013**, 28(1), pp. 1–16.
- Huh, Sungkyoo, Jin, John Jongdae, Lee, Kyung Joo, Yoo, Sehwan, Differential effects of student characteristics on performance: Online vis-a-vis offline accounting courses. *Academy of Educational Leadership Journal*, **2010**, 14 (4), pp. 81–89.
- Dereshiwsky, Mary, Rich, Anne, Assessing the comparative effectiveness of teaching undergraduate intermediate accounting in the online classroom format. *Journal of College Teaching & Learning (TLC)*, **2011**, 8(9), pp. 19–27.
- McCarthy, Mary, Kusaila, Michelle, Grasso, Lawrence, Intermediate accounting and auditing: Does course delivery mode impact student performance? *Journal of Accounting Education*, **2019**, 46, pp. 26–42.
- Fortin, Anne, Viger, Chantal, Deslandes, Manon, Callimaci, Antonello, Desforges, Pierre, Accounting students' choice of blended learning format and its impact on performance and satisfaction. *Accounting Education*, **2019**, 28(4), pp. 353-383.
- Grabinski, Konrad, Kedzior, Marcin, Krasodomska, Joanna, Herdan, Agnieszka, Embedding e-Learning in accounting modules: The educators' perspective. *Education Sciences*, **2020**, 10(4), pp. 97-115.
- López Gavira, Rosario, Omotoso, Kamil, Perceptions of the usefulness of virtual learning environments in accounting education: A comparative evaluation of undergraduate accounting students in Spain and England. *Accounting Education*, **2013**, 22(5), pp. 445-466.
- Gow, Lyn, Kember, David, Does higher education promote independent learning?. *Higher education*, **1990**, 19(3), pp. 307-322.
- Hall, Rex, Greengrass, David, Metcalfé, Judith, Independent learning in practice: An examination of student behaviour in the Open University UK. *Open Learning: The Journal of Open, Distance and e-Learning*, **1993**, 8(3), 26-35.
- Hockings, Christine, Thomas, Liz, Ottaway, Jim, Jones, Rob, Independent learning—what we do when you're not there. *Teaching in Higher Education*, **2018**, 23(2), pp. 145-161.
- Candy, Philip. C., *Self-Direction for Lifelong Learning. A Comprehensive Guide to Theory and Practice*. Jossey-Bass, 350 Sansome Street, San Francisco, CA, **1991**, 94104-1310.
- Chan, Victoria, Learning Autonomously: The learners' perspectives. *Journal of Further and Higher Education*. **2001**, 25(3), pp. 285-300.
- Meyer, Bill, Haywood, Naomi, Sachdev, Darshan, Faraday, Sally, What is independent learning and what are the benefits for students. *Department for Children, Schools and Families Research Report*, **2008**, 51.
- Murad, M. Hassan, Varkey, Prathibha, Self-directed learning in health professions education. *Annals Academy of Medicine Singapore*, **2008**, 37(7), pp. 580.
- McLinden, Mike, Edwards, Corony, Developing a culture of enquiry-based, independent learning in a research-led institution: Findings from a survey of pedagogic practice. *International Journal for Academic Development*, **2011**, 16(2), pp. 147-162.
- HEA, *Independent Learning from Teaching International Students Project*, York: Higher Education Academy, **2014**.
- Umaralieva, Munojatkhon, Some challenges in encouraging independent learning. *Academic research in educational sciences*, **2021**, 2(4), pp. 1878-1882.
- Burd, Barbara A., Buchanan, Lori E., Teaching the teachers: teaching and learning online. *Reference Services Review*, **2004**.
- Abdulrahman, Asma, Alshaikh, Nami, The Effect of Using Flipped Classrooms on Developing Mind-Habits and Self-Learning Skills Among the Students at Prince Sattam Bin Abdulaziz University. *Ilkogretim Online*, **2021**, 20(1), pp. 899-911.

26. Cameron, Cameron, Clark, Pat, Zwaan, Laura De, English, Diane, Lamminmaki, Dawne, O'Leary, Conor, Rae, Kirsty, Sands, John, The importance of understanding student learning styles in accounting degree programs. *Australian Accounting Review*, **2015**, 25(3), pp. 218-231.
27. Kaplan Robert S., New Roles for Management Accountants. *Journal of Cost Management*, **1995**, pp. 6-13.
28. Pittman, Kelly, Edmond, Tracie, Student engagement and performance: is technology the answer? *Academy of Educational Leadership Journal*, **2016**, 20(3), pp. 44-55.
29. Gainor, MaryElla, Bline, Dennis, Zheng, Xiaochuan, Teaching internal control through active learning. *Journal of Accounting Education*, **2014**, 32(2), pp. 200-221.
30. Fatima, A.H., Ahmad, Nik Nazli Nik, Nor, Putri Nor Suad Megat Mohd, Nor, Anita Mohd, Accounting students' perceptions of effective teaching methods and instructor characteristics: some Malaysian evidence. *Management & Accounting Review*, **2007**, 6(1), pp. 101-128.
31. Handy, Sheila A., Polimeni, Ralph S., Engaging students-use of active learning activities to enhance student learning in an introductory managerial accounting course. *Journal of Applied Research for Business Instruction*, **2015**, 13(3), pp. 1.
32. Matherly, Michele, Burney, Laurie L., Active learning activities to revitalize managerial accounting principles. *Issues in Accounting Education*, **2013**, 28(3), pp. 653-680.
33. Burnett, Sharon, The Future of Accounting Education. A Regional Perspective. *Journal of Education for Business*. **2003**, pp. 129-134.
34. Welch, Orion J., Madison, Tom, Welch, Sandra, Accounting professionals' value assessment of entry level IT skills and topics: A comparison of the differences between CPA firms and industry/government organizations. *Issues in Information Systems*, **2010**, 11(1), pp. 211-215.
35. Tam, Thomas, What IT knowledge and skills do accounting graduates need?, *New Zealand Journal of Applied Business Research*, **2013**, 11(2), pp. 23.
36. Weaver, Pamela Q., Kulesza, Marie G., Are new accounting hires equipped to meet employers' expectations? *Connecticut CPA*, **2013**, pp. 12-14.
37. Lafond, C. Andrew, McAleer, Anna C., Wentzel, Kristin, Enhancing the Link between Technology and Accounting in Introductory Courses: Evidence From Students, *Journal of the Academy of Business Education*, **2016**, 17, pp. 95-108.
38. Zeidan, Rabih, Reed, Anita, Enhancing Student Engagement and Learning Outcomes Using an Excel Based Teaching Case in Introductory Accounting Courses. *Southwest Teaching and Learning Journal*, **2013**, pp. 120-135.
39. Convery, Susan P., Swaney, Amy M., Analyzing Business Issues-With Excel: The Case of Superior Log Cabins, Inc., *Issues in Accounting Education*, **2012**, 27(1), pp. 141-156.
40. Ragland, Linda, Ramachandran, Usha, Towards an understanding of Excel functional skills needed for a career in public accounting: Perceptions from public accountants and accounting students. *Journal of Accounting Education*, **2014**, 32, pp. 113-129.
41. Bradbard, David A., Alvis, Charles, Morris, Richard, Spreadsheet usage by management accountants: An exploratory study. *Journal of Accounting Education*, **2014**, 32, pp. 24-30.
42. Lee, Chang Boon Patrick, Tang, Heng, Sam, Kin Meng, Xiong, Gang, Spreadsheet proficiency: which spreadsheet skills are important?. *J. Inf. Technol. Manag.*, **2018**, 29(3), pp. 35-44.
43. Cory, Suzanne N., Pruske, Kimberly A., A Factor Analysis of the Skills Necessary in Accounting Graduates. *Journal of Business and Accounting*, **2012**, 5(1), pp. 121-128.
44. Gean, Farrell, Gean, Virginia, The Desirability of an Integrated Learning Methodology for Enriching CVP Analysis. *Journal of Business and Accounting*, **2015**, 8(1), pp. 127-137.
45. Frownfelter-Lohrke, Cynthia, Teaching good Excel design and skills: A three spreadsheet assignment project, *Journal of Accounting Education*, **2017**, 39, pp. 68-83.
46. Bedore Gerry L., Bedore M.R., Bedore Gerry L., Jr. OnLine Education. The Future Is Now, Phoenix, **2001**, pp. 70-73.
47. Kopzhassarova, Umit; Akbayeva, Gulden; Eskazinova, Zhanar; Belgibayeva, Gulbarshyn; Tazhikeyeva, Akerke, Enhancement of Students' Independent Learning through Their Critical Thinking Skills Development. *International Journal of Environmental and Science Education*, **2016**, 11(18), pp. 11585-11592.
48. Hiltz, Starr Roxanne, Teaching in a virtual classroom. *International Journal of Educational Telecommunications*, **1995**, 1(2), pp. 185-198.
49. Maki, Ruth H, Maki, William S., Patterson, Michele, Whittaker, P. David, Evaluation of a web-based introductory psychology course: learning and satisfaction in on-line versus lecture courses, *Behavior Research Methods, Instruments and Computers*, **2000**, 32(2), pp. 230-239.
50. Alavi, Maryam, Computer-mediated collaborative learning: an empirical evaluation. *MIS Quarterly*, **1994**, 18(2), pp. 159-174.
51. Dowling, Carlin, Godfrey, Jayne M., Gyles, Nikole, Do hybrid flexible delivery teaching methods improve accounting students' learning outcomes? *Accounting Education*, **2010**, 12, pp. 373-391.
52. Poon, Joanna, Use of blended learning to enhance the student learning experience and engagement in property education, *Property Management*, **2012**, 30, pp. 129-156.
53. Ng, Cory, Emerging trends in online accounting education at colleges. *Pennsylvania CPA Journal*, **2011**, 82(1), pp. 1-3.
54. Volery, Thierry, Lord, Deborah, Critical success factor in online education, *The International Journal of Education Management*, **2000**, 14(5), pp. 216.
55. Yazedjian, Ani, Kolkhorst, Brittany Boyle, Implementing small-group activities in large lecture classes, *College Teaching*, **2007**, 55, pp. 164-169.
56. Morton, Ann, Lecturing to large groups, in: Fry, Heather, Ketteridge, Steve, Marshall, Stephanie, eds., A Handbook for Teaching and Learning in Higher Education: Enhancing Academic Practice (Routledge, New York, NY), **2009**, pp. 58-71.
57. Handy, Sheila Anne, An exploratory study of learners' use of a computerised accounting tutorial, Information Technology. *Learning and Performance Journal*, **2005**, 23(2), pp. 17-29.
58. Jalobeanu, Mihai, The internet in education: the past, the present and, hopefully, the future, in: N. Nistor, S. English, S. Wheeler (Eds) Toward the Virtual University: International Online Learning Perspective, **2003**, pp. 23-36 (Greenwich: Information Age Publishing).