W kierunku umiędzynarodowienia / Towards internationalization

Online-only learning during the COVID-19 pandemic. What determines accounting students’ engagement?¹

Nauka zdalna podczas pandemii COVID-19. Co determinuje zaangażowanie studentów rachunkowości?

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Abstract

Objective: The paper aims to identify the factors that determine accounting students’ engagement in online-only learning during the COVID-19 pandemic.

Methodology/research approach: The unified theory of acceptance and use of technology (UTAUT) is used as a theoretical lens. Survey responses provided by accounting students participating in online-only courses at Polish universities between May and June 2020 are analyzed, and regression analysis is employed to verify the research hypotheses.

Findings: According to our findings, student effort expectancy and performance significantly and positively influence their engagement in online-only learning. Age is also significant for student engagement, with younger students being more engaged in online-only learning than older ones.

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Originality/value: The study contributes to the literature on distance learning as it investigates a relatively unexplored group of students in an unprecedented situation. The paper also proposes new measures to capture UTAUT factors. The findings are also relevant for practice. It seems that after the pandemic, online learning will continue to be used and ensuring student engagement will become more relevant than technological issues, already mastered by both sides of the educational process.

Keywords: distance learning, unified theory of acceptance and use of technology, UTAUT, survey, COVID-19.

Introduction

The COVID-19 pandemic has pushed educators out of their comfort zones with the switch to online-only delivery. When planning online classes, teachers had to take into account their and their students’ technical capabilities, their competence in building Internet-mediated learning, and a number of fundamental issues necessary for the success of this form of education (Winiarczyk, Warzocha, 2021). The sudden shift to this environment, completely alien to many of them, resulted in stress (Kwiatkowski, 2021) and the inevitable deterioration of the quality of education. During the first weeks of the lockdown, the focus was placed on ensuring continuity of the educational process. Most educators devoted their energy to mastering the new distance learning tools and transforming traditional (face-to-face) delivery into the remote version as quickly as possible. Preparing high-quality teaching materials, becoming proficient at using previously unknown software, delivering assessments, and providing technical support to accounting students was extremely challenging for many faculty members. The new situation also impacted student engagement (Sangster et al., 2020).
According to Cole and Chan (1994, p. 259), student engagement is ‘the extent of student involvement and active participation in learning activities’. Similarly, Li and Baker (2018, p. 42–43) define educational engagement as ‘the investment of time, energy, and effort in learning activities’. Student engagement is a central concept in the literature on teaching and learning in higher education (Meyer, 2014), and its key elements neither assume nor require face-to-face instruction (McCormick et al., 2013; Paulsen, McCormick, 2020).

The study aims to investigate the factors that determine student engagement in online-only learning during the COVID-19 lockdown and uses the unified theory of acceptance and use of technology (UTAUT) as a theoretical lens. From May to June 2020, accounting students who participated in online-only courses at seven Polish universities were surveyed. The collected responses are further examined using descriptive statistics and regression analysis. According to our findings, students’ self-assessment of their engagement is high. However, their effort expectancy is low, implying that they do not find online learning tools easy. Simultaneously, their perceived ease of use is significantly and positively related to engagement in online-only learning. Student engagement is also influenced by the positive assessment of online-only learning in the context of academic and job performance. Neither facilitating conditions nor social influence has a significant positive effect on student engagement in online-only learning. Of the moderating factors, only age influences it positively. Other factors, such as voluntariness of use, gender, and experience, are not relevant.

Our paper contributes to the literature on distance learning in higher education in at least three ways. First, we focus on Poland, which is a relatively unexplored setting as regards online education. Despite the increased use of distance learning tools in this country and the important implications this has for the professional qualifications of Polish students, they remain relatively underresearched. Second, we can test UTAUT in an online-only environment, introduced in response to the COVID-19 pandemic. Third, we use our own approach to capture the UTAUT factors.

Our study findings are also relevant for practice. We believe that education in most countries will not return to what it was like before the COVID-19 pandemic. The standard approach will be a ‘blended mix’ of face-to-face (F2F) and online delivery, with the latter at a much more significant level than before (Sangster et al., 2020). The educators’ and accounting students’ experiences gathered during the first months of the crisis allow us to identify and address the issues in education that need improvements; student engagement is one of them.

This study comprises five main sections. After the introduction, student engagement in the context of the COVID-19 pandemic is briefly discussed. Then, the theoretical background is presented, and research hypotheses are developed. Next, the research methods are introduced. Subsequently, the research findings are discussed. The final section concludes the research, providing a discussion of the study’s limitations and indicating future research possibilities based on the contents of the paper.
According to Perrin et al. (2020), the literature shows that the need for physical distancing during the pandemic comes at a psychological cost for people affected, and COVID-19, as with previous catastrophes and disasters, might be associated with psychological distress, depression, anxiety, panic, posttraumatic stress disorder, and interpersonal problems. The literature on mental health and emotional well-being demonstrates that emotions impact students’ academic experience (Garris, Fleck, 2020). Dhar et al. (2020) refer to several studies that focus on students who suffer from stresses and negative emotions due to COVID-19 (e.g., Cao et al., 2020; Elmer et al., 2020). Their loneliness increased, and well-being and learning effectiveness decreased, and it was particularly noticeable for students who were already experiencing vulnerabilities (Waters et al., 2021).

Student engagement is perceived as ‘students’ involvement in activities and conditions that are linked with high quality learning’ (Kuh, 2001, p.12). Some studies stress the positive influence of online delivery on student engagement. Asynchronous learning allows learners more time to think critically and reflectively, and facilitates collaboration, which is an important element of student engagement (Chen et al., 2010). As regards synchronous online learning, according to Francescucci and Rohani (2018), virtual, interactive, real-time, instructor-led online learning can deliver the same student engagement outcomes as a F2F course. Students who attended more ‘wired’ institutions, as well as those with increased familiarity with computers, were found to be more engaged in good educational practices and developing social skills (Hu, Kuh, 2001; Kuh, Vesper, 2001). On the other hand, some authors are more critical, pointing out that learning supported by technology requires structuring interactions within the group and focusing on social aspects of learning (Meger, 2008; Dąbrowski, Zając, 2006), mainly the ‘social presence of the group members,’ to enable successful team working (cf.: Jochems, Kreijns, 2006, p. 110). However, the studies conducted to date were performed in circumstances different from those under which educators and students found themselves in Spring 2020.

The traditional nature of higher education implies that it is dominated by campus-located F2F delivery, with large group lectures and small group tutorials, workshops, or other classes. Moving from this structural constraint was one of the most important challenges at the beginning of the COVID-19 lockdown. A lack of internet access or suitable equipment, broadband bandwidth overload issues, a lack of a quiet space with access to computers, learning resource access issues, faculty preference for F2F interaction, and inertia with regard to change were included among a range of personal, social, technical, political, and economic infrastructure issues faculty needed to face. In many cases, they were strictly connected to the countries’ socio-economic and political conditions. The above problems and the need to overcome them were often connected with the high level of stress that both faculty and students experienced (Sangster et al., 2020). The
sudden and unexpected disruption of courses and lifestyles inevitably influenced student engagement.

In comparison to traditional classes, several additional negative factors impacted student engagement. They included a decrease in students’ attendance, problems with switching to online, unwillingness to connect cameras or not having cameras, muted audio, or students being quiet online (Sangster et al., 2020). Other problems were also observed, such as an increase in students’ workload, their need for additional training, or a lack of suitable conditions to study at home (Sangster et al., 2020). Due to the above, the COVID-19 crisis provides a unique context to analyze student engagement in the enforced online-only learning, as it has enabled the rapid and widespread implementation of information technology in education, and hence its transformation. Therefore, it is important to understand the consequence of this change for student engagement (cf. Mooij, 2006). The study intends to answer Harrison’s call to use a wider range of representations of learning with technology in multiple environments to extend our understanding of the relationship between information technology and learning (Harrison, 2006).

2. Theoretical background and research hypotheses

In order to understand student engagement in online-only learning during the COVID-19 lockdown, we use the unified theory of acceptance and use of technology (UTAUT) as our theoretical underpinning. UTAUT, introduced to the literature by Venkatesh, Morris, Davis, and Davis (Venkatesh et al., 2003; Venkatesh, Zhang, 2010; Straub, 2009), has become one of the leading theories of information technology (IT) and software acceptance. In the context of the teaching approaches used in the higher education environment, distance learning mostly attracts UTAUT research (Wrycza et al., 2017).

UTAUT recognizes three factors that determine behavioral intention to use IT: performance expectancy, effort expectancy, and social influence. UTAUT also distinguishes direct determinants of technology use, namely facilitating conditions (Venkatesh et al., 2003; Venkatesh, Zhang, 2010). Facilitating conditions are the environmental factors or physical behavior settings that persuade users to carry out tasks (Salloum, Shaalan, 2019). There are also four moderating factors for the acceptance and use of new technologies, namely gender, age, experience, and voluntariness of use (Venkatesh, Zhang, 2010).

Performance expectancy in the study context is defined as the degree to which a distance learner believes IT use will improve his/her job performance (Lewis et al., 2013). It can be described with the following statement: ‘I would find the current online learning system useful in my learning’ (Chen, Hwang, 2019). Prior research suggests that performance expectancy has a positive influence on student engagement in the learning process (e.g., Raman, Don, 2013; Pardamean, Susanto, 2012; Wang et al., 2009; Abu-Al-Aish et al., 2013; Chen, Hwang, 2019, Salloum, Shaalan, 2019). Therefore, we posit that:
H1: Performance expectancy has a positive effect on accounting students’ engagement in online-only learning

Effort expectancy is defined as a distance learner’s belief about the degree of ease related to the IT systems and their use. The following statement expresses this concept: ‘My interaction with the current online learning system would be clear and understandable’ (Chen, Hwang, 2019, p. 7). In line with the UTAUT and previous research (e.g., Roca, Gagné, 2008; Fagan et al., 2008; Venkatesh, Davis, 2000; Raman, Don, 2013; Wang et al., 2009; Yoo et al., 2013; Abu-Al-Aish et al., 2013; Iqbal, Qureshi, 2012; Terzis, Economides, 2011) it is expected that individual engagement in distance learning will depend upon its perceived ease and friendliness of use. Accordingly, the following hypothesis is tested:

H2: Effort expectancy has a positive effect on accounting students’ engagement in online-only learning

According to UTAUT, social influence is understood as the degree to which a distance learner perceives others’ belief that the use of the distance learning approach is important and that he or she should use it (e.g., ‘People who are important to me think that I should use online learning systems’ (Chen, Hwang, 2019, p. 7). Previous studies showed that individuals’ intention to use IT is created by social influence (Pardamean, Susanto, 2012; Raman, Don, 2013; Wang et al., 2009). Therefore, social influence is expected to be a significant factor that contributes to the behavioral intention to engage in distance learning. In line with the above, we posit that:

H3: Social influence has a positive effect on accounting students’ engagement in online-only learning

Facilitating conditions define the degree to which distance learners share the view that technical and organizational infrastructures could persuade them to engage in distance learning. These conditions can include dedicated training and individual support, materials, and platforms that are easily accessible and can be used to improve skills and knowledge in distance learning (Wang et al., 2009; Iqbal, Qureshi, 2012; Khechine et al., 2014). Based on the studies published to date, we propose the following hypothesis:

H4: Facilitating conditions have a positive effect on accounting students’ engagement in online-only learning

We believe that the factors referred to in the research hypotheses, and relevant for the use of IT by students, will determine their engagement in distance learning during the COVID-19 pandemic.

3. Research design

3.1. Data collection

The primary source of data was an online questionnaire distributed among the students of accounting online study programs at the Cracow University of Economics, the University of Lodz, the University of Rzeszow, the Technical University of
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Krakow, the Technical University of Rzeszow, the University of Social Science, and the Public University of Malopolska between May and June 2020. The questionnaire was pre-tested in April 2020. Three hundred Polish students took part in the survey; however, only 234 answers were found to be valid. This difference stems from the fact that not all students who chose to participate in the study responded to all survey questions. Incomplete questionnaires were eliminated.

The first part of the questionnaire contains questions related to the students’ personal characteristics, such as gender, age, type of studies, and work experience. The second part focuses on student engagement in online-only learning, while the third part aims to provide information about the students’ assessment of key factors and moderators of online-only learning: performance expectancy, effort expectancy, social influence, as well as facilitating conditions.

Most of the answers in the questionnaire use a 7-point Likert scale, where respondents indicate the extent of their agreement with a statement on a scale of 1–7 (1 – strongly disagree and 7 – strongly agree). The respondents were asked to attribute answers from 1 – never to 7 – very often to questions related to their engagement in online-only learning\(^1\). Descriptive statistics and multiple regression were used to analyze the results.

All the questions in the questionnaire were drawn from the literature, where they were deemed to be reliable and valid for measuring constructs of the phenomena that they intend to represent (cf. among others: Giannakos, Vlamos, 2011; van der Merwe, van Heerden, 2013; Chen, Hwang, 2019; Straub 2009; Venkatesh, 2000). For each hypothesis, independent variables were created to describe a given factor.

### 3.2. Variables used in the study

**Dependent Variables**

Student engagement in online-only learning (INDX_ENGAG) is measured as the respondents’ average assessment of 10 items related to the online activity. The students were asked to assess their experience of using an eLearning platform, participating in live online lectures, completing voluntary and mandatory online assignments, studying voluntary and mandatory online materials, participating in online discussions and chats, studying online presentations, and watching videos.

**Independent variables**

Performance expectancy (PERFORM) is measured as the respondents’ average assessment of 2 items related to the benefits of the tools used in online-only learning

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\(^1\) The Likert scale is widely used in measuring complex phenomena socio-economic phenomena (cf. Tarka, 2015). Węziak-Białowolska (2011) perceives the Likert scale with at least five response categories as a continuous scale. Other examples of the use of Likert scales in research include Aiken and West (1991), Sagan (1998).
for their performance. Mainly, students were asked if online-only learning would help them to achieve academic and professional performance.

Effort expectancy (EFFORT) is defined as a student’s belief about the degree of ease related to the use of the online-only learning and measured with an 11-item average based on the assessed ease of selected tools used in distance learning, such as Moodle, Virtual whiteboard, Zoom, etc.

Social influence (SOCIAL) is the degree to which students understand how others believe that they should use online-only learning. It is measured with a 3-item average based on the respondents’ perception of the pressure exerted by classmates on the online exchange of materials, carrying out online projects and discussions.

Facilitating conditions (FACIL) represent the technical and organizational factors that support the individuals in the use of online-only learning. A 2-item average is used to assess the technical support and clear that students receive guidelines from their universities regarding online classes.

Control variables

Voluntariness of use, gender, age, and experience, are all moderating factors for the acceptance and use of new technologies (Venkatesh, 2000). Some research on gender (GEND) as a predictor of online course success shows that there is no significant difference between male and female learners as regards study success (Breslow et al., 2013; Green et al., 2015; Park, Choi, 2009; Marks et al., 2005). On the other hand, UTAUT suggests that gender interacts with social pressure, and women were found to have higher effort expectancies (cf. Straub, 2009). Nevertheless, the study investigates the possible relationship between gender and engagement in online-only learning.

The relationship between age characteristics (AGE) and online course outcomes has often been studied, showing similar unclear results as research on gender as a predictor (Breslow et al., 2013; Green et al., 2015; Park, Choi, 2009; Marks et al., 2005). As this study concentrates on the factors that hinder or support engagement in online-only learning, we expect that age makes a difference regarding aspects of the online educational process.

Based on the earlier studies (see among others: Henderikx et al., 2017, 2019), we assume that professional experience (EXPER) is positively related to engagement in online-only learning due to more professional knowledge.

Finally, the UTAUT originally incorporates the concept of willingness or voluntariness to use a new technology, measuring it on a categorical binary variable (high/low). As suggested by Straub (2009), the study investigates if the different levels of voluntary behavior influence the acceptance and use of technology, measuring it with the variable VOLUNT, calculated as an average of 2 items (readiness to continue the online courses and readiness to select a new online course). Table 1 summarizes the variables and their measurement. The variables were standardized.
Table 1. Overview of variables used in the empirical study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Measurement</th>
<th>Original scale</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEPENDENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDEX_ENGAG</td>
<td>Student engagement in online-only learning</td>
<td>Average assessment of 10 items</td>
<td>Ordinal 1...7</td>
<td>Giannakos and Vlamos, 2011; van der Merwe and van Heerden, 2013</td>
</tr>
<tr>
<td><strong>INDEPENDENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERFORM</td>
<td>Assessment of the benefits of online-only learning for academic and professional performance</td>
<td>Average assessment of 2 items</td>
<td>Ordinal 1...7</td>
<td>Chen and Hwang, 2019; Straub, 2009; Venkatesh, 2000</td>
</tr>
<tr>
<td>EFFORT</td>
<td>Assessment of the ease of use of selected tools of online-only learning</td>
<td>Average assessment of 11 items</td>
<td>Ordinal 1...7</td>
<td>Chen and Hwang, 2019; Straub, 2009; Venkatesh, 2000</td>
</tr>
<tr>
<td>SOCIAL</td>
<td>Assessment of the social pressure to use online-only learning</td>
<td>Average assessment of 3 items</td>
<td>Ordinal 1...7</td>
<td>Chen and Hwang, 2019; Straub, 2009; Venkatesh, 2000</td>
</tr>
<tr>
<td>FACIL</td>
<td>Assessment of the support received from the university</td>
<td>Average assessment of 2 items</td>
<td>Ordinal 1...7</td>
<td>Chen and Hwang, 2019; Straub, 2009; Venkatesh, 2000</td>
</tr>
<tr>
<td><strong>CONTROL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEND</td>
<td>Gender of respondent</td>
<td>1=women 0=men</td>
<td>Dichotomous</td>
<td>Venkatesh, 2000; Breslow et al., 2013; Green et al., 2015; Park and Choi, 2009; Marks et al., 2005; Straub, 2009</td>
</tr>
<tr>
<td>AGE</td>
<td>Age of respondent</td>
<td>In years</td>
<td>Metric</td>
<td>Breslow et al., 2013; Greene et al., 2015; Park and Choi, 2009; Marks et al., 2005; Straub, 2009; Venkatesh, 2000</td>
</tr>
<tr>
<td>EXPER</td>
<td>The experience of the respondent</td>
<td>1=with experience 0=without experience</td>
<td>Dichotomous</td>
<td>Henderikx et al., 2017, 2019; Straub, 2009; Venkatesh, 2000</td>
</tr>
<tr>
<td>VOLUNT</td>
<td>Voluntariness of use</td>
<td>Average assessment of 2 items</td>
<td>Ordinal 1...7</td>
<td>Straub, 2009; Venkatesh, 2000</td>
</tr>
</tbody>
</table>

Source: authors’ own elaboration (applies to all tables).
4. Empirical findings

4.1. Descriptive statistics

Table 2 shows descriptive statistics for the sample. The average age of respondents is 23. Women represent most of the searched population (almost 85%). Nearly 85% of students declared practical experience. Interestingly, the average assessment of engagement during online-only learning made by students is relatively high (mean = 5.076), but their assessment of the ease of using selected online-only learning tools is slightly lower (mean = 3.913). It is worth noting that the degree to which respondents believe that technology will assist them in performing job duties is high (mean = 5.321). Students assess the support of the organization and social pressure to use online-only learning moderately (respectively, mean = 4.004 and 3.568). The voluntariness to use online-only learning in the future is moderate; its assessment is probably impacted by the fact that online-only learning was forced by the pandemic.

Table 2. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Coef.Var.(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDX_ENGAG</td>
<td>5.076</td>
<td>1.229</td>
<td>24.207</td>
</tr>
<tr>
<td>PERFORM</td>
<td>5.321</td>
<td>1.402</td>
<td>26.350</td>
</tr>
<tr>
<td>EFFORT</td>
<td>3.913</td>
<td>0.888</td>
<td>22.705</td>
</tr>
<tr>
<td>SOCIAL</td>
<td>3.568</td>
<td>1.864</td>
<td>52.232</td>
</tr>
<tr>
<td>FACIL</td>
<td>4.004</td>
<td>2.039</td>
<td>50.928</td>
</tr>
<tr>
<td>GEND</td>
<td>0.846</td>
<td>0.362</td>
<td>42.732</td>
</tr>
<tr>
<td>AGE</td>
<td>23.444</td>
<td>4.618</td>
<td>19.699</td>
</tr>
<tr>
<td>EXPER</td>
<td>0.846</td>
<td>0.362</td>
<td>42.732</td>
</tr>
<tr>
<td>VOLUNT</td>
<td>4.423</td>
<td>2.060</td>
<td>46.582</td>
</tr>
</tbody>
</table>

Table 3 present the correlation between the set of variables. There is a correlation between student engagement in online-only learning and the perceived ease of use of selected tools, as well as benefits for academic and job performance. However, the test of multicollinearity suggests that the data do not present such an issue. The variance inflation factor (VIF) test values are below 2.05.

Table 3. Correlation between variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>EFFORT</th>
<th>INDX_ENGAG</th>
<th>PERFORM</th>
<th>FACIL</th>
<th>VOLUNT</th>
<th>GENDER</th>
<th>EXPER</th>
<th>AGE</th>
<th>SOCIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFORT</td>
<td>1.000</td>
<td>0.288</td>
<td>0.246</td>
<td>-0.074</td>
<td>-0.006</td>
<td>0.126</td>
<td>0.009</td>
<td>-0.138</td>
<td>0.023</td>
</tr>
<tr>
<td>INDX_ENGAG</td>
<td>0.288</td>
<td>1.000</td>
<td>0.341</td>
<td>0.115</td>
<td>-0.022</td>
<td>0.109</td>
<td>-0.092</td>
<td>-0.225</td>
<td>0.088</td>
</tr>
</tbody>
</table>
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cont. tab. 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>EF-FORT</th>
<th>INDEX ENG</th>
<th>PERFORM</th>
<th>FACIL</th>
<th>VOLUNT</th>
<th>GENDER</th>
<th>EX-PER</th>
<th>AGE</th>
<th>SOCIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERFORM</td>
<td>0.246</td>
<td>0.341</td>
<td>1.000</td>
<td>0.359</td>
<td>0.113</td>
<td>0.077</td>
<td>-0.038</td>
<td>-0.098</td>
<td>0.122</td>
</tr>
<tr>
<td>FACIL</td>
<td>-0.074</td>
<td>0.115</td>
<td>0.359</td>
<td>1.000</td>
<td>0.048</td>
<td>0.001</td>
<td>-0.022</td>
<td>0.111</td>
<td>0.152</td>
</tr>
<tr>
<td>VOLUNT</td>
<td>-0.006</td>
<td>-0.022</td>
<td>0.113</td>
<td>0.048</td>
<td>1.000</td>
<td>0.105</td>
<td>0.019</td>
<td>0.036</td>
<td>0.388</td>
</tr>
<tr>
<td>GENDER</td>
<td>0.126</td>
<td>0.109</td>
<td>0.077</td>
<td>0.001</td>
<td>0.105</td>
<td>1.000</td>
<td>0.048</td>
<td>0.026</td>
<td>0.098</td>
</tr>
<tr>
<td>EXPER</td>
<td>0.009</td>
<td>-0.092</td>
<td>-0.038</td>
<td>-0.022</td>
<td>0.019</td>
<td>0.048</td>
<td>1.000</td>
<td>0.226</td>
<td>0.060</td>
</tr>
<tr>
<td>AGE</td>
<td>-0.138</td>
<td>-0.225</td>
<td>-0.098</td>
<td>0.111</td>
<td>0.036</td>
<td>0.026</td>
<td>0.226</td>
<td>1.000</td>
<td>0.163</td>
</tr>
<tr>
<td>SOCIAL</td>
<td>0.023</td>
<td>0.088</td>
<td>0.122</td>
<td>0.152</td>
<td>0.388</td>
<td>0.098</td>
<td>0.060</td>
<td>0.163</td>
<td>1.000</td>
</tr>
</tbody>
</table>

4.2. Regression analysis

The results of estimating the equation to test the hypotheses are presented in Table 4.

**Table 4.** The results of estimating the equation to test the hypotheses

<table>
<thead>
<tr>
<th></th>
<th>Regression Summary for Dependent Variable: INDEX ENGAG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R = 0.459</td>
</tr>
<tr>
<td></td>
<td>R² = 0.211</td>
</tr>
<tr>
<td></td>
<td>Adjusted R² = 0.183</td>
</tr>
<tr>
<td></td>
<td>Std. Error of estimate: 1.111</td>
</tr>
<tr>
<td>N = 234</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>b*</td>
</tr>
<tr>
<td>PERFORM</td>
<td>0.248</td>
</tr>
<tr>
<td>EFFORT</td>
<td>0.193</td>
</tr>
<tr>
<td>SOCIAL</td>
<td>0.108</td>
</tr>
<tr>
<td>FACIL</td>
<td>0.048</td>
</tr>
<tr>
<td>GEND</td>
<td>0.072</td>
</tr>
<tr>
<td>AGE</td>
<td>-0.184</td>
</tr>
<tr>
<td>EXPER</td>
<td>-0.050</td>
</tr>
<tr>
<td>VOLUNT</td>
<td>-0.093</td>
</tr>
</tbody>
</table>

The results reveal that when the students believe that the new technologies used for online-only learning will help them perform professional and academic duties (PERFORM), they are more engaged in online-only learning. Moreover, the degree to which an individual perceives a tool used in online-only learning to be easy to use (EFFORT) determines their engagement in online classes. Finally, younger students are more involved in online-only learning (AGE). Thus, the first and second hypotheses are supported, while the third and fourth are not. The statistical results of the equation to test the hypotheses show that the equation...
represents a relatively low degree of explanation because the R-squared ($R^2$) equals 0.183. Therefore, only 18.3% of the changes in the assessment of online-only learning are explained by the proposed independent variables.

**Conclusions**

Student engagement is crucial for learning (cf. D’Aquila et al., 2019; Jochems, Kreijns, 2006, p.110). Studies have revealed that engaged students are more satisfied and motivated to learn, their sense of isolation is reduced, and performance in online courses improves (Martin et al., 2018). In the online-only environment, maintaining student engagement can be challenging mainly due to the reduced interaction between and among the students and educators (Chakraborty, Nafukho, 2014). Therefore, identifying factors that influence this engagement might be useful to increase the effectiveness of the learning experience and the quality of education.

This paper analyzed Polish accounting students’ engagement in courses delivered in an online-only environment in the first phase of the COVID-19 pandemic. Even though the new situation was challenging as it generated a lot of stress for students and educators and led to a decrease in student engagement, we see several positive consequences in the long term.

According to our findings, student engagement is influenced by their positive assessment of the benefits of the online-only learning system for their academic and job performance. Thus, the first hypothesis, that performance expectancy has a positive effect on student engagement in online-only learning, is supported. Therefore, we are able to support the results of previous studies (e.g., Raman, Don (2013); Pardamean, Susanto (2012); Wang et al. (2009); Abu-Al-Aishv et al. (2013); Chen, Hwang (2019); Salloum, Shaalan (2019)). It seems that accounting students are aware of the important role of IT tools for their education and current or future work, and they perceive them as beneficial and useful. Given the expected changes in education after the COVID-19 crisis, this finding is encouraging.

Moreover, effort expectancy is significantly and positively related to student engagement in online-only learning, which supports our second hypothesis. Students seem to be convinced about the degree of ease related to the IT systems and their use, which impacts their engagement. Many previous studies produced similar results (e.g., Roca, Gagné, 2008; Fagan et al., 2008; Venkatesh, Davis, 2000; Raman, Don, 2013; Wang et al., 2009; Yoo et al., 2012; Abu-Al-Aish et al., 2013; Iqbal, Qureshi, 2012; Terzis, Economides, 2011). However, there are also studies that provide contradictory findings, e.g., Salloum and Shaalan (2019) or Pardamean and Susanto (2012). The fact that students were forced to use IT systems due to the COVID-19 lockdown might have contributed to the increase in their familiarity with them, and it could have a positive impact on their further online education after the pandemic.

Based on our findings, social influence and facilitating conditions do not affect student engagement in online-only learning. Therefore, hypotheses three and four
are not supported. The accounting students that participated in our study do not seem to think that their classmates believe in the importance of the distance learning approach or the need to use it. This finding might also be driven to some extent by the attitude of educators who, in many cases, were reluctant to suddenly switch to online-only delivery and did not see online learning as equally efficient compared to the traditional approach. The inertia regarding online delivery was reflected in the study of Sangster et al. (2020) in several references to the relief felt or expected by faculty on their return to F2F delivery. It seems that more needs to be done to convince educators about the benefits of online teaching. The lack of social influence might also be caused by the fact that online-only education during the pandemic required students to be separated from their classmates, thus decreasing the interaction between them and the possibility of influencing each other. Facilitating conditions, such as technical and organizational infrastructures, dedicated training and individual support, materials and platforms were not found to be relevant factors as regards enhancing student engagement. Therefore, university authorities might consider increasing the support given to students if, as we predict, online learning is here to stay.

Of the moderating factors, only age was found to positively influence student engagement in online-only education. Namely, younger students are more engaged than their older classmates. The relationship between age characteristics and online course outcomes has often been studied, showing similar, unclear results (Breslow et al., 2013; Green et al., 2015; Park, Choi, 2009; Marks et al., 2005). Our study clearly reveals that the younger generation seems to be more open to change and more familiar with new technologies, thus suggesting the need to introduce changes into the old way of ‘chalk and talk’ didactic teaching. The above positive relationship may stem from the fact that students starting their studies (and younger) are more engaged than their older colleagues.

The paper contributes to the literature on distance education. We confirmed that the findings of several previous studies still hold in the new learning environment that resulted from the COVID-19 pandemic. They are also valid in a new Polish setting. Despite the increased use of distance learning tools in Central and Eastern European countries, they remain relatively under-researched, also in the context of the pandemic, as other studies focus on countries such as the Netherlands (de Boer, 2021), Ethiopia (Tamrat, 2021), China (Yang, Huang, 2021), Argentina (Perrota, 2021), Hong Kong (Jung et al., 2021), UK (Eringfeld, 2021), Italy (Agasisti, Soncin, 2021), South Africa (van Schalkwyk, 2021), or Canada (Metcalf, 2021). They also often concentrate on the perspectives of the educators (e.g., de Boer, 2021), higher education institutions (e.g., Tamrat, 2021; Yang, Huang, 2021), or national governments (e.g., Perrota, 2021). Our study also answers the call of Harrison (2006), as we investigate the Internet-based learning process in a unique context.

Our study is also relevant for practice. As we expect that online delivery will be the ‘new normal’ of future education (Yang, Huang, 2021), educators eager to increase their student engagement should emphasize the benefits of this approach for their students’ academic and professional performance. When educators continue to use tools that support online education, students’ skills will improve, and it will
help further enhance student engagement, as the effort expectancy will decrease. Older students should be given special attention, as according to our findings, they might have more difficulties engaging in online learning. There is a risk that after the COVID-19 pandemic, students will differ in their level of knowledge and skills because they did not engage equally in online-only learning. These differences will have to be properly addressed when we all go back to the ‘new normal’. The results of this study can also be useful to effectively engage less involved students, and make sure that no one is left behind in the educational process.

The paper is not free from limitations. They include the sample size and that the respondents are based in one country. The statistical results of the equation to test the hypotheses show that the equation represents a relatively low degree of explanation. Replication with more data could enable the generalization of the results and a comparative combination of study results.

As we believe that online learning is an important topic within education research, we propose possible avenues for future studies. Further research could focus on the interactions between determinants such as students’ gender, age, and experience, or voluntariness to use a new technology and, in this way, provide further insights into the factors that influence students’ engagement. Researchers in other Central and Eastern European countries could follow our approach and identify the factors that influence student engagement in online-only delivery in their countries. Comparing results from more countries in the region could provide additional insights into the impacts of the COVID-19 pandemic on the environment in which online education was not as popular before the pandemic as in Western Europe. In the international context, it would also be worth investigating if accounting students’ culture and background, as well as the size of the classes they learn in, play a role in determining their engagement in online learning (cf. Exeter et al., 2010). Interviews among educators and students could also provide more in-depth data about their views on the role of engagement in online courses. It might also be interesting to see how the personality traits of accounting students (Meier et al., 2019) impact their engagement in online learning. The quality of education is seen as the defining element of academic reality in the 21st century (Zarzycka et al., 2018). Presumably, after the COVID-19 pandemic, blended delivery will be the ‘new normal’. As such, it will require new tools and techniques to ensure the high quality of the educational process. The related research, collaboration of educators, and knowledge-sharing would be particularly welcome.

References


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Appendix. The survey questions

(1) Gender
   - Female
   - Male

(2) Please provide your age [open question]

(3) Please provide university name [open question]

(4) Please provide the study program name [open question]

(5) Please provide the study cycle [open question]

(6) Please provide your work experience in months [open question]

(7) Please assess your activity in online learning on a scale of 1–7 (from 1 – never to 7 – very often):
   - I use an eLearning platform
   - I participate in live online lectures
   - I complete online voluntary assignments
   - I complete mandatory assignment
   - I study online voluntary materials
   - I study mandatory online materials
   - I participate in discussions during live online lectures
   - I discuss via chats
   - I watch podcasts and videos provided by teachers
   - I watch recorded lectures

(8) Please indicate the extent of your agreement with the statements below on a scale of 1–7 (1 – strongly disagree and 7 – strongly agree):
   - Online learning helps me to achieve high academic performance
   - Online learning helps me to achieve high professional performance

(9) Please assess the degree of ease of use of the indicated tools used in distance learning on a scale of 1–7 (from 1 – very difficult to 7 – very easy, please choose N/A if you do not have experience with the tool):
   - Click meeting
   - Facebook
   - LinkedIn
   - Messenger
   - Moodle
   - MS Teams
   - OneDrive
   - Skype
   - Virtual whiteboard
   - WhatsApp
   - Zoom

(10) Please indicate the extent of your agreement with the statements below on a scale of 1–7 (1 – strongly disagree and 7 – strongly agree):
    - There is a strong pressure exerted by classmates on the online exchange of materials
    - There is a strong pressure exerted by classmates on the online realization of the project
    - There is a strong pressure exerted by classmates on having online discussions
(11) Please indicate the extent of your agreement with the statements below on a scale of 1–7 (1 – strongly disagree and 7 – strongly agree):

- I receive full technical support from my university in the process of online learning
- I receive clear guidelines from my university regarding online learning

(12) Please indicate the extent of your agreement with the statements below on a scale of 1–7 (1 – strongly disagree and 7 – strongly agree):

- I would like to continue online courses
- I would like to participate in a new online course in the future