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## EDUCATION POLICY | RESEARCH ARTICLE

# Developing operational accounting competencies during the pandemic using emergency online learning

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**Abstract:** The COVID-19 pandemic has forced all the universities in Indonesia to switch their on-campus learning to online learning. Some universities could only provide emergency online learning since they were not ready to conduct proper online learning. This switching may decrease the students' engagement with learning and impact their perceived competencies. Operational accounting competencies (OAC) are important basic competencies which allow accounting graduates to perform generic jobs in their field. Hence, this study attempts to identify the impact of emergency online learning on students' perceived OAC. A survey was used to collect data on the students' engagement with synchronous and asynchronous learning and OAC. The study collected 122 items of data and analysed them using descriptive and path analyses. The students have reported that synchronous learning—online classroom engagement—only had a small impact on improving their perceived OAC. The improvement in the students' perceived OAC was mainly caused by asynchronous learning in terms of active, collaborative and enrichment



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### PUBLIC INTEREST STATEMENT

The COVID-19 pandemic has forced all the universities in Indonesia to switch their on-campus learning to online learning. But in fact, some universities have offered emergency online learning since they were not ready to conduct proper online learning. Thus, the impact of emergency online learning on students' perceived operational accounting competencies (OAC) needs to be studied. OAC is an important basic competency that allows accounting graduates to work well in their field. This study showed that emergency online learning had an unfavourable influence on the students' engagement and perceived OAC. Online classroom engagement has small impacts on students' OAC. Students reported that the gain of perceived OAC was mainly influenced by active, collaborative, and enrichment learning. The accounting department should develop the human resources of their lecturers and supporting staff, redesign the learning materials, improve their information technology and communication, and provide a more complete infrastructure for online learning.

learning. Lecturers should improve their skills in organising online learning to increase their students' engagement. Accounting departments need to provide a more complete structure, better infrastructure, and other necessary technologies to improve online learning, as the pandemic's duration cannot be predicted.

**Subjects:** Education; Further & Higher Education; Accounting Education

**Keywords:** operational accounting competency; education during the pandemic; online-learning strategy

## 1. Introduction

The COVID-19 virus spreads quickly through human-to-human contact, forcing the Government of Indonesia (GoI) to make policies to limit mass physical human contact. As a result, educational activities carried out physically in classrooms and laboratories have been banned and switched to online learning. The GoI, through the Ministry of Education and Culture, instructed universities to run online learning processes to curb the spread of COVID-19 (Kemendikbud, 2020).

Up to this time, only the Indonesia Open University was prepared, experienced and had all the necessary infrastructure for conducting distance learning (UT, 2020). Most of the universities in Indonesia are conventional universities that organise their learning through on-campus education processes. Thus, this sudden switch to online learning caused difficulties for most universities in implementing online learning, because this mode of learning needs careful preparation (Dzulfikar, 2020). This mode of learning, as now used by the universities, is online learning in the pandemic emergency as stated by Hodges et al. (2020) and Rahiem (2020). In this paper, online learning refers to emergency online learning (EOL) during the COVID-19 pandemic.

Fortunately, students are familiar with information technology in the administration and learning process. Most students already have computers to complete their assignments and smart-phones to connect to the internet. Data shows that in 2020 as many as 196.7 million or 73.7% of Indonesia's population was internet literate (Jatmiko, 2020). This is supported by the internet network which already covers 97% of Indonesia's territory (Sinuhaji, 2020).

The switch from conventional learning to online learning caused a change in the pattern of interactions between lecturers and students, between the students themselves and between students and the facilities in their faculty. This was assumed to influence the quality of the process and the output of the learning. Besides having advantages, online learning also has weaknesses. Chen et al. (2008) found that distance learning had a lower level of student engagement compared to learning conducted directly on campus. Student engagement is the involvement of students in academic and non-academic activities organised by their university. Previous studies show that students' engagement with on-campus learning had a significant effect on their perceived competencies. For example, Zakir and Yanto (2015) found that students' engagement influenced their perceived competency for conducting forensic audits.

Several studies focusing on emergency online learning during the pandemic in the Indonesian context have been intensively conducted. Rahiem (2020) investigated the experiences of students who participated in blended and paradoxical learning during the pandemic. Blended learning is the combination of online learning and on-campus learning, while paradoxical learning is students being challenged to learn from home, something they have never experienced before. Fatonia et al. (2020) focused their study on a private university by identifying the advantages and constraints of, along with the solutions to, emergency online learning. Moreover, Suryaman et al. (2020) attempted to identify the obstacles faced by students, teachers, and parents in the process of online teaching and learning during the pandemic. A study focusing on switching on-campus learning to emergency online learning and its impact on improving students' accounting

competencies seems to be non-existent. Research into the influence of online learning on students' operational competency during the pandemic is considered pivotal as it would significantly influence the quality of the human resources in accounting in the future.

Operational accounting competence is considered vital for accounting students because this competence is the main requirement for students to work in the field of accounting. Practitioners and academics argue that this competency is vital for accounting students who want to work at the national and international levels (Yanto et al., 2018). Besides, the accounting competency frameworks developed by several countries have also accommodated this operational accounting competency. For example, Singapore has included technical skills (GOS, 2020) and the United States includes accounting competencies as an important competency (AICPA, 2018). This study deliberately covers only operational accounting competency, considering that this competency is the most important one.

Learning transactions during the COVID-19 pandemic are carried out online, using various platforms. This study seeks to identify the impact of emergency online learning on improving the students' perceived operational accounting competency. Also, the end of the COVID-19 pandemic is still unclear; meaning the accounting learning process in higher education will still be carried out online, for the foreseeable future. Jennings et al. (2008) all contended that pandemics cannot be predicted. Nevertheless, Pratikto (2020), using a parametric growth model, predicted that the COVID-19 pandemic in Indonesia will finish in September 2021.

Universities, faculties, and accounting departments may benefit from this research as they will get handy information about the impact of online learning on the operational accounting competency among accounting students during the pandemic. This research also provides information for lecturers about the results of their online learning during the pandemic. Accounting lecturers can use this information to improve online learning in the following semesters, as the pandemic's end cannot be predicted accurately.

## 2. Theoretical literature review

To measure the process of teaching and learning during the pandemic, this study employed the concept of student engagement. Student engagement has been widely used by universities for measuring the educational processes in higher education institutions. The involvement theory (Astin, 1993), the seven principles of good practices (Chickering & Gamson, 1987) and the model of voluntary student departure (Tinto, 1993) are used as the bases for developing the instruments for measuring students' engagement. The theory of involvement, contended by Astin (1993), stated that students will learn and understand more if they are actively involved both physically and psychologically in a university environment. This theory is also supported by Tinto (1993), who said that students have to be integrated with the academic and social systems of their university. Relating to the university environment, Chickering and Gamson (1987) came up with the seven principles of good practices in undergraduate education. The principles include: (1) interaction between students and faculty; (2) cooperation among students; (3) active learning; (4) prompt feedback; (5) time on task; (6) high expectations; and (7) diverse talents and ways of learning.

Student engagement is a concept to measure the involvement of students in a university environment and their level of active participation in academic and non-academic activities. Krause and Coates (2008) stated that student engagement is an outpouring of time, commitment and the use of resources for learning purposes at a university. Student engagement is considered effective for measuring the process of learning in higher education institutions. This study employs the concept of student engagement contended by Australian Council for Educational Research (ACER, 2010).

Operational accounting competency is a student's ability to perform work in the accounting field. This competency is a core skill that serves as a minimum requirement for accounting

graduates to perform generic work as accountants. Research by Yanto et al. (2018) identified ten indicators for the operational competency of accounting. The indicators are: (1) organisational regulation; (2) internal control; (3) risk assessment; (4) performing accounting records; (5) assessing a company's performance; (6) performing an audit; (7) preparing financial statements; (8) preparing an effective budget; (9) preparing financial information; and (10) understanding the accounting system. The indicators for this competency already have good validity and reliability performance. Furthermore, accounting practitioners and academics have the same opinion about the importance of operational accounting competency for accounting graduates (Yanto et al., 2018). Even though it is called different names, this competency has also been included in the accounting competency framework in several countries such as the United States (AICPA, 2018), Singapore (GOS, 2020), and Malaysia (MIA, 2019).

The competencies obtained by students during their attendance at a university will benefit them when performing their daily work as accountants in organisations. Previous research has also shown that the competence of fresh graduates is useful in helping them to adapt to the working environment (Pang et al., 2019). These findings indicate that the competencies prepared by the universities contribute to the graduates' readiness for work. Universities are obliged to continually adjust their curricula according to the needs of the job market (Wolf & Wright, 2014). However, a curriculum cannot fully adapt to the actual conditions of the real world because some competencies can only be developed in the workplace.

The main problem of emergency online learning is the issue of student engagement—the students' involvement in the learning environment provided by the university. In on-campus learning, students will be physically involved in academic and non-academic activities held on campus. Chen et al. (2008) found that online learning has lower student engagement compared to on-campus learning. On the other hand, student engagement of on-campus learning has a significant effect on students' perceived accounting competency (Yanto et al., 2011). Based on the research findings of Ouma and Nkuyubwatsi (2019), changing on-campus to online or distance learning faces at least ten challenges.

Based on the ten online learning challenges stated by Ouma and Nkuyubwatsi (2019), the implementation of EOL for accounting during the pandemic has several limitations. *First*, not all lecturers have experience of organising and teaching using online learning (Dzulfikar, 2020). *Second*, the online learning technology owned by campuses, lecturers, and students is still limited. Arifa (2020) found that the technology's structure and infrastructure for organising online learning were not sufficient. *Third*, accounting laboratories—accounting program software and accounting practices books—have not been fully accessible to students during the pandemic, since accounting laboratories are designed for on-campus learning. Virtual accounting laboratories for learning purposes are still under development by several universities. *Fourth*, the students have to spend more money on their internet connections (Ningsih, 2020).

### 3. Empirical literature review and hypotheses development

To measure students' engagement with on-campus learning ACER (2010) contended there were six factors i.e. (1) academic challenge; (2) active learning; (3) student-staff interaction; (4) enriching educational experience; (5) supportive learning environment; and (6) work integrated learning. During the pandemic, the process of teaching and learning has been conducted using emergency online learning. Most of the lecturers have been using three elements of emergency online learning i.e., synchronous learning, unsynchronous learning and student-faculty interaction. Synchronous learning is the process of teaching and learning in the online classroom using virtual meeting platforms based on the schedule. In this case, unsynchronous learning is the process of independent, collaborative and enrichment learning carried out by students in addition to the classroom online learning. Lastly, student-faculty interactions are the method for communication between students and lecturers during asynchronous learning. To measure synchronous learning, the study employed the students' engagement with online-classroom learning. In addition, the study also

used student engagement in active, collaborative and enrichment learning to measure the unsynchronous learning. Lastly, the student-staff interaction was used to measure the intensity of the communications between students and lecturers outside the online classroom. Since all the learning activities have been carried out online, the role of communications technology has been pivotal (Rahman et al., 2011; Suryaman et al., 2020; Wei & Chou, 2020).

### **3.1. Online classroom engagement and operational accounting competencies**

Students' participation in online classrooms was measured using student engagement. Student engagement is used to measure the teaching and learning process carried out by the university. Based on the involvement theory contended by Astin (1993) each student has a different intensity of involvement in their learning environment, both physically, psychologically and in the amount of time they spend. However, student engagement, as used in this study, is online-student engagement. According to D. Song et al. (2016), for online learning, interest and engagement are important factors. This study classified student engagement into two parts, namely synchronous learning engagement measured by online classroom engagement (OCE) and asynchronous learning engagement proxied by active, collaborative and enrichment learning (ACEL). OCE refers to student engagement with teaching and learning activities conducted in an online classroom, while ACEL refers to student engagement with learning activities after the online classroom session ends. To date, research on the effect of emergency online learning on perceived operational accounting competencies gained by students seems to be non-existent. In an offline classroom condition, classroom engagement measured by academic challenges has a significant impact on students' perceived competencies (Yanto, 2016) and achievements (Zilvinskis et al., 2017). Even though learning is carried out online, it is likely that online classroom learning still makes a significant contribution to the perceived operational accounting competence of the students. Therefore, this study formulates the following hypothesis:

H1. Online classroom engagement has a positive effect on increasing the perceived operational accounting competencies.

### **3.2. Online classroom engagement and active, collaborative and enrichment learning**

This study assumed that students carry out active, collaborative and enrichment learning after they participate in online classroom learning. Students and lecturers attend online classroom learning based on the schedule, so they have time constraints. Therefore, lecturers encourage students to actively carry out independent, collaborative and enrichment learning to complete their assignments outside the online classroom. Independent learning (Cukurova et al., 2018), collaborative online learning (Jin, 2017) and enrichment learning (ACER, 2010) are pivotal in higher education.

Online classroom learning is an important educational transaction between lecturers and students since this online learning provides the initial information about the learning topic and the scenarios for further learning after the online class ends. Online-classroom learning is then followed up by the students performing asynchronous learning in terms of active, collaborative, and enrichment learning outside the online classroom and further learning with the lecturers by interacting with each other. Online classroom learning provides a way for students to study using independent or group learning processes. Given the limited meetings between students and lecturers during the pandemic period, online classroom engagement serves as a trigger for the students to be more active in their independent learning, collaborating with peers and enriching the material assigned by their lecturers.

H2. Online classroom engagement positively influences active, collaborative and enrichment learning.

### **3.3. Active, collaborative and enrichment learning and operational accounting competencies**

In normal conditions all the activities for students' engagement are carried out in a university environment. During the emergency online learning, students have to participate in asynchronous learning activities—active, collaborative and enrichment learning—to complete all the assignments prescribed in the semester's learning plan. With online learning, the students are required to learn more actively (Cukurova et al., 2018; Sadikin & Hamidah, 2020), to be more independent (Verawardina et al., 2020), to be more participative in collaborative learning (Jin, 2017; Kupczynski et al., 2012) and to be more active in performing enrichment learning (ACER, 2010).

Previous studies conducted in normal conditions show that active, collaborative and enrichment learning have positive impacts on the students' perceived accounting competencies (Yanto, 2016; Zakir & Yanto, 2015). Other study also found that active self-learning had a significant effect on the students' mastery of their course content (Nobaew, 2016). Active self-learning, as an effort to increase students' knowledge, skills and experiences, could be classified as enrichment learning. Therefore, this study posits the following hypothesis:

H3. Active, collaborative and enrichment learning have a positive effect on the students' perceived operational accounting competencies

### **3.4. Student-faculty interaction and active, collaborative and enrichment learning**

Interaction between the students and faculty members has an important role both inside and outside the classroom. In on-campus learning, the relationship between students and lecturers plays an important role in increasing the students' engagement and satisfaction (Richardson & Radloff, 2014). More importantly, they also found that the relationship between students and lecturers increased the opportunities for lecturers to motivate students to achieve the learning objectives. It is likely that, during the pandemic, the intensity of the lecturer-student interactions has decreased significantly, although the students and lecturers can still use various media platforms to communicate. Nevertheless, student-faculty interactions are considered important for the process of teaching-learning. Previous research also found that student-lecturer relationships increased the students' satisfaction and persistence (Croxtton, 2014).

Other research showed that with on-campus learning, student-faculty interactions can increase the students' motivation (Trolan et al., 2016). Student-faculty interaction activities can be in the form of discussions between lecturers and students to elaborate on the lecture material or relevant topics. Student-faculty interactions are also an opportunity for students to discuss material that has not been understood very well. Likewise, with online learning, the lecturer-student interaction should be maintained to facilitate the students and to build a learning environment (Ouyang et al., 2020). Most likely the relationship between the students and their lecturers during online emergency learning could motivate the students to learn and to conduct their enrichment studies more actively.

H4. The interaction between lecturers and students during emergency online learning would increase active, collaborative and enrichment learning.

### **3.5. Student-faculty interaction and operational accounting competencies**

The interaction between lecturers and students outside the classroom is not only limited to providing motivation, but also giving individual tutorials to students. Research conducted by Nugent (2009) found that the interaction between teachers and students had a positive influence not only on the students' motivation, but also on their academic achievements. During the

interaction, faculty members and students could also discuss any of the course content that is not fully understood by the students. By using the context of education in Indonesia, Yanto (2016) found that there was a direct effect of lecturer-student interactions on students' perceived accounting competencies.

Research conducted by Nugent (2009) and Yanto (2016) used an on-campus learning context. In an online context, it is likely that the interaction between lecturers and students has a significant effect on competency. Indeed, there are criticisms that student engagement during online learning is much lower than during traditional learning (Chen et al., 2008). However, it does not mean that the interaction between lecturers and students during online learning has no impact on the students' perceived competency.

H5. The interaction between lecturers and students could improve the perceived operational accounting competencies of students.

### **3.6. Communications technology and online classroom engagement**

Prior to the emergency online learning, all the universities except the Indonesia Open University organised face-to-face learning where lecturers and students met directly to carry out the teaching and learning processes. Currently, information and communications technology is a necessity for universities in Indonesia (Indrayani, 2011). The function of information technology is to provide an information system for learning's administration. This system records course selection sheets, the learning process, and its evaluation. The second function of the information technology is to facilitate the lecturers and students to carry out the teaching-and-learning process (Rerung & Ramadhan, 2018). Lecturers utilise information technology to prepare, deliver and evaluate the learning process, while students use information technology to complete their assignments and communicate with the lecturers. During on-campus learning the direct interaction between the students and lecturers was much more intensive since the students could see their lecturers to discuss the learning material. During emergency online learning, all classes are taught online using meeting platforms such as Zoom Meeting Application, Google Meet, etc. In addition, face-to-face meeting between students and lecturers are very limited. The interaction between students and lecturers also uses communications technology.

To simplify the theoretical framework of emergency online learning, this study classifies it into three main activities, namely (1) online classroom learning or synchronous learning; (2) active, collaborative and enrichment learning or asynchronous learning; and (3) student-faculty interaction. Information and communications technology is one of the backbones of online learning, which mediates all the activities of emergency online learning. Suryaman et al. (2020) contended that during the pandemic, information technology plays vital roles in online learning. In this case, communications technology refers to the internet and multimedia systems (Ratheeswari, 2018). More specifically, Rahman et al. (2011) listed three communications technologies i.e. students' technology, lecturers' technology and internet networks. Therefore, improving the ICT skills of both the lecturers and students for distance learning becomes more important (Ouma & Nkuyubwatsi, 2019).

With communications technology, students can still actively participate in online learning even though they are in different places. L. Song et al. (2004) found that the existing communications technology has facilitated the lecturers and students' interactions. Virtual meetings using platforms such as Zoom, Google Meet, Cisco Webex, and so on also allow the students to study in groups. WhatsApp and Telegram technologies provide handy facilities for students to communicate in two directions using both text and video. Besides, learning resources are no longer only found in libraries and laboratories, but some are already available on the internet. Students could access these learning resources for free or pay for material enrichment purposes. In other words,



the readiness of the students' communications technology greatly determines the success of online learning (Wei & Chou, 2020). Thus, this study formulated the following hypotheses:

H6. Reliable communications technology would increase the students' involvement in the online classroom learning organised by their lecturers.

H7. Reliable information technology would facilitate the students to be involved in active, collaborative and enrichment learning.

H8. Communications technology would increase the student-faculty interactions.

The online classroom is a synchronous learning where teaching and learning transaction carried out by students and lecturers in a virtual classroom. This transaction is then followed up by each student who performs asynchronous learning consisting of active, collaborative and enrichment learning. However, students still maintain their interaction with the lecturers outside of the online classroom sessions. The function of the interaction between the lecturers and the students is to facilitate the students to increase their competencies and to assist them to carry out active, collaborative and enrichment learning activities. The students' engagement in online classroom learning and active, collaborative and enrichment learning, supported by student-faculty interactions should have positive impacts on the students' perceptions of them gaining operational accounting competencies. This study also hypothesised that reliable communications technology supports the three activities involved in emergency online learning i.e., (1) online classroom engagements; (2) active, collaborative and enrichment learning; and (3) student-faculty interactions.

#### **4. Research design**

This study used a quantitative approach which emphasised the use of numerical measurements and statistical tools for the data's analysis. By using survey techniques, this study collected numerical data about the perceptions of accounting students while participating in online learning during the pandemic. The purpose of this study was to determine the effect of online learning on the students' perceived operational accounting competency during a pandemic.

##### **4.1. Population and sampling**

The total population of this study comprised of 249 students majoring in accounting at the Faculty of Economics, Universitas Negeri, Semarang, in the fifth semester. By using a random online survey, this study collected 122 (40%) items of data from the respondents. This study used fifth-semester students as respondents because during this semester the students take courses that are closely related to operational accounting competencies.

##### **4.2. Research variable**

This study included five variables, namely operational accounting competencies (OAC), online classroom engagement (OCE), active, collaborative and enrichment learning (ACEL), student-faculty interaction (SFI), and communications technology (CT). Students have to be equipped with operational accounting competency to ensure they can work properly in the field of accounting. This study did not perform any form of testing to obtain the data of students' operational accounting competency. During the COVID-19 pandemic, students were encouraged to stay in their own homes. Therefore, this study collected data on the students' increase in their OAC during emergency online learning, based on their perceptions.

As previously mentioned, OAC has ten indicators as stated by Yanto et al. (2018). This study adopted these indicators to measure the students' perceptions of their increased competency during the emergency online learning. Several previous studies have also measured students' competencies using perceptions such as Chan and Luk (2020) and Catano and Harvey (2011). In

addition, the study also measured OCE, ACEL, and SFI based on the students' perceptions. This measurement technique was used by Zilvinskis et al. (2017).

Online classroom engagement measured the students' involvement in the online learning activities organised by their lecturers using the communications media. Active, collaborative and enrichment learning quantified the students' activities in independent learning, studying with friends and learning for enrichment purposes. Student-faculty interactions measured the intensity of the communications between lecturers and students after the activities were undertaken in the scheduled OCE. Student engagement is an effective proxy for measuring the learning process in higher education (Reyes et al., 2012; Yanto, 2016).

Since all online learning activities were conducted using communications technology, the availability of the required equipment in the form of computers, smartphones, internet networks and internet quotas is pivotal. The operational definitions of the OCE, ACEL and SFI variables, developed by ACER (2010) and Tendhar et al. (2013), were used as the basis for developing the indicators of the instruments. This study also adapted several online learning indicators developed by Dixson (2015). Meanwhile, the operational definition and indicators for the CT variable were developed by this study.

#### **4.3. Validity and reliability test**

This study developed an online classroom engagement scale by referring to the students' engagement factors and operational definitions suggested by ACER (2010) and by taking into account the 19 online learning indicators developed by Dixson (2015). Classroom engagement is an important educational transaction between lecturers and students that should be implemented before other learning activities are carried out. In this case, the factor of an academic challenge, as contended by ACER (2010), was more appropriate to measure the classroom online learning.

The study employed corrected-item correlation (CITC) and Cronbach's alpha to determine the instrument's validity and reliability. The thresholds of CITC and Cronbach's alpha were 0.3 and 0.7 respectively (De Vaus, 2013). The results of the validity and reliability analyses indicated that the instruments used to collect the data met the minimum requirements. The OAC variable had the highest reliability, with a Cronbach's alpha value of 0.899, the highest CITC value of 0.756 and the lowest CITC value of 0.469. Table 1 below provides more complete information about the validity and reliability of the instruments.

#### **4.4. Data analysis**

This research used descriptive analysis, which aimed to describe the extent of each variable. The maximum and minimum values, the mean and the standard deviation provided an overview of the variables. The second analysis technique was a path analysis, which was aimed at providing an overview of the causal relationship pattern between the endogenous and exogenous variables. This study had one exogenous variable (CT) and four endogenous variables (OAC, OCE, ACEL and SFI). A hypothetical model was developed, based on the literature review and this was tested using this analysis. To determine the goodness of fit of the empirical framework, as suggested by Eyasu et al. (2020), this study used eight indices.

Chi-squared is a measure to determine the difference in the covariance matrix of a sample and population. The expected value of chi-square,  $p$ , should be insignificant ( $p > 0.05$ ), which would mean that there was no difference between the two covariance matrices, while the value of CMIN/df should be below 3.0 (Ferdinand, 2005). Further, Ghozali (2014) stated that the values of GFI, AGFI, CFI, TLI, and NFI should be above 0.9 while the value of the RMSEA index should be less than 0.08. However, Browne and Cudeck (1993) stated that an RMSEA below 0.05 was the most ideal value, but they also said that an RMSEA below 0.1 was still acceptable. This study also used multivariate normality as a measure of the data's normality. If the value of the multivariate normality had risen above 2.58, this study would have performed bootstrapping using the Bollen-Stine technique, as suggested by Widhiarso (2012).

**Table 1. Validity and reliability of instrument**

Variable	No of Item	Cronbach's alpha	Max. CITC	Min. CITC
Operational Accounting Competencies (OAC)	10	0.899	0.756	0.469
Online Classroom Engagement (OCE)	5	0.745	0.714	0.309
Active, Collaborative, Enrichment Learning (ACEL)	14	0.874	0.650	0.367
Student-faculty Interaction (SFI)	4	0.826	0.711	0.616
Communications Technology (CT)	4	0.759	0.622	0.514

**Table 2. Descriptive analysis**

Variable	N	No Item	Min.	Max.	Mean	Std. Dev
Operational Accounting Competency (OAC)	122	10	20	48	33.80	5.206
Online Classroom Engagement (OCE)	122	5	11	25	19.98	3.227
Active, Cooperative, Enrichment Learning (ACEL)	122	14	39	68	54.89	6.76
Student-faculty Interaction (SFI)	122	4	4	20	13.74	2.86
Communications Technology (CT)	122	4	4	20	13.41	3.00

## 5. Empirical results and discussion

### 5.1. Descriptive analysis

The students' perceptions of their increasing operational accounting competencies reached an average of 33.38 with a maximum value of 48.00 and a standard deviation value of 5.206. On average, the students perceive themselves as being somewhat satisfied (67%) with their increasing OAC during the emergency online learning. The implementation of online classroom engagement (OCE) was perceived as being good by the students (80%). Likewise, active, collaborative and enrichment learning (ACEL) during the pandemic was also reported to be good by the students (78%). Meanwhile, student-faculty interactions (SFI) and the communications technology (CT) were perceived as fair with the percentage being 69% and 67% respectively. [Table 2](#) below presents a complete descriptive analysis.

### 5.2. Path analysis

The results of a path analysis showed that the active, collaborative and enrichment learning (ACEL) had a very dominant role in increasing students' perceived operational accounting competencies (OAC), with an estimate value of 0.403 ( $p < 0.001$ ). However, the role of online classroom engagement in increasing the perceived OAC was still small in magnitude, with an estimated value of

**Table 3. Summary of hypothesis testing**

Hypothesis	Variable			Estimate	p	Remark
H1	OAC	<—	OCE	0.171	0.047	Accepted
H2	ACEL	<—	OCE	0.090	0.230	Rejected
H3	OAC	<—	ACEL	0.403	***	Accepted
H4	ACEL	<—	SFI	0.395	***	Accepted
H5	OAC	<—	SFI	-0.015	0.876	Rejected
H6	OCE	<—	CT	0.384	***	Accepted
H7	ACEL	<—	CT	0.387	***	Accepted
H8	SFI	<—	CT	0.296	***	Accepted

0.171 ( $p = 0.047$ ). The student-faculty interaction (SFI) variable did not make a significant contribution to increasing the OAC ( $-0.015, p > 0.05$ ). On the other hand, SFI had a significant role in motivating the students to undertake active, collaborative and enrichment learning ( $0.395, p < 0.001$ ). This study found that student activities in the online classroom did not affect the ACEL ( $0.090, p > 0.05$ ). Lastly, communications technology (CT) had a positive and significant effect on OCE, ACEL, and SFI. In the previous section, this study proposed eight hypotheses. Six of these hypotheses were accepted (H1, H3, H4, H6, H7, and H8) while the remaining two (H2 and H5) were rejected. For more details, Table 3 below provides a summary of the testing of the hypotheses.

Operational accounting competency (OAC) was influenced by ACEL and OCE, while ACEL was influenced by SFI and CT. Then, CT affected OCE, ACEL and SFI. Two causal relationships in the empirical framework were insignificant and indicated by dashed arrows. Figure 1 shows the model developed by this study. The model was considered fit, indicated by the results of the goodness of fit test.

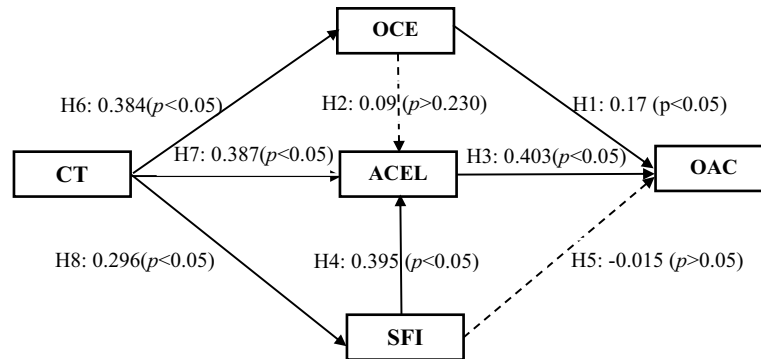
The chi-squared of the model was 4.246 ( $p > 0.05$ ) meaning that the covariance matrices of the sample and population were not different. The result of the analysis showed that the CMIN/df value was 2.213 with a maximum threshold of 3.0. The values of GFI and AGFI were respectively 0.986 and 0.898, with a minimum value of 0.9. This study assumed that the values of GFI and AGFI still met the requirements. The values from the NFI, TLI, and CFI tests showed that the respective numbers were 0.969, 0.983 and 0.982 with a threshold value of 0.9. However, the RMSEA value was 0.096 with a maximum threshold value of 0.08. Based on the criteria presented by Ghozali (2014), the RMSEA index did not meet the requirements, but Browne and Cudeck (1993) stated that a RMSEA index value of below 0.1 was still acceptable.

Lastly, the results of the multivariate normality test showed a coefficient of 2.89, which meant that the data's distribution in this study was slightly less than normal. This study conducted bootstrapping with 2,000 samples and produced a Bollen-Stine probability of 0.202 ( $p > 0.05$ ). This probability indicated that the path analysis could be continued. Thus, the results of the goodness of fit test met the criteria, except for the RMSEA value, which only met marginal, but still acceptable requirements.

### 5.3. Discussion

At the beginning of 2020, all educational institutions were instructed by the GoI, through the Ministry of Education and Culture, to conduct online learning (Kemendikbud, 2020), even though there were many universities that did not have the experience to organise online learning (Dzulfikar, 2020; UT, 2020). Universities that conducted emergency online learning, as contended by Hodges et al. (2020) and Rahiem (2020), faced the potential risk that their students' involvement in the learning process would decrease (Chen et al., 2008). Therefore, the impact of

**Figure 1. Building operational accounting competency during a pandemic.**



emergency online learning on improving the students' perceived operational accounting competencies needs to be identified.

The results of this study indicated that, during one semester of participating in emergency online learning, the students felt only somewhat satisfied with the improvement in their OAC. This fair value was probably caused by the unpreparedness of the university to conduct online learning. This result is inconsistent with the results of research conducted by Duffy et al. (2002) and McPhee et al. (2012), who found that online learning had the same impact on, or even improved, the students' achievements. The second possibility is that the observation time for this study was only one semester. Hence, there was very little time for the OAC to improve significantly. The implementation of online classroom learning (OCE) as well as active, collaborative and enrichment learning (ACEL) were perceived as good by the students, while the student-faculty interactions (SFI) and the readiness of the communications technology (CT) were perceived as fair. Descriptive analysis shows that the levels of OCE, ACEL, SFI, and CT have yet to reach a satisfactory level. In other words, the implementation of the EOL still needs significant improvement. This may cause the effect of EOL on OAC to be unsatisfactory.

Even with a marginal magnitude, online classroom engagement (OCE) had a significant effect on increasing the students' perceived operational accounting competencies. This finding supports previous research conducted by D. Song et al. (2016) that interest and engagement are important determinants of online learning. In on-campus learning, OCE is similar to classroom learning which is mostly accommodated by academic challenge factors, as contended by ACER (2010). In a normal learning condition, academic challenges have the most dominant impact on students' learning outcomes (Yanto, 2016; Yanto et al., 2011; Zakir & Yanto, 2015). This difference might be due to emergency online learning procedures during the pandemic that had not been thoroughly prepared. This is also evidence that OCE did not affect ACEL. In other words, the virtual classrooms held by the lecturers did not affect the active, collaborative and enrichment learning. The unpreparedness of the lecturers and students, inadequate teaching materials and the lack of suitable technology for online learning probably caused OCE not to have a significant effect on ACEL. As mentioned by Dzulfikar (2020), online learning must be well planned, both in terms of its human resources, materials and technology.

This study found that, based on the students' perception, ACEL had a significant effect on increasing the students' OAC. This finding was in line with previous studies that during online learning, students were required to be more active in learning (Sadikin & Hamidah, 2020) and learn more independently (Verawardina et al., 2020). This study also supported the proposition contended by Nobaew (2016) that self-active learning had a positive impact on the students' mastery of their course content. The role of the lecturer in motivating and facilitating his/her students

during online learning is vital. Even though a learning session in a virtual classroom has been completed, the lecturers have to continue to interact with their students to supervise and motivate them, to keep them active, collaborative and engaged. The results of this study support previous research which found that the relationship between lecturers and students increases the students' engagement and satisfaction (Richardson & Radloff, 2014), their persistence (Croxtton, 2014) and their motivation (Trolan et al., 2016). There is a substantial role for student-staff interactions in creating a conducive learning environment, as studied by Ouyang et al. (2020), who made the point that during online learning, the relationship between lecturers and students is vital for building a learning environment.

However, this study found that SFI did not have a significant effect on the perceived operational accounting competency (OAC). This study identified possible causes for the insignificant effects of SFI on OAC. *First*, the discussions between lecturers and students outside the online classroom were unable to pay more attention to the lecture content in detail. Possibly, the topics discussed were issues of motivation, engagement and persistence, such as the results presented by Richardson and Radloff (2014), Croxtton (2014), and Trolan et al. (2016). *Second*, naturally, the relationship between students and their lecturers outside the virtual classroom only functioned as an effort to create a learning environment (Ouyang et al., 2020) not as a replacement for course tutorials. *Third*, the decision to switch to online learning during the pandemic was made rather suddenly, leaving the lecturers with limited time to prepare modules or other learning resources for the purpose of online learning. With on-campus learning, the accounting module had an important role, as stated by Ullah et al. (2018). The role of modules in online learning is significant. In this case, Johnston (2010) claimed that a module could increase the effectiveness of learning.

Technology, in the form of the communications technology and multimedia available to the students, had a vital role in their online learning (Rahman et al., 2011; Ratheeswari, 2018). This finding confirmed that communications technology (CT) had a significant effect on online classroom engagement (OCE), active, collaborative and enrichment learning (ACEL) and student-faculty interactions (SFI). In other words, the communications technology's readiness had an important role in the success or failure of the online learning (Wei & Chou, 2020). Therefore, improving the university's capacity in information technology and upskilling CT for lecturers and students is important in online or distance learning (Ouma & Nkuyubwatsi, 2019).

The study found that the concept of the students' engagement developed, based on the involvement theory (Astin, 1993), the seven principles of good practices (Chickering & Gamson, 1987) and voluntary student departures (Tinto, 1993), all of which were effective for measuring the educational processes in higher education institutions during the pandemic. To improve the students' perceived operational accounting competencies, lecturers should increase the intensity of the students' engagement, both in their online classroom engagement or synchronous learning and in their active, collaborative and enrichment learning or asynchronous learning. Lecturers also should increase the quality of the student-faculty interactions (SFI) to motivate the students (Croxtton, 2014; Richardson & Radloff, 2014; Trolan et al., 2016), which would create a conducive learning environment (Ouyang et al., 2020). In addition, lecturers also need to improve the quality of SFI, since SFI has an indirect influence on students' perceived operational accounting competencies.

The results of the analysis show that, based on perceptions, during the emergency online learning the students only made average gains in their operational accounting competencies. This is an indication that EOL mainly relies on asynchronous learning in the form of active, collaborative and enrichment learning (ACEL). On the other hand, operational accounting competency is a basic competency that should be mastered by students to make sure they can work well in accounting areas at the national and international levels (Yanto et al., 2018). Many countries have required universities to equip their accounting students with this competency. For example, the USA (AICPA, 2018), Singapore (GOS, 2020), and Malaysia (MIA, 2019) have included operational accounting competency—albeit under a different name—in their accounting competency

frameworks. Therefore, accounting departments, faculties and universities should improve their online learning systems to curb the decline in the quality of operational accounting competencies among accounting students.

Emergency online learning has been implemented for almost two semesters. If it is assumed that the COVID-19 pandemic will not be over yet, the government is likely to extend the online learning period. Based on the forecast, this pandemic may end in September 2021 (Pratikto, 2020). This prediction implies that online learning would last for almost four semesters, or two years. The results showed that this emergency online learning has not yielded satisfactory results for improving students' perceived operational accounting competencies. The role of online classroom learning and the interaction between lecturers and students for improving students' perceived OAC is not, as yet, satisfactory. If the emergency online learning process is not immediately improved, it is likely that the quality of accounting graduates will decline significantly, and this would have an impact on the quality of the human resources for accounting in the future.

The Ministry of Education and Culture, universities, and accounting departments should immediately adopt a strategy to switch the emergency online learning to a more ideal method of online learning. One of the possible strategies is that the universities should develop a dedicated unit to be in charge of their online learning programmes. Besides providing on-campus learning services, the university and accounting department also should provide professional online learning services. Other important factors such as technology, teaching materials, human resources, structures, and infrastructure need to be well-prepared for better quality online learning to occur (Arifa, 2020; Dzulfikar, 2020; Ouma & Nkuyubwatsi, 2019). Well-prepared online learning could provide the same results as on-campus learning (Duffy et al., 2002; McPhee et al., 2012) and simultaneously, it would provide greater satisfaction for the students (Mwiya et al., 2019). Thus, this strategy is expected to improve the accounting departments' online learning management to maintain the quality of accounting graduates in the future. This strategy is considered more important as the pandemic's end cannot be predicted accurately (Jennings et al., 2008).

## 6. Summary and conclusion

This study illustrated that the sudden change from on-campus learning to emergency online learning has had an unfavourable impact on the learning process and perceived operational accounting competencies. It is found that the students' satisfaction with the increase in their operational accounting competencies during the emergency online learning has only been categorised as fair. Students reported that online classroom engagement or synchronous learning and active, collaborative and enrichment learning, or asynchronous learning have been implemented properly, while student-faculty interactions (SFI) and the availability of communications technology for the students need improving.

The students perceived that the improvement in their operational accounting competencies has mostly been obtained from asynchronous learning in terms of active, collaborative and enrichment learning (ACEL). Online classroom engagement, or synchronous learning, made a small contribution to the students' perceived operational accounting competencies. The small magnitude of the effect of online classroom learning on their operational accounting competence might be due to the hasty preparations for online teaching. The unprepared state of the lecturers, who had to organise the online learning programmes, caused an insignificant effect of online classroom learning on ACEL. Student-faculty interactions (SFI) had an indirect effect on the students' perceptions of their operational accounting competencies. The insignificant impact of SFI on the perception of students about their operational competencies may be caused by communications between the lecturers and students outside the online classroom, which did not always focus on course content.

Student engagement has an important role in improving students' operational accounting competencies during the pandemic. Lecturers need to increase the intensity and quality of student engagement—online classroom engagement, active, collaborative and enrichment learning, along

with student-faculty interaction—to improve the students' increase in their operational accounting competencies. Student engagement is an effective proxy for measuring the educational processes in higher education. In addition, the data from the students' engagement survey also can be used as a basis for benchmarking purposes.

To avoid the problems caused by being unprepared for emergency online learning, the three parties—the accounting department, faculty and university—should work hand in hand to improve the management of online learning. To organise more professional online learning, the three parties should develop the information technology and multi-media skills of their lecturers and supporting staff, redesign the learning materials into online modules and improve the availability of information technology and communications, as well as providing a more complete infrastructure. These improvements should be immediately carried out so that the online learning process can be more effective.

## 7. Limitation and future research

This research was limited to accounting students and the observation period only covered one semester. This time frame might have been too short to observe the improvement in the students' competencies. In addition, future research needs to include more respondents from the accounting departments of various universities, for sample representativeness and normality. Therefore, the results of this study should not be generalised to all accounting departments in other colleges and universities. Since the results of the RMSEA analysis are still below the ideal value, it is possible that the chi-square would reject the model with a larger sample size. In addition, this study only collected data once during the pandemic period. Therefore, it is lacking comparative data on the perceived quality of learning during the pandemic and normal times.

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