'This Isn't My Expectation': Excel in Auditing

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ABSTRACT

Manuscript type: Research paper
Research aims: This study examines the perceptions of undergraduate accounting students about the use of Excel in an auditing course.
Design/Methodology/Approach: A qualitative interview design is employed in this study. A total of 20 participants shared their perceptions in three group interviews. Their statements were analysed using thematic analysis.
Research findings: Themes of agility and undesirability appeared central to the experience of Excel usage in auditing. The agility theme refers to students' rapid adaptation to the use of Excel for auditing purposes. The undesirability theme deals with students' expectations of using software beyond Excel.
Theoretical contribution/Originality: This study generated an understanding of expectations around technology from the perspective of accounting students, which is rarely examined. For students, the future of the accounting and auditing profession relies on up-to-date technologies, and universities should provide experiences in accessing and learning to use such technologies in accounting education.

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Practitioner/Policy implications: The findings of this study provide an understanding for accounting educators and higher education institutions about the expectations of students related to the type of technology that must be covered in accounting curricula.
Research limitations: This study collected data from only one public university in Indonesia. Students' perceptions in this institution may not be the same as those in other institutions. Caution must be taken when generalising and interpreting the findings to other institutions.

Keywords: Accounting Education, Auditing, Excel, Technological Competence, Undergraduate
JEL Classification: M41, M42, A22

1. Introduction

This study was motivated by evidence that accounting graduates are perceived to have low competence in technology (Awayiga et al., 2010; Boritz & Stoner, 2014; Brewer et al., 2014; Rebele & St. Pierre, 2015; Wessels, 2010). This is problematic because technology is an important tool in the accounting profession (Boulianne, 2016; Pearson & Singleton, 2008; Rackliffe & Ragland, 2016; Spraakman et al., 2015; Willis, 2016). Although the need to transform accounting education was articulated by Albrecht and Sack (2001) around 20 years ago, there has been continuing dissatisfaction among stakeholders regarding the technological competence of accounting graduates (Borkowski et al., 2007; Brown & Pike, 2010; Rackliffe & Ragland, 2016; Ragland & Ramachandran, 2014; Spraakman et al., 2015). This indicates the urgency for efforts to upskill accounting students in their levels of technological competence.

One effort to better connect accounting students with technology involves strategies to integrate technology into relevant courses such as auditing (Lawson et al., 2014; Sledgianowski et al., 2017). Auditing is a course that is closely related to the use of technology (Sledgianowski et al., 2017). Despite the diversity of powerful technology tools available to support auditing work, research has shown that the most important tool for an auditor is Excel (Baysden, 2018; Borkowski et al., 2007; Burnett, 2003; Cory & Pruske, 2012; Lee et al., 2018; Ragland & Ramachandran, 2014; The Pathways Commission, 2015; Willis, 2016). Therefore, learning auditing using Excel is relevant and should be given more emphasis in auditing courses (Lee et al., 2018).

Initiatives to integrate Excel into auditing courses have been reported in case studies by Bagley and Harp (2012), Miller and Savage

(2009), Peaden and Stephens (2013), and Andiola et al. (2018). In these studies, Excel was used as a tool to analyse data and to create electronic work papers—a crucial document for an auditor. Unfortunately, these studies did not examine students' perceptions of using Excel; in fact, they only investigated students' responses to the general effectiveness of the case study approach, rather than probing more deeply into specific technological preferences.

The present study aims to explore students' perceptions about the use of Excel in an auditing course. The specific research question addressed in this study is "Do students perceive using Excel in an auditing course meet their expectations?" This study is expected to contribute to the literature in several ways. First, in the age of technology disruption, it is worth considering whether or not Excel is still relevant for accounting students. Lee et al. (2018) stated that it is important to re-assess the types of technology incorporated into accounting education to maintain relevance within the current practice of the profession. The types of technology used in higher education will determine the competence profile of graduates. Matching the demands of the job market with students' competence is a responsibility for higher education institutions, particularly for profession-oriented programs, such as accounting. Unfortunately, accounting educators are often uncertain about the types of technology that should be covered in the accounting curriculum (Rebele & St. Pierre, 2015). Accordingly, the results of this study could determine whether or not the technological tool currently used in accounting education is perceived to be useful to support students' learning and their future career opportunities.

Second, university students are the main customers of universities. Hence, meeting the expectations of students is key for universities to maintain quality and to survive. By understanding students' expectations to use technology in an auditing course, university could assess students' satisfaction and formulate strategic plans to improve students' competence in technology.

Third, the study also contributes to adding empirical data on the expectation disconfirmation theory (Oliver, 1980). The theory is commonly used in marketing and information systems, and several studies have applied the expectation disconfirmation theory to research on educational context (e.g., Schwarz & Zhu, 2015). However, studies that used the expectation disconfirmation theory to verify the findings of a qualitative educational study is rare. The present study will add value

to the research stream by extending the applicability of the expectation disconfirmation theory into a qualitative educational study.

The remainder of this paper is organised as follows. Section 2 reviews past literature and Section 3 explains the research methodology. Section 4 discusses the research findings and Section 5 concludes.

2. Literature Review

2.1 Technology and Accounting Education

The fast-growing technology in industry has had a significant effect on the accounting profession. Accounting education in higher education is expected to contribute to producing accounting graduates who are adaptive to current technology. Professional accounting bodies such as the American Institute of Certified Public Accountants (AICPA) and International Accounting Education Standard Board (IAESB) consider that technological competence should be a compulsory learning outcome for aspiring professional accountants. The AICPA has established a pre-certification core competency framework to identify the important competencies for accounting graduates. Technological competence is paramount with long-term value for the accounting profession (AICPA, 2018). Further, the AICPA framework states that accounting graduates must be able to identify and use relevant technology for data analysis, and more effective and efficient work.

The IAESB, in its most recent 2019 publication, mentioned that mastery of technological competence is required of students, in addition to other areas of technical competence (IAESB, 2019). The IAESB (International Education Standard [IES] 2) identifies 11 technical competencies: financial accounting and reporting; management accounting; finance and financial management; taxation; audit and assurance; governance; risk management and internal control; business laws; information technology; business and organisational environment economics; and business strategy and management (IAESB, 2019). By mastering these areas of competence and other competencies listed in IESs, graduates are becoming ready to perform in the role of a professional accountant (Sarapaivanich et al., 2019). In line with the AICPA framework, the indicator of technological competence is the capacity to explain the role of information technology in data analysis and decision making, as well as the ability to use information technology to support decision-making (IAESB, 2019).

Besides professional bodies, accreditation boards such as the Association to Advance Collegiate Schools of Business (AACSB) consider technological competence as a requirement for an institution to obtain accreditation status. To earn AACSB accreditation, an accounting program must document the learning strategy in all courses that focus on improving students' technological competence (AACSB, 2018). Further, accounting programs must list the technology tools they use, other than presentation and word processing software (AACSB, 2018).

It is apparent that professional and accreditation bodies are eager to improve technological competence among accounting students in higher education because accounting is technology reliant. Boritz and Stoner (2014) stated that accountancy is among the first professions to use computers to record transactions and convert them into reports for monitoring operations and making business decisions. Today, various software such as the Enterprise Resource Planning (ERP) system, audit software, accounting packages and tax software are an integral part of accounting regardless of the specialisation (Boulianne, 2016; Pearson & Singleton, 2008; Rackliffe & Ragland, 2016; Spraakman et al., 2015; Willis, 2016). In addition, with the advancement of new technological tools in the fourth industrial revolution, big accounting firms such as Ernst and Young have used advanced technology such as blockchain and artificial intelligence to support auditor's work (Kruskopf et al., 2019).

Compared with other relevant technology for auditing professions, such as Approva and AutoAudit (examples of a continuous audit management program), as well as Audit Command Language (ACL) and IDEA (examples of generalised audit software [GAS]) (Baker, 2009; Brennan, 2008), Microsoft Excel is considered the most commonly used software (Borkowski et al., 2007; Burnett, 2003; Cory & Pruske, 2012; Lee et al., 2018; Ragland & Ramachandran, 2014; The Pathways Commission, 2015; Willis, 2016). A survey by Lee et al. (2018) involving 197 practitioners in the United States of America found that Excel is priority software for both junior and senior accountants. The Pathways Commissions on Accounting Higher Education, created by AICPA and the American Accounting Association, through its Technology Task Force, conducted 11 focus groups engaging practitioners and academics in a mission to formulate a consensus regarding important technology to teach accounting students. The focus groups identified the 25 top technology tools and concluded that electronic spreadsheets (e.g. Microsoft Excel) ranked as the most important accounting tools and should be integrated into accounting curricula (The Pathways

Commission, 2015). Similarly, a survey by Ragland and Ramachandran (2014) involving staff and supervisors in four renowned accounting firms revealed that Excel is considered the most important software for public accountants.

Although the literature emphasises the importance of Excel for accounting professionals, accounting curricula tend to fall behind professional demand. For example, Spraakman et al. (2015) stated that although spreadsheets were developed in the early 1980s, accounting curricula only responded to their availability in 1996. Reflecting on their interviews with accounting practitioners, Borkowski et al. (2007) explained that the auditors perceived knowledge of relevant advanced Excel skills gained in higher education to be poor. These auditors believed that if they had learned advanced Excel while in training, they would have been more confident in establishing efficient and effective careers in public accounting. Further, in a survey of accounting academics, Rackliffe and Ragland (2016) reported that accounting students demonstrated poor Excel competence. Also, Brown and Pike (2010) complained about Excel incompetence among accounting graduates, who could not use Excel proficiently for professional work.

Efforts to improve technological competence—particularly in relation to Excel for accounting students in accounting information system courses—were described in several studies (e.g., Brown & Pike, 2010; Frownfelter-Lohrke, 2017; Willis, 2016). Unfortunately, these focused on teaching Excel functions rather than teaching how Excel can help auditors to work effectively. Examples integrating Excel into auditing courses were presented by Bagley and Harp (2012), Miller and Savage (2009), Peaden and Stephens (2013) and Andiola et al. (2018). Bagley and Harp (2012) designed a case study entitled 'Shoe Zoo', to help students execute property, plant and equipment audits. Miller and Savage (2009) facilitated students to audit revenue recognition in their case study 'Vouch and Trace'. Peaden and Stephens (2013) provided the example of auditing a discount sales account in a case study, 'Old Main Manufacturing', while Andiola et al. (2018) focused on an account receivables audit in their case study 'Sprandel Inc.' These four case studies were employed as a means to integrate technology into auditing learning, and Excel was utilised as a tool to analyse data and create electronic workpapers. Effectiveness in each case study was measured via surveys of students. However, the surveys were limited to gathering responses on how effective the case study approaches were for improving knowledge on audit procedures and electronic workpapers.

The surveys did not explore students' perceptions whether using Excel in an auditing course meet their expectations. As argued by McDowall and Jackling (2006) and Becker et al. (2016), the success of technology use is highly dependent on the user's perception. Thus, it is important to investigate students' perceptions about using Excel in learning auditing.

2.2 Students' Expectations

University students are the main customers of universities, so meeting the expectations of students is key for universities to maintain quality and to survive. Unfortunately, only a few studies examining students' expectations were discovered (Borghi et al., 2016). According to a United Kingdom (UK) study commissioned by Quality Assurance Agency (Kandiko & Mawer, 2013), students' expectations regarding access to basic technological services are high. The students in the study were disappointed by the technological infrastructure in UK higher education institutions. They were not keen for face-to-face learning interaction to be replaced by technology such as wikis and discussion boards; rather they expected to have efficient and reliable access to basic technology services such as wireless Internet and online learning materials. The students also had high expectations for employability, indicating that they expected institutions to provide support for developing employability skills.

Borghi et al. (2016) pointed out that students' expectations are a major determinant of students' satisfaction. While studies generally measure students' expectations at the end of their undergraduate degrees, Borghi et al. (2016) argued that post-study measurement is not useful for students. Indeed, Appleton-Knapp and Krentler (2006) criticised institutions that evaluated students' expectations at the end of their degrees. They reasoned that students might forget their early expectations, and need to see whether their expectations are met. Further, Long et al. (1999) argued that the possibility of a change in students' expectations over years is high, so that expectations identified in the past may not align with those more recent. Accordingly, assessment of students' expectations should be conducted frequently and continuously.

The types of expectations raised by higher education students were mapped by Borghi et al. (2016). Based on a literature review, they identified 30 student expectations ranging from academic to non-academic. Access to the latest technology was one of the main expectations of students because, as technology growth increases, so do students' expectations for access to up-to-date technology (Borghi et al., 2016).

Borghi et al. (2016) then compared student and faculty perceptions of the importance of the 30 listed expectations to identify whether expectation gaps existed in a Brazilian university. Both students and faculty were asked to respond to a questionnaire containing 30 questions on academic and non-academic aspects of expectations. It was found that the students and faculty under investigation had different expectations. Student expectations about the course and institution were significantly higher than faculty expectations, which suggests that students demand more than staff anticipate.

2.3 The Expectation Disconfirmation Theory

The expectation disconfirmation theory is one of the most widely accepted theories regarding the use of information technology. In the field of marketing research, the theory has been used to assess customer satisfaction processes, and it has also been used to study information technology adoption (Lankton & McKnight, 2012; Schwarz & Zhu, 2015).

According to the theory, satisfaction or dissatisfaction results from the gap between predetermined expectations and performance (Schwarz & Zhu, 2015). Performance is an individual belief after experiencing or using technological tools or public services. If performance is perceived to be better than the predetermined expectation, positive disconfirmation occurs. On the other hand, if performance is lower than the predetermined expectations, negative disconfirmation occurs. Simple confirmation occurs when performance and predetermined expectation are equal. Positive disconfirmation leads to satisfaction, while negative disconfirmation leads to dissatisfaction (Schwarz & Zhu, 2015).

In the context of information technology usage, the theory is a useful lens for understanding how satisfaction with technology is based on users' initial technology expectation, technology usage, and comparison of technology performance against initial expectations (Lankton & McKnight, 2012). In this study, the expectation disconfirmation theory is adopted to build up the study arguments and support the findings.

3. Research Methodology

This study is part of a larger study aiming to improve the competence of accounting students. The larger study employed an experimental mixed-method design in which the first stage of the research is the experiment, followed by a qualitative study. The qualitative study is reported in this

article. It used an interview method, adapting data collection and data analysis techniques from Braun and Clarke (Braun & Clarke, 2006, 2013; Braun et al., 2019). Braun and Clarke formulated a metaphor that the researcher in a qualitative interview study must engage their subjective interpretation to uncover hidden patterns in the data, like a 'sculptor who creates a reality with their sculpture' (Braun & Clarke, 2013, p. 29). This is different from researchers in quantitative studies who distance themselves from subjective interpretation to find reality.

The research setting was an advanced auditing course at an Indonesian public university. The course was redesigned to incorporate Excel related activities into three elements: the intended learning outcomes, the teaching and learning activities, and the assessment tasks. The underpinning framework for redesigning the course was constructive alignment (Biggs, 1999, 2012; Biggs & Tang, 2011), which required alignment among the three important elements of the course design. Accordingly, technological competence was declared as one of the intended learning outcomes and students were made aware of this expectation. In addition, the teaching and learning activities utilised case study methods and the technology (Excel) was incorporated into these case studies. The case studies were adapted from audit case studies designed by Bagley and Harp (2012), Miller and Savage (2009), Peaden and Stephens (2013) and Andiola et al. (2018). All the student activities using Excel in auditing were assessed.

To explore students' perceptions about using Excel in auditing, group interviews were conducted. Group interviews were chosen over individual interviews to provide a natural setting for participants to recall their experiences using Excel, and allow them to listen to other participants' experiences in a convenient environment that mimics a normal conversation (Dilshad & Latif, 2013; Fraenkel et al., 2012). The group interview approach also enabled researchers to gather collective insights from the participants, which is not possible with individual interviews (Creswell, 2012; Fraenkel et al., 2012).

The participants were 20 students undertaking the auditing course. There were three group interviews, with eight participants in the first and six in each of the other two interviews. The participants were senior students (third year) aged 20–21 years. The interview with each group lasted for approximately 2 hours. The focus of the interview was the students' perceptions of the use of Excel in the auditing course (see appendix for interview protocol). The interview was recorded using a voice recorder and the result was used to create a verbatim transcript

by two research assistants. The accuracy of the interview transcript was checked by the researcher before it was used for analysis.

The data analysis employed a thematic analysis approach of Braun and Clarke (Braun & Clarke, 2006; Braun et al., 2019). Thematic data analysis includes six steps: familiarisation, generating codes, constructing themes, revising themes, defining themes and producing reports. Familiarisation was gained by reading interview transcripts multiple times. At this stage, important information was flagged to develop a sense of the data. At the generating codes stage, coding was conducted by labelling the data with an inductive orientation, which involves coding being directly obtained from the data rather than pre-determined by the researcher. Braun et al. (2019) labelled thematic analysis with inductive orientation coding as reflexive thematic analysis, which draws different characteristics from thematic analysis using a codebook approach and coding reliability. At this stage, 30 initial codings were identified. In the third step, constructing themes, an initial theme was constructed by merging similar codes. For example, several codes that related to perceptions of Excel for general purposes and how students expressed their familiarity with Excel were collated into an initial theme called 'Excel is easy'. We constructed six themes at this stage, including Excel in audit – new stuff, Excel is easy, confusion, lack of support, expectations, and aware but unsure.

During the fourth step, revising themes, the researcher revisited the initial themes and constructed modified themes. For example, we felt that the initial theme, lack of support, did not really represent the data. We modified the theme to better reflect the data, and a new theme disappointment was constructed. The fifth step is defining themes; the researcher identified themes and ensured that all those in the data were intercorrelated to construct a story. We examined the essence of what each theme is about and decided to combine several themes that have similar stories. At this stage, we constructed two overarching themes: agility and undesirability. The last step of thematic analysis is writing a report, which is presented in Section 4.

Several methods were employed to improve the credibility of the findings. A group interview was conducted across three stages to obtain 'full stories' from groups of participants until no new codes were produced (code saturation) (Guest et al., 2006). The accuracy of interview results was ensured by recording the interview using an audio recorder. Before the interview, the participants completed a consent form to express their agreement to participate in the interview and allow the

researcher to record the interview. Further, the accuracy of the verbatim transcript was confirmed via a double checking process in which the researcher read the transcription text prepared by two research assistants, while listening to the audio recording. In the analysis process, determination of codes and themes was thorough, involving member checking verification by asking the sample of participants to comment on the themes constructed by the researcher. Although Braun and Clarke (2013) stated that member checking was not necessary for qualitative research, the researcher argued that member checking is important to minimise 'inappropriate interpretation of their [participants'] experiences' (Braun & Clarke, 2013, p. 283).

4. Results and Analysis

Two main themes were developed from the analysis of the interview data (see Appendix). The first is agility, where the participants perceived themselves as able to quickly adapt to the use of Excel in auditing. The second theme is undesirability, where the participants were unwilling to only use Excel in auditing.

4.1 Agility

Agility is the first theme to emerge from the interviews. The notion has been made popular by the AACSB, through its five standards released in 2018, which require institutions seeking AACSB accreditation to demonstrate efforts to develop 'technology agility' among students (AACSB, 2018). Agility in the context of technological competence is defined as the capacity to readily adopt new technology or to adapt to use technology in new situations.

The interview results show that for the students, Excel was not a new technology, although they were not used to employing Excel for auditing. Nevertheless, these students could easily use Excel for auditing because they were familiar with the software, as exemplified by the following quotations taken from interview transcripts:

> "In this (auditing) course, I just realise that I cannot use Excel for auditing purposes."
>
> "Yes, me too. But it's easy. We are familiar with Excel although for other purposes (besides auditing)"
>
> "We never used Excel for auditing before. Then we get a new experience here (in the auditing course). Soon after we learned

the examples, we could easily understand how Excel works for auditing"

The students' familiarity with Excel was probably a result of their experience learning Excel in their previous education at secondary, upper secondary and higher education levels. The accounting program in this study dedicated its information and communication technology course to Excel use. However, since Excel was not integrated into relevant accounting courses, the students had difficulty to use Excel in auditing. In other words, the students were familiar with Excel in general, but not for auditing practices. Even so, the above quotations imply that the students did not take long to adopt Excel in a new situation. It might be interpreted that the students had achieved technology agility because they could easily adapt to using technology in a new situation, but from a company perspective (employer), accounting graduates demonstrate poor competence with Excel in various work contexts (Brown & Pike, 2010; Rackliffe & Ragland, 2016; Ragland & Ramachandran, 2014). It may be the case, as Willis (2016) found, most accounting students are overconfident about their competence.

Moreover, student agility with Excel does not necessarily reflect their agility in the use of other software technology. The AACSB (2018) expects accounting students to grasp the opportunity to learn new software relevant to a particular field, instead of limiting themselves to one software package. The aim is for students to quickly adapt to any software used at work. In an auditing context, renowned accounting firms have implemented new technology to support auditor work. For example, Ernst and Young launched a blockchain analyser in 2018 to help auditors gather data on company transactions from several blockchain ledgers to speed up transaction analysis and outlier detection (Kruskopf et al., 2019). Pricewaterhouse Cooper (PwC) performs efficient and automated data transfer by harnessing artificial intelligence to bypass manual verification by the client in accounting systems (Kruskopf et al., 2019). Given the progressive technology implemented by public accounting firms, it is important to explore whether the students were complacent in the use of Excel in the auditing course. This theme is discussed in the next section.

4.2 Undesirability

The second theme that emerged from the interview data analysis is undesirability, which indicates students' unwillingness or reluctance

to only use Excel in their auditing education. This requires elaboration, because students' perceptions of a type of technology may affect their performance in using that technology (Becker et al., 2016; McDowall & Jackling, 2006). Moreover, students' perceptions of technology reflect their expectations of the service provided by the university (Borghi et al., 2016; Kandiko & Mawer, 2013).

When asked to voice their opinions regarding the use of Excel for auditing, the students vehemently stated that they expected to use technology other than Excel. As observed in the course syllabus, one of the intended learning outcomes in the advanced auditing course is: 'It is expected that after partaking in the Advanced Auditing course, the students are able to use the technology (Excel) to audit a financial statement'. The lecturer's expectation as stated in this intended learning outcome seems to clash with the students' expectations as implied by the interview results. This is indicative of an expectation mismatch between the educators and the students.

> "My expectation regarding technology is to get familiar with auditing software or to use the software for auditing … but rather, all I got is Excel … for me, it's just the same as what I learned in other courses. So, for auditing fields, Excel is below my expectation."
>
> "Me too. I was wondering why we only got Excel. How is it different with other (courses), meanwhile, there are many applications … and auditing software too. So I'm always curious about technology for auditing … so far I only use Excel."
>
> "In my opinion, accounting has MYOB [Mind Your Own Business], so audits should have one too … but we weren't introduced to it. Instead, we just got Excel. Excel is for general purposes, right."
>
> "My expectation for technology in auditing is beyond Excel … there must be an introduction to new software or programs for auditing."

These participants described the use of Excel in their course using phrases such as 'only use Excel', 'just got Excel' and 'below my expectation', which expresses their undesirability, unwillingness or reluctance to use only Excel for auditing. For the students, Excel was general software for many purposes and they were looking for specific software for auditing purposes. The students gave examples of specific software, such as MYOB for accounting and the Statistical Package

for Social Science (SPSS) for statistics. They were sure that audit-specific software was also available. They may have been referring to generalised audit software such as IDEA and ACL.

There were reasons for the use of Excel in the context of auditing course in this study. The literature provides evidence that despite many options for audit software, Excel is the main tool used by auditors (Borkowski et al., 2007; Burnett, 2003; Lee et al., 2018). In fact, Excel is one of the newest features of Certified Public Accountant (CPA) exams set by the AICPA, in which it is used as an analysis tool (Baysden, 2018). This is indicative of the importance of Excel mastery for professional auditors. In an Indonesian context, Widuri (2014) confirmed that few public accounting firms in Indonesia use Generalised Audit Software (GAS).

Although the literature suggests the dominance of Excel in auditing, recent studies also indicate the need for students to be familiar with audit-specific software (Blankley et al., 2018; Reinstein et al., 2018). Students equipped with knowledge of these software programs would be more marketable to employers (O'Donnell & Moore, 2005). In a real-life setting, each institution might have their own customised audit software; however, introducing audit software such as IDEA and ACL to students would help accelerate their adoption of new technology (Sledgianowski et al., 2017), as is expected by the AACSB (2018).

Audit specific software is considered more powerful than Excel for analysing large and complicated datasets, and may make auditor performance more effective and efficient (Kuruppu, 2012). Here, efficient refers to auditing work being finished in a short time to minimise costs (Brennan, 2008); effective refers to audit coverage that is improved by performing a comprehensive audit of the population (Baker, 2009). Besides audit-specific software, public accountant firms are gradually harnessing technology equal to that used by their clients, such as Big Data Analytics, which nowadays is intensively harnessed. Hence, clients' expectations of suitable audit evidence and processes for their businesses have changed (Salijeni et al., 2019). Clients from Fintech sectors, for example, rely not only on financial data but also non-financial data for making decisions, so the job coverage in public accountant firms transcends audit services and includes advisory services using Big Data Analytics (Salijeni et al., 2019).

The main issues in integrating audit software into an auditing course in higher education are the lack of accounting educators competent in its use (Andiola et al., 2020; Kotb et al., 2019) and the cost associated with introducing new software into courses (Andiola et al.,

2020; Kuruppu, 2012; Pelzer & Delaurell, 2019; Sledgianowski et al., 2017). For example, investigating accounting educators in the UK and Ireland, Kotb et al. (2019) found that accounting educators in auditing courses did not equip students with relevant technologies for auditing practice due to lack of competence to teach information technology. Since undergraduate accounting students were rarely taught about technological tools that are used in the accounting profession, the technological competence of accounting students and graduates in many regions worldwide is often considered lacking (Borkowski et al., 2007; Brown & Pike, 2010; Rackliffe & Ragland, 2016; Ragland & Ramachandran, 2014; Spraakman et al., 2015). AACSB (2020) recommends that educators must upgrade their competencies through active involvement with professional accounting bodies and industry. Through active involvement with professional bodies, accounting educators – especially those who do not have a practitioner's background – are not left behind with the latest development of technology used in the profession. Universities could support accounting educators with funding to update their competencies (Andiola et al., 2020). Professional certifications and continuing professional development programs conducted by professional accounting bodies usually require significant funding. Funding support from universities could motivate accounting educators to seek relevant training to keep up to date with the latest practice of accounting, auditing and technology. Furthermore, accounting educators may also choose to teach collaboratively with their peers through team teaching. Team teaching is a good way to share expertise between lecturers (Singleton, 2019). Particularly in terms of developing technological competence, lecturers who find it difficult to maintain or develop new competency with technology can collaborate with other lecturers who are more technologically proficient.

Regarding the cost, Sledgianowski et al. (2017), Pelzer and Delaurell (2019) and Kuruppu (2012) have offered solutions involving low-cost strategies for including audit software, tailored for auditing courses. They recommended specific auditing textbooks that enable students to access audit software such as ACL for educational purposes. In this way, students can access the software without extra costs to themselves or the institution. Such auditing textbooks include those by Johnstone et al. (2016), Louwers et al. (2015), Whittington and Pany (2015), Arens et al. (2013) and Messier et al. (2007). Another preferred method for integrating advanced auditing technology is to use relevant audit case studies that could enrich students' learning experiences. Kuruppu (2012)

added that using audit software does not nullify Excel because the latter provides a common format for inputting data into audit software.

The reluctance of the students in this study to only use Excel to learn auditing is indicative of negative disconfirmation. In the expectation disconfirmation theory, negative disconfirmation means that students initial expectations exceed actual performance (Lankton & McKnight, 2012; Schwarz & Zhu, 2015). Students expected to use advanced and specific audit software beyond Excel. As their expectations to use audit specific software were not met, students perceived Excel alone was not quite useful to learn auditing and may decrease their learning satisfaction. Accordingly, it is important to revisit the relevance of Excel for auditing learning.

The students' tendency to offer negative responses when using Excel in their auditing course contrasts with comments from students using audit-specific software as in the study of Kuruppu (2012), where most students had a positive perception of using ACL in their auditing course. Becker et al. (2016) concluded that the students in their study who deemed IDEA important for auditing were more accomplished than their counterparts. In the context of accounting courses, students in one study perceived the use of Quickbooks Pro for learning as positive (McDowall & Jackling, 2006). The students considered this accounting software package useful for improving their understanding of concepts, and for significantly improving their performance in the accounting course (McDowall & Jackling, 2006). Similarly, Nori et al. (2016) and Boulianne (2014) stated that the benefits of technology integration in accounting lessons include improving not only students' competence in technology but also their understanding of accounting concepts.

Moreover, students' expectations to gain learning experience using audit-specific software may reflect their expectations of becoming familiar with the modern auditing world. The students in this study seemed to consider higher education institutions as responsible for enhancing their employability prospects, consistent with Kandiko and Mawer's (2013) findings. Thus, they expected the course to offer them support to develop their skills, particularly in the area of technology. Auditing lecturers and the university should respond to this by facilitating the students to learn auditing software using the aforementioned low-cost strategy.

Considering the projected trend for technology to overtake the routine work of accountants and auditors in processing and analysing data (Kruskopf et al., 2019), accounting educators need to divert the

learning focus from simply how to use the technology to how to exercise scepticism and judgement, and to communicate results from technology-generated data. In this way, integrating technology into auditing courses would remain interesting for students, rather than a boring activity as reported by Lane and Porch (2002). Lane and Porch (2002) argued that computer-aided learning negatively affected their student participants' perceptions of accounting. After partaking in accounting courses that involved integrated applied technology, the students perceived their accounting course as boring, static and not challenging (Lane & Porch, 2002), perhaps because of the inappropriate focus of the learning.

In general, it is apparent that the students' expectations regarding technological tools in this study were higher than those of the lecturer, which is quite different from the results of the study by Borghi et al. (2016), who found students and faculty had similar expectations. In particular, among the 30 indicators of expectations in their questionnaire, access to the latest technology in Borghi et al.'s study got the lowest means and the largest dispersion of data. It seems that there was no consensus among students; some thought that access to the latest technology is vital while others did not expect this from the university. However, Borghi et al. (2016) noted that expectations change over time. Past student expectations may not match current expectations, which highlights the need to continuously monitor students' expectations (Borghi et al., 2016).

5. Conclusion

The objective of this study was to explore students' perceptions about using Excel in an auditing course. The findings show that the students considered their technology agility regarding Excel as adequate. Also, Excel was not the only software they expected to use in their auditing course. For them, the auditing profession relies on high-end technology, which drove their expectations in regard to services provided by the higher education institution.

The findings provide additional evidence that there is a demand for improvement in accounting graduates' competencies in technology not only from practitioners, employers and professional accounting bodies, but also from the main customers of higher education — the students. Accounting students are keen to learn about new technology and they expect the university to provide a learning experience which includes the technological aspects of accounting and auditing. If universities

facilitate students' expectations, then students' engagement in the course and their level of satisfaction toward the course would be greater.

Students' agility in regard to Excel and their reluctance to rely only on Excel for auditing might motivate accounting educators to integrate technology beyond Excel so that students understand the real nature of the auditing profession in the modern era. The findings of this study provide an understanding for accounting educators and higher education institutions about the expectations of students related to the type of technology that must be covered in accounting curricula. Auditing educators, in their pursuit of improving students' competencies in technology, could consider the two themes in this research, agility and undesirability, as stepping-stones to determine the type of technology and the strategy to integrate it into the learning process.

This study is not without limitations. The study collected data from only one public university in Indonesia. Students' perceptions in this institution may not be the same as those in other institutions, therefore caution must be taken when generalising the findings. Further research could explore the perceptions of students from multiple institutions to obtain various perspectives from the wider community. Moreover, this study used the group interview method to gather data. Other data collection methods, such as measuring students' actual learning outcomes in regard to technological competencies, could add further interpretation to the findings.

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Appendix 1: Interview Protocol

1. What was your feeling when you noticed that one of the learning outcomes of the course was on technological competence?
2. Please tell me your experience to learn Auditing using Excel.
3. Do you think you have the expertise to use Excel in Auditing?
4. Do you think using Excel in Auditing help you to achieve the intended learning outcome associated with technological competence?
5. Can you think of any possible ways to improve your technological competence?

Appendix 2: Themes Formation

Coding	Initial themes	Revising themes	Defining themes
1. Using excel in auditing is a new experience. 2. Realising that at first, we didn't know how to use Excel in auditing. 3. Had no experience about using Excel in auditing.	Excel in audit? New stuff		
4. Excel is just about formula. 5. Excel is easy. 6. Frequent user of Excel, although for non-auditing purpose. 7. Easy to use Excel in auditing after seeing the examples. 8. Using Excel formula to replace manual computation.	Excel is easy	Agility	Agility
9. Confuse about the role of technology in auditing. 10. Is there any software that can ease audit works? 11. Is there any software that can change auditor judgment? 12. Less understanding of technology in auditing. 13. How's the application of technology in auditing practice?	Confusion	Confusion	

Appendix 2: Continued

Coding	Initial themes	Revising themes	Defining themes
14. Excel is software for any purpose. 15. Only use Excel during the course. 16. The case studies did not apply the audit specific software. 17. Technology competence was not well supported. 18. Excel does not represent the application of technology 19. Why do we only learn auditing using Excel? 20. What's the difference with other courses if Excel is the only software learned in the course? 21. Only use Excel in auditing? That is not my expectation.	Lack of support	Disappoint-ment	**Undesir-ability**
22. Expect to learn technology for auditing. 23. Expect to learn audit-specific software. 24. Expect to be able to use audit-specific software. 25. Expect to be introduced to software for auditing, other than Excel. 26. Don't just use Excel. What about other software? 27. There should be an introduction to the latest audit software. 28. Expect to learn deeper into the use of technology in auditing.	Expectations	Expectations	
29. Statistics have specific software; auditing must apply a specific software too. 30. There is MYOB in accounting, there should be a software in auditing.	Aware but unsure	Awareness about software for auditing	