Educating Financial Accounting: A Need Analysis for Technology-Driven Problem-Solving Skills

Nuwan Lakmal Hettiarachchi*, Tamil Selvan Subramaniam, Muhammad Nurtanto, Sarala Thulasi Palpanadan, Zachariah John A. Belmonte, Arul Lawrence Antony Selvaraj, and Nur Kholifah

***Abstract*—The teaching and learning process of financial accounting (FA) has become a challenge in an ever-changing global perspective, and an important discussion is replacing classroom teaching with career-based requirements. Problem-solving skills (PSS) help determine the source of problems and find appropriate solutions in teaching FA topics. This study aimed to identify the need for problem-solving skills for FA students for job readiness and identify the appropriate technology-savvy platform to improve problem-solving skills. Undergraduate students at the College of Banking and Financial Studies (CBFS) in Muscat, Sultanate of Oman, were selected as the research domain for data collection and analysis. This study reports a part of a preliminary study conducted using a survey technique on FA students. The main finding was that they had placed problem-solving skills as one of the important job skills in the modern financial accounting era. Furthermore, the needs analysis reflected the importance of the quiz-based learning (QBL) method embedded in Microsoft Forms (MFS) as a technology-based platform for teaching and learning about FA. Therefore, this study collected findings from the needs analysis phase with the help of QBL-MFS to improve the problem-solving skills of FA students to prepare them with life skills to be applied in the world place.**

***Index Terms*—Financial accounting, problem-solving skills, quiz-based learning, Microsoft forms.**

I. Introduction

The teaching and learning of financial accounting (FA) have been difficult for both students and teachers. Furthermore, it necessitates excellent problem-solving abilities while creating financial accounts for diverse corporate firms [1]. Accounting students' lifetime exposure to information technology (IT) and game-based learning gained traction at a rapid rate [2, 3]. To achieve new heights in financial accounting learning, the notion of game-based learning (GBL) analogies will be implanted into instructional technology. Accounting students are more interested in the digital game-based notion of learning to account than in the talk-chalk technique or two-way conversation. It is critical to improve financial accounting students' problem-solving skills by listing the chronological order of the development of game-based teaching for accounting students, providing guidelines for developing well-designed educational games, and introducing new game-based activities for teaching and learning [4]. Moreover, the study argued that the element of indulging will eliminate the stress of conventional teaching

A previous study showed that studying Malaysian Financial Reporting Standards (MFRS) is challenging for accounting scholars [5]. The most significant strength of this study is content analysis, which is used to develop Game-Based Learning (GBL) for accounting students as an alternate learning approach. GBL is used to enhance communication skills, social connections, inventiveness, and invention as well as promote motivation and user pleasure in psychology [5–7]. GBL is a sequential approach where participants must complete all previous stages to move to the next level [8]. For future researchers, GBL becomes a priority reference in pedagogy, especially FA learning from this content analysis [9]. Another study by Seow & Wong (2016) [10] emphasizes the development of an Accounting Challenge (ACA) application that combines mobile learning and game-based learning. The ACE application impacts improving accounting teaching outside the classroom with content anywhere, anytime. As a result, key stakeholders in the educational environment have demonstrated the importance of digital game-based learning and are embracing new technological advances during use in teacher pedagogical competencies [11, 12].

The trend of instructional effectiveness using digital technology in accounting learning in higher education has been identified. Ngadiran (2020) did a research to analyze the efficacy of Digital Game-Based-Learning (DGBL), and the findings, qualities, and motivation had a major influence, according to the findings [13]. Other researchers have the same opinion in exploring new ways during the teaching and learning process, namely embedded quiz-based learning, a genre of game-based learning that has been recommended [14]. Based on the arguments and emphasis, this study discusses the need for quiz-based learning to teach financial accounting and improve problem-solving skills. Furthermore, this study looks at how financial accounting students view quiz-based learning to improve problem-solving skills through Microsoft Forms (MSF), pedagogical skills, user interfaces, and front-end features and criteria combined into quizzes.

Teaching FA today, faced with the involvement of the role of technology, is convenient and practical [15] but is still in the early stages of exposure. So, the application of technology to answer the challenge has been piloted.

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Nuwan Lakmal Hettiarachchi and Tamil Selvan Subramaniam are with the Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia.

Muhammad Nurtanto is with the Faculty of Teacher Training and Education, Sultan Ageng Tirtayasa University (UNTIRTA) Banten, Indonesia.

Sarala Thurlasi Palpanadan is with the Center for Language Studies, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia.

Zachariah John A. Belmonte is with the Faculty of Mechanical Engineering and Allied Department, Technological University of the Philippines, Philippines.

Arul Lawrence Antony Selvaraj is the School Education, Tamil Nadu Open University, India.

Nur Kholifah is with the Faculty of Engineering Education, Yogyakarta State University (UNY), Indonesia.

*Correspondence: h_nuwan78@yahoo.com

However, the current gap is that relevant learning such as knowledge during the study with skills in the workplace has not been clearly defined. Therefore, according to the previous studies, an effective strategy is needed that combines work skills and involves technology during learning. Digital Intelligence (DI) and Computer Technology (CT) can be used in teaching FA, so accounting practice will enhance skills in future accounting careers. Thus, this study aimed to identify the need for learning FA assisted by technology-based platforms and improve problem-solving skills (PSS) relevant to a career in accounting. This study clarified the existence of fuzzy FA learning that did not meet industry requirements and thus, considered outdated.

II. Method

A. Research Design

This study identified the use of quizzed-based learning approaches to increase students' financial accounting problem-solving skills. This study used the Design and Development Research (DDR) approach suggested by Richey and Klein (2007) [16]. DDR is the systematic study of the design, development, and evaluation process to build an empirical basis for creating instructional and non-instructional products and tools and new or enhanced models that govern their development [16]. The DDR chronological process is described in figure 1 below.

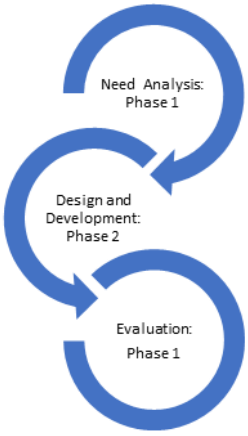

Fig. 1. Phases of design and development research.

As in Fig. 1, it is clear that the DDR commences with the need analysis, which helps understand the necessity of a Quizzed-based learning platform and the need for problem-solving skills for financial accounting students. The output of one exit phase is the input of the following entry phrase.

B. Participants and Procedures of Research

The respondents studied Financial Accounting at level 2 (UG037) in the second semester in S1-B.Sc Study Program (Accounting, Auditing, and Finance, for the 2020/2021 school year). A total of 96 students were involved in the need analysis stage. The respondents were selected using the purposive random sampling technique [17], where the sampling criterion was that the universities had Banking and Finance Studies of the Sultanate of Oman. The first stage of this research was to conduct a survey to assess the participants' demographic background and understand the learning methods chosen by students from various locations. The demographic construct investigated seven aspects – gender, IT skill level, online quiz-based skill level, availability of technology tools, existing problem-solving skills (PSS), and preferred level of PSS. The results are summarized in Table I below.

TABLE I: Participants' Demographic Information

Genre	Sub-genre	Frequency (F)	Composition (%)
Gender	Male	70	72.9
	Female	26	27.1
Level of IT Skills	No skills	4	4.2
	Basic skills	46	47.9
	Skillful	39	40.6
	extremely competent	7	7.3
Level of quiz-based skills	No skills	4	4.2
	Beginner	57	59.4
	Average	28	29.2
	Experts	7	7.3
Availability of technological devices	Desktop Computer:		
	Yes	83	86.5
	No	13	13.5
	Laptop Computer:		
	Yes	92	95.8
	No	4	4.2
	Tablets:		
	Yes	15	15.6
	No	81	84.4
	Smart Phone:		
	Yes	73	76.0
	No	23	24.0
	Game Console:		
	Yes	-	-
	No	96	100.0
	PlayStation:		
	Yes	-	-
	No	96	100.0
	VR Headset:		
	Yes	15	15.6
	No	81	84.4
Availability of digital devices	Mobile Data Plan:		
	Yes	89	92.7
	No	7	7.3
	Home-Broad-Band:		
	Yes	79	82.3
	No	17	17.7
	College Wi-Fi:		
	Yes	96	100.0
	No	-	-
The existing level of problem-solving skills	Weak Understanding	44	45.8
	Average Understanding	30	31.3
	Fairly Good Understanding	9	9.4
	Very Good Understanding	13	13.5
Preferred level of PSS	Not at all important	15	15.6
	Fairly Important	30	31.3
	Important	45	46.9
	Very Important	6	6.3

Table I depicts the demographic variables of the participants being surveyed. The finding on gender composition demonstrated that 72.9 % of the participants were male students, whereas the remaining 27.1% are female students. IT skills vary from no skills (4.2) to highly competent (7.3%). Out of the total participants, 47.9% of students were used to having basic IT skills meanwhile, 40.6% consisted of skillful participants in IT. The students came with various quiz-based skills backgrounds; 4.2% of

the students enrolled in the HNF FA course with no quiz-based skills, whereas 59.4% of students were absolute beginners, 29.2% of the students showed an average understanding of quiz-based learning, and the remaining students of 7.3% were mastery experts.

The availability of tech devices was examined with dichotomous: Yes and No questions. Most of the students (86.5%) used a desktop computer, and the balance was 13.5% of students who did not use desktops for their study purposes. Apart from desktop computers, most students (95.8%) had laptops and very few students (4.25%) did not have laptops. The survey also depicted that comparatively more students (76%) were using smartphones than tablets (15.6%) and VR headsets (15.6%). It was found that neither game consoles nor PlayStation allowed students to connect with quiz-based problem-solving activities for FA. Digital data plan services, broadband, and college Wi-Fi were available with most of the students at 92.7%, 82.7%, and 100%, respectively, accessing online quiz-based PPS for FA. Finally, the existing and preferred levels of PSS were accessed. With the view of underrating the present level of PPS of students as of prior semesters, the survey assessed 45.8% as weak understanding and 31.3% of average understanding of PSS. A total of 77.1% of the students had required some PPS orientation. Meanwhile, 22.9% of students were used to having a good understanding of PPS. The weaker and average students had ranked PPS as important (84.4%), and the remaining students (15.6%) were under the impression that PPS was not that important.

C. Collecting and Analysis Data

An online questionnaire was used to identify the needs of financial accounting students regarding quiz-based problem-solving and design principles and determine the students' acceptance of the delivery platform. The questionnaire was adapted from previous research during the needs analysis survey [18, 19]. This questionnaire consisted of three main parts.

1. Part A showed participants' demographic factors, including gender, IT and Gaming skills, and availability of digital devices and services.
2. Meanwhile, Part B explored the level of understanding of Problem-Solving Skills (PSS), which ranges from; weak understanding (1) to perfect understanding (5), as well as PSS assessment requirements and criteria in the creation of Financial Accounting knowledge within the range of 'Not at all important' (1) to 'Very Important' (5).
3. Part C contained questions about the need for Problem Solving Skills (PSS) for students of financial accounting, Microsoft Forms, quiz-based learning, and quiz-based assessments ranging from 'strongly disagree' (1) to 'strongly agree' (5). The online questionnaire was a 5-point Likert Scale consisting of closed questions.

An online questionnaire was used to identify the needs of financial accounting students regarding quiz-based problem-solving, and design principles, and to determine the students' acceptance of the delivery platform. The questionnaire was adapted from previous research during the need analysis survey [18–20]. The mean score acceptance rate is highlighted in Table II.

TABLE II: MEAN SCORE ACCEPTANCE RANGE

Level of Agreement	Mean Score Range
High	5.00-3.68
Medium	3.67-2.34
Low	2.33-1.00

III. RESULTS

The questionnaire consisted of three main parts.

A. Needs of Problem-Solving Skills (PSS) for Financial Accounting Students

This section probed the students' needs for PSS to fulfill the required level of understanding of FA in the B.Sc. programs. PPS is important in selecting the best way to solve a problem within the range of available strategies. The high needs of PPS can be migrated to quiz-based learning modules to gain mastery knowledge in FA. As per Table III, the mean score acceptance range has been used to trigger PSS acceptance within the FA module. The needs of PPS were examined based on nine constructs using 5-point Likert scale: extremely disagree (1) to extremely agree (5). Results are summarized in the table below:

TABLE III: RELEVANCY OF PSS WITHIN THE QUIZ-BASED FA MODULE

Items	Mean Score	Standard Deviation	Level of Acceptance
PSS is important for me to learn Financial Accounting	4.30	0.698	High
Higher Education Institutions (HEIs) must assist students in improving their PSS	3.71	0.753	High
PSS will help to overcome day-to-day challenges	3.76	0.830	High
HEIs should include PSS in their curriculum	3.94	0.678	High
PSS relating to Financial Accounting will help me find a good career in accounting.	3.11	1.141	Medium
PSS is required for 21st-century Accountants	4.06	0.765	High
PSS is vitally important for any profession	3.52	0.502	Medium
The Business program needs to keep its students ready to solve problems of Financial Accounting	4.02	0.894	High
Future accountants must be trained to enhance their PSS related to financial accounting	3.93	0.743	High

All constructs were adopted to understand the needs of PSS within the FA module for HND students. The findings showed that the students agreed on the necessary collaborations of PPS for FA knowledge creation. Table III demonstrates the need for PPS, as all criteria show a mean score beyond three points. The overall mean score of 3.817 suggested high ratings for the requirement of PPS in the teaching and learning pedagogy of FA.

B. The Platform, Strategy, and Assessment Methods of PSS

A one-way ANOVA was applied to check the statistical significance of the desired platform, learning strategy, and assessment method. It helped to ascertain a statistically significant difference between the means of independent groups. If the sign existed, descriptive statistics was used to determine the best platform, strategy, or assessment concerning the highest mean value. Furthermore, Post Hoc Test-Tukey HSD were utilized in deciding the significance of the various pairs of means.

A one-way ANOVA was applied to compare the impact of ten different platforms in executing PPS in knowledge creation. A five-point Likert-scale questionnaire was administered from significantly disagree (1) to agree substantially (5). There were 96 students in the research, and all were given their preferred choices in selecting the desired platform among ten different widely used platforms.

TABLE IV: PREFERRED PLATFORM FOR LEARNING PSS

PSS Platform	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Form	96	4.2292	1.01025	0.10311	4.0245	4.4339	1.00	5.00
LMS	96	1.7500	0.94032	0.09597	1.5595	1.9405	1.00	5.00
Insight	96	1.7500	0.88258	0.09008	1.5712	1.9288	1.00	5.00
Polly	96	1.7917	0.89345	0.09119	1.6106	1.9727	1.00	5.00
Community	96	1.6979	0.79630	0.08127	1.5366	1.8593	1.00	5.00
Kahoot	96	1.6563	0.85628	0.08739	1.4828	1.8297	1.00	5.00
Quizlet	96	1.6947	0.90004	0.09234	1.5114	1.8781	1.00	5.00
Myquiz	96	1.6495	0.81702	0.08296	1.4848	1.8142	1.00	5.00
CBFS	96	1.7083	0.80677	0.08234	1.5449	1.8718	1.00	5.00
Msg	96	1.7813	0.96467	0.09846	1.5858	1.9767	1.00	5.00

As of the calculations of one-way ANOVA, it was found that there was a statistically significant difference in mean score between at least two groups (F (9, 950) = [76.730], p = 0.000). This significance existed because the probability (p) was less than 0.05, the test statistic. Henceforth, as Table IV depicts, the highest mean value of 4.2292 for Microsoft Form suggests that future researchers may use it as the platform for upskilling PPS for learning pedagogy.

TABLE V: PSS PLATFORM (MULTIPLE COMPARISONS)

(I) Platform	(J) Platform	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Form	LMS	2.47917*	0.12835	0.000	2.0721	2.8862
	Insight	2.47917*	0.12835	0.000	2.0721	2.8862
	Polly	2.43750*	0.12835	0.000	2.0305	2.8445
	Community	2.53125*	0.12835	0.000	2.1242	2.9383
	Kahoot	2.57292*	0.12835	0.000	2.1659	2.9799
	Quizlet	2.53443*	0.12868	0.000	2.1263	2.9425
	Myquiz	2.57968*	0.12801	0.000	2.1737	2.9857
	CBFS	2.52083*	0.12835	0.000	2.1138	2.9279
	Msg	2.44792*	0.12835	0.000	2.0409	2.8549

Table V, which shows the Post Hoc Test-Tukey HSD test to identify the mean differences between the various pairs of different platforms. The analysis revealed that the mean value of platform selection was significantly different between Microsoft Form platform and other platforms (p= 0.000, 95% C.I). But there was no statistically significant difference in the mean values of other platforms, and Microsoft Forms' p-value was way higher than 0.05.

A one-way ANOVA was being applied to compare the impact of six different learning strategies in executing PPS in knowledge creation. A five-point Likert-scale questionnaire was administered starting from extremely disagree (1) to extremely agree (5). There was a section within the same survey to determine the suitable learning strategy for developing PPS for technology-driven teaching practices. This section included the Quizzed-Based-Learning (QBL), Online lectures, Face-to-face lectures, independent learning, Q and A Sessions, and Group problem-solving.

TABLE VI: PREFERRED TEACHING STRATEGY OF PSS

Teaching Strategy	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
QBL	96	3.9792	1.24798	0.12737	3.7263	4.2320	1.00	5.00
Online	96	1.7708	1.01025	0.10311	1.5661	1.9755	1.00	5.00
F2F	96	1.6563	0.93840	0.09577	1.4661	1.8464	1.00	5.00
Independent	96	1.6667	0.90224	0.09208	1.4839	1.8495	1.00	5.00
Q&A	96	1.8958	1.04104	0.10625	1.6849	2.1068	1.00	5.00
Group	96	1.7083	0.86956	0.08875	1.5321	1.8845	1.00	5.00
Total	576	2.1128	1.30927	0.05455	2.0057	2.2200	1.00	5.00

As of the calculations of one-way ANOVA, it was found that there was a statistically significant difference in mean score between at least two groups (F (5, 570) = [79.501], p = 0.000). This significance exists because the probability (p) is less than 0.05, the test statistic. As Table VI depicted, the highest mean value of 3.9792 for QBL suggests that future

researchers use it as the learning strategy in upskilling PPS within the learning pedagogy.

TABLE VII: PSS TEACHING STRATEGY MULTIPLE COMPARISONS

(I) Strategy	(J) Strategy	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
QBL	Online	2.20833*	0.14569	0.000	1.7918	2.6249
	F2F	2.32292*	0.14569	0.000	1.9063	2.7395
	Independent	2.31250*	0.14569	0.000	1.8959	2.7291
	Q&A	2.08333*	0.14569	0.000	1.6668	2.4999
	Group	2.27083*	0.14569	0.000	1.8543	2.6874

Table VII above, which shows the Post Hoc Test-Tukey HSD test to identify the mean differences between the various pairs of different learning strategies. The analysis revealed that the mean value of strategy selection was significantly different between QBL learning strategy and other strategies (p= 0.000, 95% C.I). But there was no statistically significant difference in the mean values of further learning strategies and QBL. The p-value was way higher than 0.05.

Another section was added to the survey to determine the best assessment model for developing PPS for technology-driven teaching assessment. This section included Quizzed-Based Assessment (QBA), Assignments, Time-constrained exams, Presentation and viva, and other relevant modes. A five-point Likert-scale questionnaire was administrated from significantly disagree (1) to agree significantly (5). A one-way ANOVA was applied to compare the impact of five different assessments modes in executing PPS in the knowledge creation.

TABLE VIII: PREFERRED ASSESSMENT METHODS OF PSS

Assessment Methods	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
QBA	96	3.6667	1.42141	0.14286	3.3832	3.9502	1.00	5.00
Assignments	96	1.8021	0.91329	0.09321	1.6170	1.9871	1.00	5.00
Time Constrained Exam	96	1.6979	0.95278	0.09724	1.5049	1.8910	1.00	5.00
Presentation and Viva	96	1.8646	1.07233	0.10944	1.6473	2.0819	1.00	5.00
Other Modes	96	1.8817	1.07187	0.11115	1.6610	2.1025	1.00	5.00

As of the calculations of one-way ANOVA, it was found that there was a statistically significant difference in mean score between at least two groups (F (4, 475) = [55.958], p = 0.000). This significance existed because the probability (p) was less than 0.05 (the test statistic). As Table VIII depicts, the highest mean value of 3.6667 for QBA suggests that future researchers may use it as the assessment mode in upskilling PPS within the learning pedagogy.

TABLE IX: PSS ASSESSMENT METHOD MULTIPLE COMPARISONS

(I) Assessment	(J) Assessment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
QBA	Assignments	1.86458*	0.15807	0.000	1.4318	2.2974
	Time Constrained Exam	1.96875*	0.15807	0.000	1.5359	2.4016
	Presentation and Viva	1.80208*	0.15807	0.000	1.3693	2.2349
	Other Modes	1.78495*	0.15935	0.000	1.3486	2.2213

Table IX shows the Post Hoc Test-Tukey HSD test used to identify the mean differences between the various pairs of different learning strategies. The analysis revealed that the mean value of the assessment mode was significantly different between the QBA assessment mode and other strategies (p= 0.000, 95% C.I). The p-value was way higher than 0.05. But there was no statistically significant difference in the mean values of other assessment modes and QBA.

IV. DISCUSSION

Based on the results, this study's need analysis survey had numerous implications. The survey results revealed the need for technology-driven PSS in mastering FA, showing students' readiness and willingness to use new technology and a new way of pedagogical teaching [21, 22]. The findings of need analysis were also in line with past studies [1, 2], and the results found that 59.4% of students preferred to have an impact game in accounting studies, but they were still at the early level of game-based learning. The financial accounting students requested to have quizzes as a genre of games. Thus, having a technology-driven teaching pedagogy would be an ideal choice for delivering and inspiring financial accounting [23]. Therefore, it is important to link and match PSS within the industrial training domain as a work-based learning method [24, 25]. The survey results revealed the need for technology-driven PSS in mastering FA, and it also showed the students' readiness and willingness to use new technology and a new way of pedagogical teaching, and agreed with the literature [3, 26]. Past research also suggested using game-based learning to improve PSS within the accounting domain, which was the case in Omani. As to the findings of this research, 84.4% of students wanted to have PSS as their preferred occupational skill [27]. In preparing students for career-based education, all vocational educators must assess their IT skills, Quiz-based skills, and ownership of technology before executing new ways of teaching [26, 28, 29]. The results emphasized several key issues before designing and developing a new teaching pedagogy. It was noted that students were neither extremely competent (7.3%) in IT skills nor expert (7.3%) in quiz-based skills, so it was important to keep the user interface as simple as possible

within the design and development phase [3, 5].

The survey legends probed that students used to have weak or average understanding (77.1%) of PSS but preferred an important high level (84.4%). This implication showed their willingness to be competent in PSS before they entered industrial internships [30]. The students' dependency on college Wi-Fi was 100%. Hence, the availability of the selected platform-MS Forms (Mean=4.2292) must be in both online and offline versions. It must be further noticed that students' Microsoft usernames and passwords were active even off-campus and during the period of alumni. All legends for the relevancy of PSS were either highly or moderately important and vary from the mean values of 3.11 to 4.30, so PSS was vitally important to bridge the gap between the theory and practice of FA [10].

It was important to compare the mean difference between Microsoft Forms and the other methods in deciding the significance of selecting Microsoft Forms as the mode of the platform. The p-value of 0.000 was less than the significant level of 0.05, and all other multiple comparisons showed a higher value than the significant level. A new implication of this research and Microsoft Form may be appreciated by other educators in delivering lectures within the domain of FA. The teaching strategy chosen was QBL (Mean = 3.9792) in this survey, and the results showed a p-value of 0.000 compared to other strategies, including online teaching, F2F teaching, independent learning, question and answer, and group learning. Therefore, QBL was more relevant in developing Microsoft Forms for FA discussion. In designing Microsoft Forms, it is important to include FA content to gauge students' needs and willingness to study FA. It is important to compare the mean difference between QBA and the other assessment methods in deciding the significance of selecting QBA (Mean= 3.6667) as the assessment method. The p-value of 0.000 was less than the significant level of 0.05, and all other multiple comparisons showed higher values than the significant level. It was a new implication of this research, and QBA assessment may be appreciated by other educators in assessing the knowledge of FA. The past studies [2] suggested that the students' assessments can also be executed with QBL. Hence, the impact of FA-2 learning outcomes would be signified.

This research contributes immensely to the body of knowledge, adds to the existing knowledge, and creates new knowledge. The understanding of technology-driven applications can bridge the gap between theory and practice of FA-2 by enhancing PPS. It empirically shows that technology can boost existing students' knowledge of PSS. According to previous research, there was little opportunity to contribute to the accounting profession with Microsoft products such as MSF. This study provides sufficient evidence to warrant the addition of PSS to the corpus of accounting expertise. This needs analysis gives further information on how a curriculum should be created and implemented to improve PSS. By promoting PSS, such curriculum development assures that understanding of FA may be improved. As a result, educational practitioners will find it easier to teach FA-2, while students will find it easier to acquire FA information. Online quizzes may be used as a teaching tool. Meanwhile, technology may be used to train technologically competent kids.

V. Conclusion

In concussion, the analysis revealed that the research objectives were achieved. The researcher attempted to negate the impact of research limitation, but there were few constraints due to the inherent nature of this research. Based on the ANOVA test statistics, there is a need for technology-driven teaching pedagogy embedded with the Microsoft Teams platform, QBL learning strategy, and QBA assessment mode. Other researchers may test the applicability of the given framework for assessing other subjects instead of FA and level of studies in parallel to undergraduate studies. Sample extraction was based on financial accounting students of UG AAF and BBA programs in semester two at CBFS. This needs analysis has been done for the financial accounting domain, and future researchers will do a similar analysis in other domains, such as the needs of PSS in marketing and engineering fields. QBL was introduced as the teaching and learning strategy in this needs analysis. But there are many other forms of strategies to enhance problem-solving skills. Future researchers may use other strategies and include them in the needs analysis. Furthermore, needs analysis is one phase of DDR, and it limits the whole process of research methodology. In developing educational products, a complete cycle of DDR is required. PPS is one of the occupational skills required for an accountant, and there is a line of other skills, including but not limited to communication skills and creativity. Future researchers may adopt the same sampling framework and questionnaire to different Higher Education Institutes (HEIs) within Oman or Gulf region to test the validity of this needs analysis.

This research significantly explored the critical areas in FA education with sound occupational skills and provided insights on students and teachers of FA-2 within the Omani context. Furthermore, it identified a novel instructional technology for teaching and learning FA-2 provided that better technology is in place. The findings of this research are expected to promote acceptance from stakeholders in FA and add value to a smooth transition of classroom knowledge into workplace skills. The paradigm switches from traditional (face-to-face) education to a new form of teaching (quiz-based learning), increasing students' vocational skills such as PSS.

Conflict of Interest

The authors declare no potential conflicts of interest regarding this article's research, authorship, and/or publication.

Author Contributions

Nuwan Lakmal Hettaiarachchi studied framework development, instrument development; write manuscript and analyzed data; Tamil Selvan Subramaniam studied framework development, instrument development; Muhammad Nurtanto visualized/presented data in text, write and submitted manuscript; Sarala Thulasi Palpanadan visualized/presented data in text, typed, proofread, and edited the manuscript; Zachariah John A. Belmonte corrected and edited the manuscript; Arul Lawrence Antony Selvaraj typed and edited the manuscript; Nur Kholifah corrected and edited

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Lakmal N Hettaiarachchi is an assistant lecturer in the Professional studies and Undergraduate department at College of Banking and Financial Studies, Sultanate of Oman. Research interests in the fields of education technology, curriculum design, accounting and banking education, occupational skills and learning management systems (LMS).

Muhammad Nurtanto is an assistant professor in Department of Mechanical Engineering Education, Universitas Sultan Ageng Tirtayasa, Banten, Indonesia. Research interests in the fields of professional learning, Teacher Emotion, Teacher Identity Philosophy of education, STEM education, gamification, and teacher quality in vocational education.

Sarala Thulasi Palpanadan is a senior lecturer at the Center for Language Studies (CLS) at Universiti Tun Hussain Onn Malaysia (UTHM). She is an expert in the fields of TESL, ESP, teacher education, writing instruction, and mixed-method research. She has vast experience in teacher training and development. She has participated in many national and international conferences and won awards as well. Dr. Sarala has numerous publications in many reputed national and international journals. She has also authored books and modules about research and language development.

Zachariah John A. Belmonte is currently the dean of the student affairs and faculty of Technological University of the Philippines. Research interest in the field of industrial engineering, management science, engineering technology and educational management.

A. S. Arul Lawrence is assistant professor, School of Education, Tamil Nadu Open University, has has 16 years of teaching experience and 10 years of administrative experience in various positions. He has written five books, five SLMs, translated one, edited eleven, and published four research tools. He has authored over 50 peer-reviewed research articles and countless web-media items. He belongs to 10 academic/professional organizations and has reviewed 11 journals. He has organized 20 national and international programmers. Educational Psychology, Educational Technology, ICT, and ODL are among his research interests.

Nur Kholifah is a lecturer at the Department of Clothing and Food Engineering, Yogyakarta State University, Yogyakarta, Indonesia. Research interest in the field of empowering vocational communities, learning methods, vocational teachers, and gamification.