ACCOUNTING CURRICULUM FOR FUTURE - READY GRADUATES: ACCOUNTING EDUCATORS' AND PROFESSIONALS' PERSPECTIVE

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ABSTRACT

This study attempts to examine the impact of technological advancements on accounting profession and education and it also proposed to review accounting curriculum. The current study focussed on the use of new technologies like Blockchain Technology, Artificial Intelligence and Bigdata Analytics in accounting profession, practice and, consequently, how accounting education will be affected and the need to adjust to these new technologies in an evaluative approach. A qualitative methodology was employed, investigating accounting educators' and professionals' perceptions on these developments. A sample of 45 respondents were selected using snowball sampling method and data was collected through a structured questionnaire. The results of correlation and ordinal logistic regression analysis showed a significant positive relationship between changing accounting profession due to technological advancements and accounting education and accounting curriculum and a significant impact of students' knowledge in new technologies on value-added benefits to firms. In view of changing business environment due to technological advancements, the accounting curriculum must be revised to incorporate new technologies.

Keywords: ***Blockchain Technology, Artificial Intelligence, Bigdata Analytics, Accounting Education, Accounting Profession, Correlation, Ordinal Logistic Regression***

1. Introduction

Accounting which is known as the language of business measures economic activities of organizations and communicate the same to related stakeholders, such as creditors, employees, corporate managers, creditors, consumers etc. Recent technological developments have introduced dramatic changes to the practice of many traditional professions, including accounting. The accounting profession is predicted to further experience a significant change, due to such advancements. Accounting Practices will be automated and people in related positions might lose jobs, therefore, accounting graduates need to be educated for different tasks and positions (Coyne and McMickle, 2017; Aldhizer ,2015).

A successful accounting curriculum should include new technical skills, knowledge, and competence of the industry. Moreover, it must be responsive to technological developments in the industry in a timely manner. The accounting curriculum has been criticized for being resilient to changes and for being focused more on acquiring technical accounting knowledge rather than the technological in-demand skills. As the use of digital technologies in industries increased, to meet technology needs of students, a number of universities globally are speeding up the pace in integrating technology into the curriculum. The use of Blockchain technology (BT), Artificial Intelligence (AI) and Bigdata Analytics (BDA) in the accounting and auditing profession is increasing rapidly. The current paper discusses and presents the application of these technologies in accounting profession and emphasises that these technologies should be integrated into the accounting curriculum to help in rapid adoption of these technologies (Kokina, Mancha and Pachamanova ,2017).

9. Application of technologies accounting profession

The application of technologies in accounting profession is presented as follows

BT and the Accounting Profession

The introduction of BT started to change the landscape of accounting profession. Some viewed it as a game changer. Others considered BT, the fifth pillar of the IT revolution, after mainframes, personal computers, the internet, and social media. BT is used in accounting and auditing in the following ways

1. It is safe from manipulation, which is its main advantage over a traditional database for accounting as a transaction ledger.
2. It can be used to securely store accounting data, to instantly share data with users, and to increase the verifiability of business data.
3. Data Analytics is also incorporated with BT to discover irregularities and other useful information.

4. BCT improves the efficiency of transactions that require multiple validations.
5. The source of data to support the auditing business while ensuring the unique sources of accounting data.
6. It improves the authenticity and reliability of audit data, significantly reducing the risk of data being attacked by the audited unit.
7. The timestamp feature increases the difficulty to tampering the data and provides a stable audit trail for the development of the auditing business
8. BCT enables auditors to write audit algorithms and audit business processing rules, laying a solid foundation for the automation of audit.

BDA and the Accounting Profession

The advent of Big Data has also affected the accounting profession. By using Bigdata analytics, data can be processed electronically to enable decision-making.

1. Companies are employing Big Data to assist them in better understanding the market, the industry, and their standing in social media, as well as to identify challenges and opportunities that can create value.
2. Through the use of sophisticated Big Data and time series models, millions of transactions can be searched to spot patterns and detect abnormalities and irregularities
3. Deep learning software is used to perform a content analysis audit of social media postings to detect potential litigation risk, business risk, internal control risk, or even risk of management fraud.
4. Recent studies indicated that internal auditors are seeking to verify the effectiveness and accuracy of information through the use of data analytics techniques. Similarly, external auditors are concerned with BA as they relate to verification of the veracity of the financial statements
5. Bigdata Analytics aids the identification of meaningful patterns and correlations among variables in complex, structured and unstructured, historical, and potential future data sets for the purposes of predicting future events.

AI And the Accounting Profession

The application of AI in business operations has affected various tasks in accounting and auditing profession. Currently, the use of AI technologies in the auditing process is at a growth stage, where monotonous audit tasks, such as internal control testing, can be done with the help of AI technologies. For instance, counting inventory which has traditionally been the work of humans, is now the domain of robots. Previous research studies reported

the use of drones for internal and external auditing. However, AI is broad and only some aspects are relevant to the accounting profession.

Background

The background of technological aspects is presented as follows:

Blockchain Technology (BT)

A business runs on information and it is better if it is received faster. Blockchain is an immutable ledger that assists the process of recording business transactions, and tracking assets. Anything that has a value can be tracked and traded in the blockchain network. There it is less risky and less costly. It is ideal for disseminating information as it provides ready and fully transparent information stored on an immutable ledger that can only be accessed by authorised members.

Artificial Intelligence (AI)

The term artificial intelligence has become popular now though it was used in 1956. This is because of the increased data volumes, storage, advanced algorithms and more. AI is a field that combines datasets with computer science to enable problem-solving. It contains sub-fields like machine learning which makes predictions based on input data.

Bigdata Analytics (BDA)

It is a process of analysing or examining huge data to disclose hidden information like market trends, customer preferences, hidden patterns, correlations etc that can assist the organisation in making business decisions. It is a form of advanced analytics, that involves complex applications such as statistical algorithms, predictive models to make data-driven decisions that provide organization benefits such as effective marketing, customer personalization, improved efficiency, competitive advantage over rivals.

Need for the Study

Due to the advent of new technologies such as AI, BDA, BCT, and other emerging technologies, the accounting profession has gone through substantial changes. Employers are looking for accountants who possess technical knowledge and competencies and are capable of adapting to complex business models and transactions, along with their basic accounting knowledge. This concept highlights the need for accountants to be knowledgeable in various technology trends related with accounting profession(Lau (2001; Qasim and Kharbat,2020). Therefore, in view of information technologies used in the job market, accounting programs should be taught in a different way. This paper studies the use of these technologies in accounting profession and explains the need for their inclusion into the curriculum.

Review of Literature

The important studies reviewed on this topic are presented as follows

Joshua G. Coyne; Peter L. Mc Mickle (2017) emphasised that blockchain has enabled the successful creation of decentralized digital currency networks and has prompted further investigation into the usefulness of blockchains in other business settings. This study shows that blockchain becoming a secure alternative to accounting ledger is infeasible. Their study identified various defects hindering implementation of the blockchain as a financial reporting tool. This paper concludes that, the security benefits of the blockchain are not fully available or reliable in an accounting setting.

Deshmukh, A (2006) covered fundamental topics such as accounting software, XBRL (eXtensible Business Reporting Language), and EDI and provided a foundation for digital accounting. This study highlighted the effects of the Internet and ERP on accounting and classified the effects and presented for each accounting cycle, along with a comprehensive discussion of online controls. This study provided a conceptual approach to handling the latest developments at the intersection of the accounting and IT fields.

Pan, G., and P. S. Seow (2017) stated that the universality of information technology (IT) in businesses has altered the nature and economies of accounting activities. The emergence of cloud computing, extendible Business Reporting Language, and business analytics in recent years have transformed the way companies report financial performance and make business decisions. Consequently, there is a huge increase in demand for advanced IT skills among accounting professionals.

Research Gap

The increase of technical and data analysis skills has grabbed attention from accounting firms and is vital in accounting education courses. The purpose of this research paper is to present, and discuss the use of AI and blockchain technology in the accounting field and argues that inclusion of recent technologies in curriculum improves efficiency and brings value-added benefits to organizations. Though, studies have been conducted about use of technologies in accounting profession, not enough studies have been conducted to propose the mandatory inclusion of these technologies in the accounting curriculum.

Objectives of the Study

The important objectives formed for this study are as follows

1. To present and discuss the applications of Blockchain Technology, Artificial Intelligence and Bigdata Analytics in accounting profession.
2. To study the relationship between changing accounting profession due to technological

advancements and accounting education and curriculum.

3. To study the impact of students' knowledge in new technologies on Value-added benefits to firms.

Hypotheses

The objectives are tested with the help of following hypotheses

1. H01: There is no significant relationship between changing accounting profession due to technological advancements and accounting education and curriculum.
2. H02: There is no significant impact of students' knowledge in new technologies on Value-added benefits to firms.

The Method

Using a descriptive research design, this study is conducted. In order to carry out the study, both primary and secondary data is used to conduct the study. Further, primary data is collected through a structured questionnaire and secondary data from published reports, journals and magazines. A sample of 45 accounting graduates as respondents' participating in the study. These participants were from the class pursuing accounting courses. A structure questionnaire included scales to measure the study variables. Details are presented in the following sections.

Reliability Analysis

The questionnaire has a total of 22 questions. Questions measuring a single variable are grouped together as one scale and reliability of each scale is assessed. 4 items to know if technological advancements are affecting accounting education and accounting profession are grouped, Cronbach's alpha for which is 0.889 indicating high internal consistency. 4 items to find out the drawbacks of current curriculum of Under-Graduation and Post-Graduation, 4 items to know if the respondents support revision of curriculum, 5 items to know if inclusion of new technologies into curriculum helps accounting students and 5 items to find out if students with new technical skills bring value-added benefits to organizations they work for. The Cronbach's alpha value for the above scales is 0.897, 0.882, 0.955, 0.962 respectively. It indicates high reliability and internal consistency scale.

Table-1: Reliability Statistics

Name of the Variable	No. of Items	Cronbach's Alpha
Technological advancements are affecting accounting education and accounting profession.	4	0.889
Drawbacks in current curriculum of Under-Graduation and Post-Graduation.	4	0.897
Revision of Curriculum.	4	0.882
Inclusion of new technologies into curriculum helps accounting students.	5	0.955
Students with new technical skills bring value-added benefits to organizations.	5	0.962

Source: Compiled from primary data

Data analysis was carried out using SPSS software to test the reliability of scale and to test the hypotheses. Cronbach's alpha is used to test the reliability and Spearman's rank correlation and ordinary Logistic regression is used to test the hypotheses.

Result Analysis

Demographic Analysis

Amongst the 45 respondents, 58% were male, while 42% were female. This shows a satisfactory gender distribution enabling the researcher to obtain a balanced opinion between male and female respondents. 60% of respondents belonged to the age group of 20-30, 13% to 30-40, 13% to 40-50 and 13% were above 50 years.

This study is aimed to study the relationship between changing accounting profession due to technological advancements and accounting education and curriculum and to study the impact of students' knowledge in new technologies on Value-added benefits to firms. The relevant hypotheses were tested as followed

H01: There is no significant relationship between changing accounting profession due to technological advancements and accounting education and curriculum.

The p-value of spearman's correlation is 0.000 which is less than ≤ 0.01 therefore, null hypothesis is rejected concluding that there is a significant relationship between changing accounting profession due to technological advancements and accounting education and curriculum. The value of the spearman correlation coefficient (r) is 0.792 which explains the higher positive correlation, significant at the 0.01 level (two-tailed). It is concluded that changing accounting profession due to technological advancements is positively associated with Accounting Education and curriculum at Under-Graduation and Post-Graduation level.

Table-2: Spearman's Rank correlation

			Technological Advancements affecting Accounting Profession	Changing accounting profession due to technological advancements effect accounting education and curriculum
Spearman's rho	Technological Advancements affecting Accounting Profession	Correlation Coefficient	1.000	.792**
		Sig. (2-tailed)	.	.000
		N	45	45
	Changing accounting profession due to technological advancements	Correlation Coefficient	.792**	1.000
		Sig. (2-tailed)	.000	.
		N	45	45

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled from primary data

The second hypothesis is tested using correlation and ordinal logistic regression analysis and is presented as follows

H02: There is no significant impact of students' knowledge about new technologies on Value-added benefits to organisation.

The p-value of spearman's correlation is 0.000 which is less than ≤ 0.01 therefore; null hypothesis is rejected concluding that there is a significant relationship between students' knowledge about new technologies and value-added benefits to organizations. The value of the spearman correlation coefficient (r) is 0.785 which explains the higher positive correlation, significant at the 0.01 level (two-tailed). This explains that students' knowledge in new technologies is highly related to value-added benefits to organizations.

Table-3: Spearman's Rank correlation

			Students' knowledge in new technologies	Value added benefits to the organizations
Spearman's rho	Students' knowledge in new technologies	Correlation Coefficient	1.000	.785**
		Sig. (2-tailed)	.	.000
		N	45	45
	Value added benefits to the organizations	Correlation Coefficient	.785**	1.000
		Sig. (2-tailed)	.000	.
		N	45	45

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled from primary data

Ordinal Logistic Regression Analysis

Ordinal logistic regression is a statistical technique used to model the relationship between an ordinal dependent variable and one or more independent variables. For the study, the independent variable is students' knowledge of new technologies and the dependent variable is Value-added benefits to the firm. In SPSS, the output of ordinal logistic regression includes several tables that provide information on the model's goodness of fit, coefficients, significance levels, and parameter estimates.

Table-4: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	94.414			
Final	40.394	54.019	2	.000

Link function: Logit.
Source: Compiled from primary data

The p-value of less than 0.001 shows that the model is a very good fits the data. A p-value of <0.001, would lead us to conclude that at least one of the regression coefficients in the model is not equal to zero. The Pearson and deviance test's significant value are 0.174 and 0.851 which are greater than an alpha value of 0.05 indicating our model to be a good fit.

Table-4 is the output of "Model Summary" and Table-3 is the output of "Goodness of Fit", which provides information about the overall fit of the model. The "Chi-Square" value in this table tests the null hypothesis that the model coefficients are equal to zero, which would indicate that the model does not fit the data well. A significant Chi-Square value suggests that the model provides a good fit to the data. Table-4 is the output for "Tests of Parallel Lines," tests the assumption of proportional odds, which is necessary for the interpretation of the coefficients. If the assumption of proportional odds is violated, then the coefficients are not valid. A non-significant result indicates that the assumption is met. Table-5 is the parameter estimates table shows probability of a case falling above a given category on the dependent variable.

Table-6: Test of Parallel Lines

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Null Hypothesis	40.394			
General	30.912	9.483	4	.069

a. Link function: Logit.
Source: Compiled from primary data

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

This tests the assumption of proportional odds and we want it to be greater than 0.05. This is the case here (p-value = 0.069). The main assumption of the ordinal regression is checked.

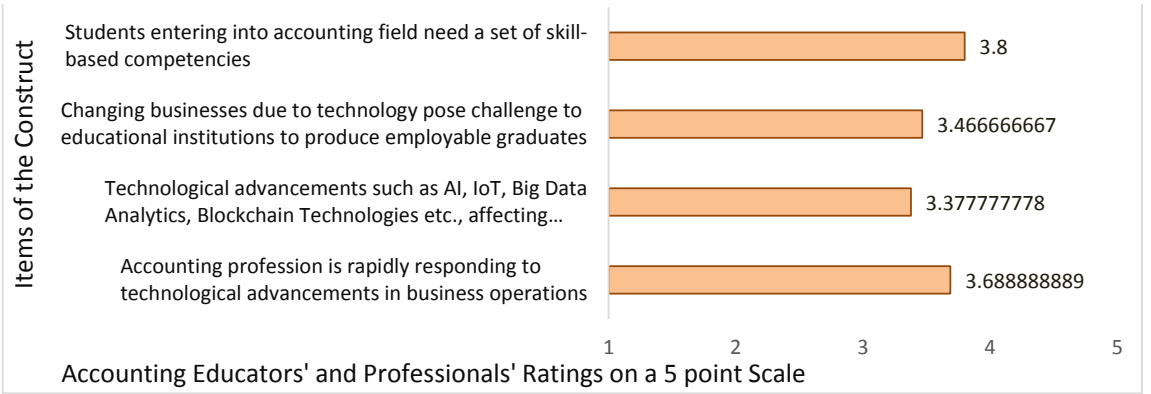
Table:7 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.
Threshold	students with knowledge of new technologies bring value-addition to firms = 1	5.816	1.672	12.103	1	.001
	students with knowledge of new technologies bring value-addition to firms = 3	9.938	2.162	21.121	1	.000
	students with knowledge of new technologies bring value-addition to firms = 4	13.310	2.539	27.493	1	.000
Location	Students analyse large data sets and taxation questions faster	1.403	.553	6.428	1	.011
	Students find behavioural patterns and build analytical models to find opportunities	1.587	.607	6.846	1	.009

The most interesting aspect is the locations. We have a statistically significant result for students with knowledge of new technologies (p-value= 0.009). It is significant at 0.05 levels. Therefore, we fail to accept the null hypothesis. The value of variable's coefficient is positive (1.587 respectively), which indicates that students' knowledge of new technologies positively impacts value-addition to organizations. The value of variable's coefficient is 1.587, which suggests that 1% increase in students' skills leads to a 1.5% increase in value-addition to organizations. This proves that students with knowledge of new technologies can help companies stay ahead of the curve in terms of innovation, gain a competitive advantage in the marketplace and improve its bottom line.

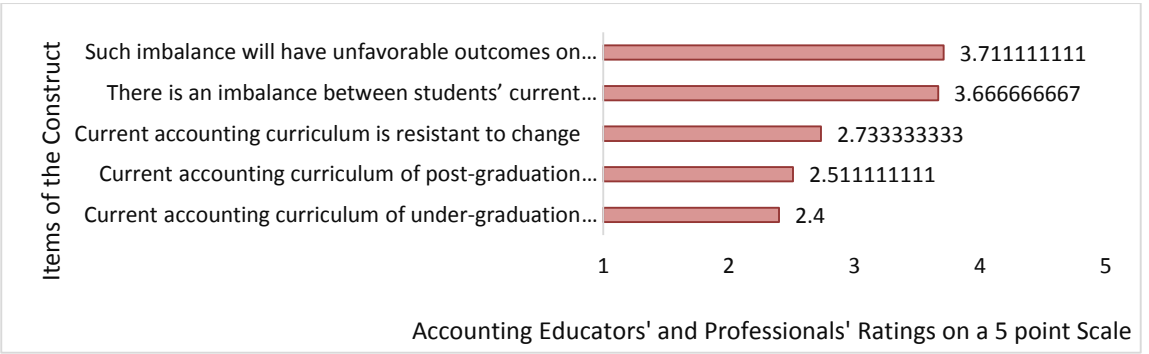
Graph-1, Graph-2, Graph-3, represents a set of statements related to the impact of technological advancements on the accounting profession, drawbacks of current curriculum and the need to revise the curriculum to adapt to these changes. The statements are rated on a Likert scale, with a range of 1 to 5, where 1 represents "strongly disagree" and 5 represents "strongly agree" by accounting educators and professionals.

Graph.1: Changing Accounting Profession Due to Technological Advancements



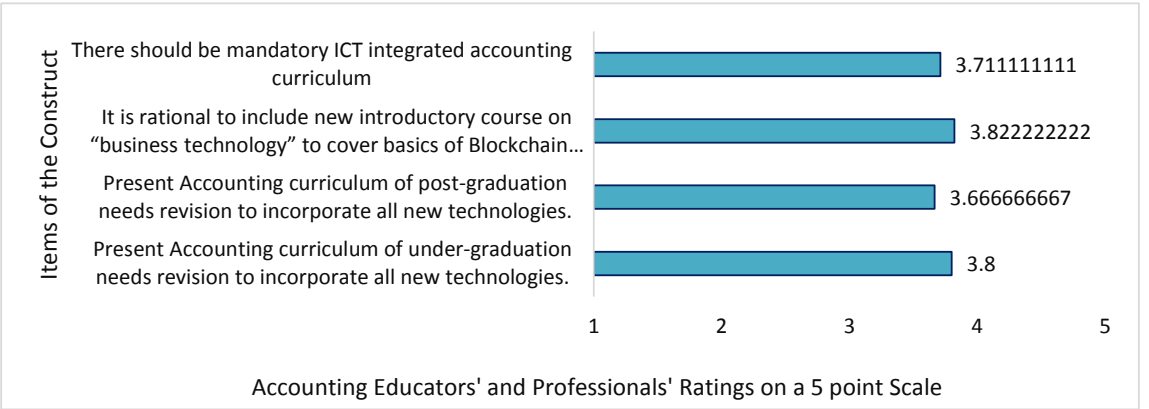
The respondents believe that students entering into accounting profession need a set of skill-based competencies as accounting profession are rapidly responding to technological developments.

Graph-2: Drawbacks of the Current Accounting Curriculum



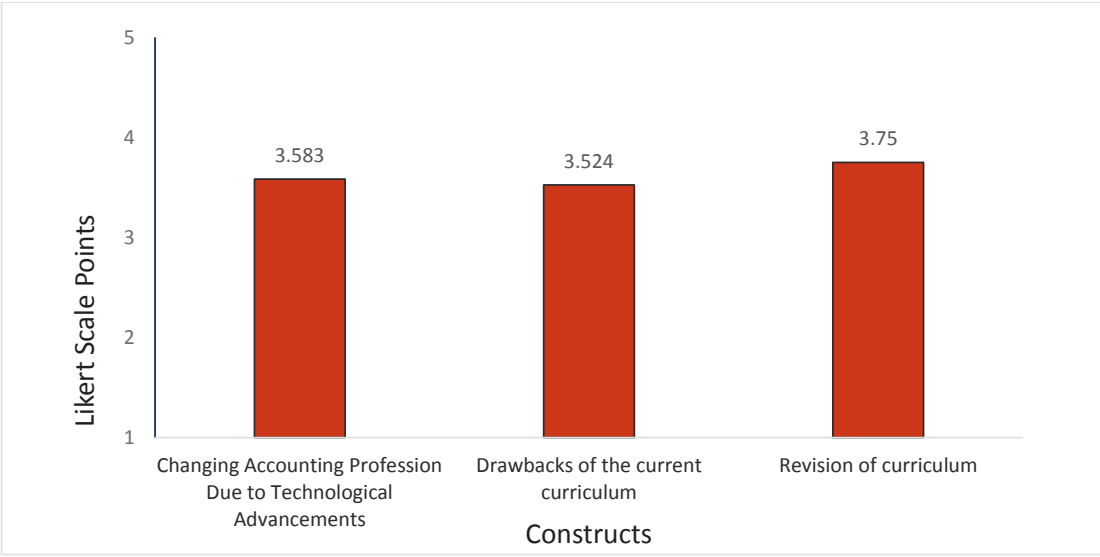
The Respondents perceive that there is an imbalance between students' current skills and in-demand skills which will have unfavourable outcomes on the employability of graduates.

Graph-3: Revision of Curriculum



The respondents strongly support the mandatory technology-integrated accounting curriculum

Graph-4: Mean Ratings of each construct according to Accounting Educators' and Professionals' Perception



Graph-4 represents the mean Ratings of each construct according to Accounting Educators' and Professionals' Perception. The first construct "Changing Accounting Profession Due to Technological Advancements" is rated 3.583, indicating that respondents have a slightly neutral opinion regarding the impact of technology on the accounting profession.

The second construct "Drawbacks of the current curriculum" is rated 3.524, indicating that respondents have a slightly neutral opinion regarding the limitations of the current accounting curriculum.

The third construct "Revision of curriculum" is rated 3.75, indicating that respondents agree that there is a need to revise the accounting curriculum to adapt to the changing technological advancements in the accounting profession.

Based on the ratings and the evidence that students' knowledge of new technologies can bring value-added benefits to firms, it would be advisable to revise the accounting curriculum to incorporate training on the latest technological advancements. This would help students to develop the skill-based competencies necessary to adapt to the changing accounting profession and to add value to firms they work for.

Suggestions

The field of accounting is constantly evolving, and it is important for accounting curriculums to keep up with these changes. To ensure that students are prepared to excel in the accounting profession, it is recommended that accounting programs incorporate courses in accounting theory, Comparative international accounting, Islamic accounting, Government accounting, International auditing standards, Advanced accounting, Accounting for partnerships, Accounting for financial institutions, Cost accounting, Forensic accounting, Principles of accounting, Accounting ethics, Tax accounting, Accounting for NGOs and specialized entities, Intermediate accounting, Financial statement analysis, Auditing, Managerial accounting, Accounting information systems, and IAS and IFRS.

By offering a comprehensive range of courses, accounting programs can prepare students for the diverse challenges that they will encounter in their careers and equip them with the knowledge and skills necessary to succeed in the ever-changing accounting landscape. To facilitate this change, we recommend that universities prioritize training their accounting teachers on recent accounting technologies. This can be done through training programs offered by the universities themselves. By equipping teachers with the necessary knowledge and skills, they can provide quality education to students and prepare them for the demands of the accounting industry.

Incorporating these revisions in the accounting curriculum will provide students with a comprehensive understanding of the latest technologies in the accounting profession. This will not only enhance their employability but also improve the quality of financial reporting of organizations. The adoption of these changes will enable accounting programs to stay up-to-date with the technological advancements.

Conclusion

In conclusion, the research findings suggest that the digitalization of accounting practice will have a significant impact on the accounting profession, and educators need to adapt the curriculum to keep pace with the evolving market. This includes incorporating contemporary technological features while also emphasizing classic analytical and advisory skills. To meet the needs of the future workforce, students must be willing to engage in a thorough and challenging learning process. The rapidly changing business environment driven by technological advancements and globalization requires businesses to redesign their operations and seek employees with specific skill-based competencies. This has put pressure on higher education institutions to produce graduates with the necessary knowledge and skills. While the accounting profession has been criticized for being slow to adapt, our research has shown that it is rapidly responding to technological advancements. However, the current imbalance between current skills and in-demand skills could lead to unfavourable outcomes

for the quality of accounting graduates and increase the risk of unemployment. The study recommends program administrators review the curriculum with input representatives from the labour market. Faculty members must shift their focus to application and engagement, allowing students to experiment and learn through authentic problems. Further research is needed to investigate specific details, such as the necessary changes in accounting standards to reflect technological developments. Finally, the accounting profession and education must reflect on the needs of the new generation and be prepared to incorporate and deal with related technologies while meeting the intellectual challenges of modern work tasks.

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