

## **Incorporating Information Technology Competencies in Accounting Curriculum: A Case Study in Malaysian Higher Education Institutions**

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**Abstract:** An increase in dynamic nature of information technologies has changed the way of accountants work. These changes not only involve skills in utilizing technology but also soft skills. Therefore, a skill set known as IT competencies comprise of technical skills organizational skills, people skills and conceptual skills is believed will enable an individual to optimise use of technology tools. This study seeks to assess the integration level of IT competencies in accounting curriculum using incorporation scale. A mixed-method consists of quantitative and qualitative data was chosen to achieve the objective of this study. The findings conclude that IT competencies are less incorporated in accounting curriculum for preparing accounting graduates to seek their professional accounting job. This study, thus, makes significant contribution to academic and professional bodies as well as to the industry by providing theoretical base for developing information technology and soft skills for knowledge workers in general and accounting practitioners in particular.

**Key words:** Information technology, competencies, accounting students, higher education institutions, information, contribution

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### **INTRODUCTION**

Within the accounting profession, competitive pressure and technology have led to expectations that accounting graduates or practitioners demonstrate other competencies (other than accounting technical knowledge) such as Information Technology (IT) and related competencies. This is also supported by IFAC which states that these competencies provide the ability for accountants to make successful use of knowledge gained through formal education. This study emphasis on skill dimensions such as technical, organisational, people and conceptual skills as a skill set for accountants. Accountants not only require for IT skills but also accounts for organisational, human and interpersonal skills. Therefore, the incorporation of IT competencies in accounting curriculum consists of coordinating diverse skills which integrate multiple functions of IT such as infrastructure and business applications. For example, providing accounting students with the ability to attain the benefits of soft skills (i.e., problem-solving skills, decision-making skills, communication skills and

negotiation skills) maximises the utilisation of database, spreadsheet or any business-related technologies to execute accounting jobs.

Knowledge of and experience in IT is at the core of these skills. However, there are certain complementary skills which need to be developed so that accountants are able to learn share and exploit knowledge to become proficient in the use of IT. For example, to develop skills and competencies in using spreadsheets, taxation and accounting software, an accountant needs to understand information needs of the process, comprehend process hand offs and interfaces and process flow to produce useful outputs.

Most universities around the world, particularly business and accounting schools or faculties would include learning strategies/activities to educate graduates to a level where they meet the skills requirements of their profession. In Malaysia, the Ministry of Higher Education (MoHE) has encouraged the soft skills needed to be introduced and incorporated in the undergraduate syllabus to reinforce human capital development and promote the mentality and intellectual capacity to enable the country to be on par with other developed nations (Selamat *et al.*, 2013). In addition, MoHE has announced

integrated Cumulative Grade Point Average (iCGPA) in 2015 as a new approach in assessing students. This approach is specified under shift 1 in the Malaysia Education Blueprint 2015-2025 (ME, 2015). The concept of iCGPA is to bridge the expectation gap of graduates-employers to produce graduates who are not only excel academically but also equipped with certain soft skills such as English proficiency, knowledge, values (ethics, patriotism and spirituality), leadership abilities and the ability to think critically.

In the accounting curriculum, the development of curriculum structure is based on Halatuju 3. The Halatuju 3 is published in 2013 through collaboration between Malaysian Institute of Accountants (MIA) and the MoHE. This Halatuju is used as a reference, standard and guideline for Malaysian institutions of higher learning to update and revise their accounting programs. One of the objectives of the Halatujutu 3 is to emphasise the issues of competency including technical and soft skills where improvements in accounting curriculum needed to produce quality accounting graduates (Sarea and Ebrahim, 2014). This is to ensure that accounting programs offered by local universities are in line with global developments within the profession.

This study aims to identify how effectively skill set of IT competencies incorporated in the curriculum of higher education institutions in Malaysia. The study also validates the incorporated scale used in categorizing the degree of incorporating of IT competencies.

**Skill set for IT competencies:** Now a days, to be a successful accountant, one is expected to be proficient in many skills. Instead of technical accounting knowledge, several studies suggest a variety of skills that are important for accountants in executing their job (Sarea and Ebrahim, 2014; Awayiga *et al.*, 2010; Barac, 2009; Lange *et al.*, 2006; Howieson, 2003). These skills include soft skills such as communication, problem-solving, leadership, teamwork, creative and critical thinking, time management and project management and technical IT skills for example spreadsheet, word processing, business accounting software, taxation software and communication software (Prosch *et al.*, 2008). This study focuses on the skills mix between soft skills and technical IT skills as a potential solution for professional accountants to maximise IT utilisation effectively in improving their professionalism. The skill set emphasis in this study are technical skills, organizational skills, people skills or IT skills enable an individual to use IT and toolssuch as Microsoft Office, databases, enterprise resource planning, electronic

networks and other software and hardware used in the execution of IT in the business. Organisational skills are defined as skills to ensure an organisation's smooth running processes (Bart and Thiell, 2014) including intra-organisation and incentives for employees to actively contribute to job efficiency (Rammer *et al.*, 2009) such as time management, planning, organizing and controlling skills. People skills however deal with human behaviour and interpersonal processes which include elements of communication skills, teamwork skills and leadership skills (Cheruvilil *et al.*, 2014) while conceptual skills emphasis in analysing and diagnosing problems such as the ability to form concepts and include critical thinking skills (Nickels *et al.*, 2010; Zehrer *et al.*, 2014).

Previous studies indicate that, although IT skills are crucial for performing an accounting task, accountants must develop more than IT skills to succeed (Kitindi and Magaya, 2006). This statement is supported by Awayiga *et al.* (2010) who state that the need for other skills such as computer skills, communication skills and other soft skills are increasing, at the expense of technical accounting knowledge. In order to provide a systematic way of integration to provide better coverage of IT and soft skills in curriculum, it requires evaluation of the existing curriculum for identification of the gaps in the material coverage and skill development (Albin and Crockett, 1991). This means that the number of skills that the accounting graduates or accountants must be proficient in apart from technical accounting knowledge is growing. In conclusion, accounting graduates must incorporate all technical IT skills and soft skills as IT competencies to achieve a desired level of professional recognition and to meet employer's expectations.

## **MATERIALS AND METHODS**

A case study approach has been employed in this study. Four public higher education institutions involved (known as G, H, I and J) located in Peninsular Malaysia. The selection of case studies is based on the number of characteristics such as type of programs/courses offered and the number of academic staff and students in these institutions. These institutions have been chosen because they fully implement government policy and they are truly reflecting what the government and MIA intent to have in Malaysia.

**Data collection:** A mixed-method was chosen because this study requires the collection of both quantitative and

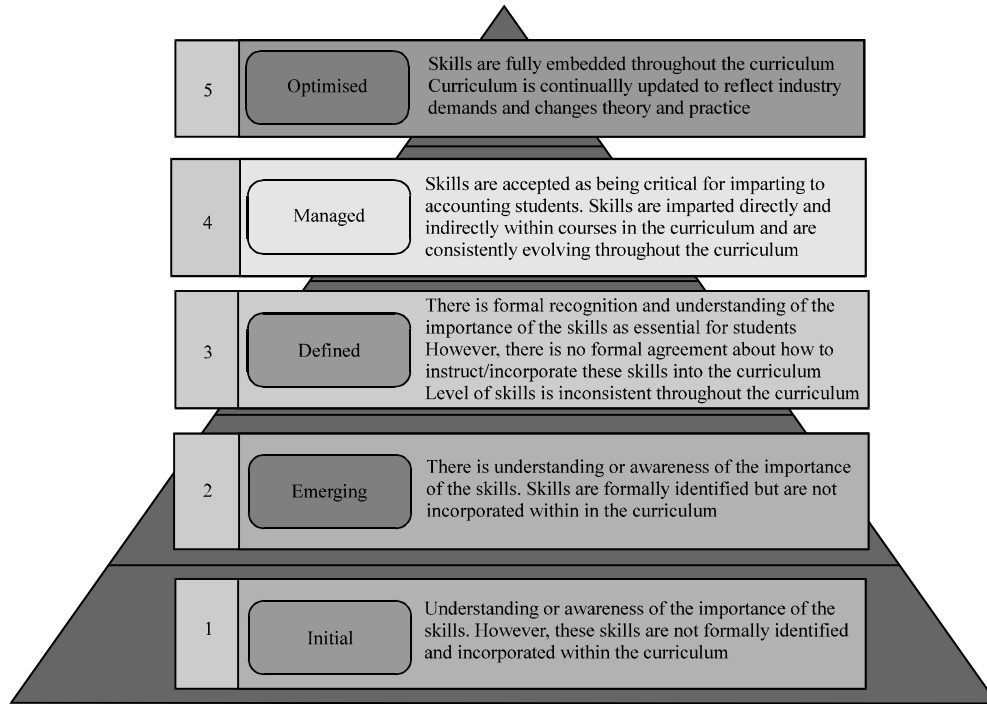


Fig. 1: Scale of IT competencies incorporated in accounting curriculum

qualitative data. The research instrument for survey was adapted from the guidelines issued by accounting professional bodies such as International Federation of Accountants (IFAC), American Institute of Certified Public Accountants (AICPA, 2011), etc. as well as from various studies on technology skills, accounting skills and management skills as described in a variety of journal articles and books. All the scaled items were measured using a five-point Likert scale to assess the level of agreement.

The questionnaire consists of 22 items where changes were made to the original items by taking into account feedback from academics and experts in the field to ensure each item fitted the context of this study. A total of 150 questionnaires were administered to the respondents consisting of academic staff. However, only 90 valid responses were received (60% return rate) and were used for data analysis. Each respondent was asked to rate each of the skill dimensions (Fig. 1) using a single/multi-dimensional scale adapted from Capability Maturity Model (CMM) with influencing factors were from Information Technology Infrastructure Library (ITIL) and Control Objectives for Information and Related Technology (COBIT). The similar kind of scale/measurement also has been adapted by Baskarada (2010) in his research about information quality management capability maturity model.

Table 1: Incorporation level categorisation

Scales by mean scores	Incorporation level
Mean score of >5	Optimised
Between 4-4.99	Managed
Between 3-3.99	Defined
Between 2-2.99	Emerging
Between 1-1.99	Initial

This research also employs semi-structured interviews as a complement to data collected through survey to increase the credibility of research findings. Cross-case analysis also implemented in this study to capture the viewpoints of respondents from higher institutions with respect to what incorporation level of IT competencies. The analysis involved descriptive statistics to analyze the survey data. Using SPSS to organize and to compile data, this study employs mean score of each IT skill elements to identify the incorporation level of IT skills based on the scale/indicator showed in Table 1. An average of the ratings was used to assess the incorporation level of a specific skill. For example, a score of 3.3 would indicate that for the specific incorporation/integration level, respondents believed that specific organization/institution is between the defined and managed ranges.

For interview data, the Qualitative Research Software (QSR) NVivo10 Software was used to interpret of interview transcripts in which the data were coded and classified according to appropriate categories.

**RESULTS AND DISCUSSION**

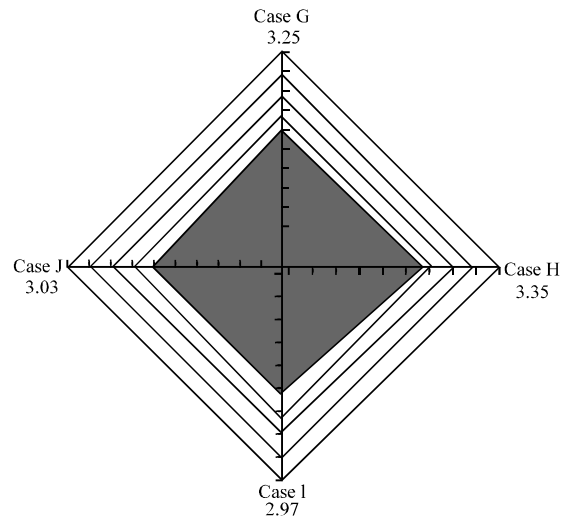
The case studies reveal that the overall level of integration of IT competencies in the curriculum is at the defined level with a mean score of 3.15 (Table 2 and Fig. 2). The findings show that the majority of the case studies indicate defined level with cases G, H and J exhibiting mean scores of 3.25, 3.35 and 3.03, respectively while case I is the only educational institution recording an emerging level of incorporation (although its score of 2.97 is practically up to the defined level). Thus, the educational institutions in these case studies seem to not fully incorporate technological skills and soft skills within their curriculum. As referred to the scale of IT competencies incorporated in the curriculum (Fig. 1), the defined level indicates formal recognition and understanding of the importance of these skills as essential for students. However, the level of skills in the case studies is inconsistent throughout the curriculum which could indicate that there is no formal agreement about how to incorporate these skills into the curriculum.

In order to provide technology savvy students upon graduation, these educational institutions have provided a number of accounting-related technological infrastructures including accounting packages, networking, operating systems, database systems and other elementary IT applications such as word processing, spreadsheet and data communication tools and the internet. In reality however, these technologies do not represent the real accounting work environment. For example, instead of using individual accounting packages that are restricted in their own application, there is comprehensive software in the market such as ERP and ORACLE which covers accounting processes comprehensively from analysing and recording business transactions to the creation of financial reporting. Thus, the institutions give the development of technology skills in these case studies less attention or consideration to the context of the current dynamic business environment.

The inadequacy of technological infrastructure has impacted on the faculty member’s performance in the case studies. The lack of technological infrastructure can cause a negative impact to the academic’s performance in providing IT skills and related competencies to their students. For example, the curriculum requires students to master the ERP system however, the inadequacy or absence of these facilities or infrastructures is probably a reason for low motivation, skills and satisfaction among academics to conduct the related learning process. In other words, insufficient technological infrastructure may hinder the development of IT and related competencies in existing curriculum within the case studies.

**Table 2: IT competency level in higher education institution’s case study**

Skill dimensions	Cases				Overall score
	G	H	I	J	
Technical skills	3.27	4.03	3.15	2.96	3.35
Organisational skill	2.82	3.00	2.98	3.00	2.95
People skills	3.55	3.21	2.90	3.13	3.20
Conceptual skills	3.15	3.18	2.87	2.93	3.03
Overall score	3.25	3.35	2.97	3.03	3.15



**Fig. 2: IT competencies incorporation for higher education institution’s case study**

The finding also reveals that the case studies put more emphasis on technical accounting knowledge rather than skills in using technology and other soft skills such as communication, problem-solving and decision-making. These soft skills are important to enable the maximisation of knowledge through education as a part of a flexible and adapted workforce.

A systematic way of skills incorporation/integration is needed to embed the required skills to curriculum. This skills integration requires evaluation of the existing curriculum to identify gaps in coverage of materials and skill development (Albin and Crockett, 1991). Relying on textbooks, learning notes and materials does not assure adequate skills coverage. Therefore, a comprehensive view of the curriculum is required to gain a cumulative effect of all related courses or subjects to produce the desired results.

Despite, the efforts by the case study institutions to integrate and develop required IT and soft skills into the curriculum, several problems have been encountered. First, the methods of delivering or teaching (pedagogical methods) used are probably not fully utilised for skill development. Since, this study emphasises undergraduate students, pedagogical approaches are the most commonly used in the case studies. Pedagogical approaches such as group assignments or projects, group discussion,

case study, e-Learning websites, assessments and presentations are actively implemented by academics that determine what how and when skills and knowledge is learned. Suitable approaches for undergraduate students includes how the teaching occurs, the way the content is delivered and what the students learn as a result of the process. However, in the case studies (case I and J), some subjects specify a significant burden of tasks (assignments and projects) to be executed within limited times. This shows that this learning method does not appear to create conducive learning environment as students probably give more emphasis to the outcomes rather than skill development during the learning process. In addition, most of the case study institutions implicitly incorporate soft skills (communication skills, teamwork skills and creative thinking skills) with no precise approaches articulated for skill enhancements.

The public higher education institutions are under government provision and therefore, to some extent they are subject to government regulation including their fund allocation. Although, the government states that the majority of Malaysian public universities are provided with current and sophisticated technological infrastructure, it is surprising to note that some IT applications are not updated are still in use and are attributed to the inconsistency of IT and related competencies integration throughout the curriculum. One respondent in case G stated, "There are indeed some version of software/systems expired in a long time". This comment specifies that the technologies used for the learning process have not been revised for a certain period. This is quite disturbing because the students will miss the opportunity to learn new technologies related to their learning field. Furthermore, it is probably difficult for students to adjust to the real working environment and to add value to skills in promoting themselves in the job market.

Another possible encountered problem is that academic staff are required to strengthen the capacity and integrity of their institutions by generating high quality local or international research and publications in order to compete with other educational institutions. This is also stated by Malaysian Education Blueprint 2015-2025 (ME, 2015) under shift 2, academics need to be excellent in niche areas of research as one of the requirements to establish a higher education strategic plan. The implementation of this requirement may increase the academic's workload, such that they may take less time to prepare teaching materials and therefore, eventually hinder the effectiveness of delivery skill to their students.

In the meantime, any academic programme in institutions of higher learning should conduct curriculum revise at least once in every 4-5 years according to Malaysian Qualification Agency (MQA, 2016). This will create opportunity for fellow faculty members to maximise input into the discussion on what why and how skills should be embedded in the curriculum. The agenda was restricted to the incorporation of required components including IT and soft skills, into the existing accounting curriculum with each course or subject determining which skills could be incorporated and possible teaching approaches for implementation. In addition, the networking systems such as Wi-Fi facilities are available in most of the case studie's compound in which they have created ample opportunities for students to gain new information and knowledge regarding the latest technology that surely will increase their skills in applying data communication skills such as social media and Internet applications. This demonstrates that the case studies to some extent have implemented the right learning environment for students to enhance their IT and related competencies during their formal study.

## **CONCLUSION**

This study focuses on the incorporation level of IT competencies in accounting curriculum within higher public education institutions in Malaysia. The majority of these educational institutions indicate a defined level of incorporation of IT competencies which again from the requirement of skills that should be integrated in the curriculum. This study then examined how effectively these skills are incorporated in the curriculum of higher education institutions in Malaysia. Curriculum design is subject to different government and professional requirements. At the same time, there is capacity, organisational, human resource and funding issues which means higher education institutions are unable to incorporate all the contemporary technical skills in their curriculum. Organisational, people and conceptual skills are predominantly incorporated indirectly in the curriculum and approaches vary between higher education institutions. Thus, this study concludes that skill set of IT competencies is less incorporated in accounting curriculum to prepare for accounting graduates to perform their professional accounting job.

## **LIMITATIONS**

The findings of this study must be interpreted with some limitations. The coverage of case study scope is

limited to the main cities within Peninsular Malaysia which makes generalisation difficult. Finally, the dynamic of IT is itself a limitation by the time this study is concluded, new IT software and hardware for accountants with requisite new skills required could be launched and available in the market. Perhaps from the limitation, this study can be extend to other locations such as East Malaysia comprising the states of Sabah and Sarawak to see the different issues they face.

### RECOMMENDATIONS

Theoretically, the findings reflect the current level of incorporation of IT and soft skills in accounting curriculum. Most of the skills are less integrated. However, institutions recognised and are aware of the importance of imparting these skills to students. Second, this study sets a platform for future IT and soft skills studies in Malaysian accounting professions and education by providing a foundation for professional policy makers such as professional accounting bodies and government such as MoHE to establish future strategic plans and guidelines for the development of the skill set for accounting practitioners as well as for academics to design accounting curriculum related to IT and soft skills components.

This study provides method/approach of assessing incorporation level of IT competencies. The incorporation scale for IT competencies developed in this study can be applied not only in accounting area but also can be used in other academic programmes/courses such as IT, commerce, marketing, finance, etc.

### REFERENCES

- AICPA., 2011. Core competency framework. American Institute of Certified Public Accountant, Durham, North Carolina.
- Albin, M. and J.R. Crockett, 1991. Integrating necessary skills and concepts into the accounting curriculum. *J. Educ. Bus.*, 66: 325-327.
- Awayiga, J.Y., J.M. Onumah and M. Tsamenyi, 2010. Knowledge and skills development of accounting graduates: The perceptions of graduates and employers in Ghana. *Accounting Educ. Intl. J.*, 19: 139-158.
- Barac, K., 2009. South African training officers' perceptions of the knowledge and skills requirements of entry level trainee accountants. *Ponder Accountancy Res.*, 17: 19-46.
- Bart, V.H. and M. Thiell, 2014. Collaboration capacity for sustainable supply chain management: Small and medium-sized enterprises in Mexico. *J. Cleaner Prod.*, 67: 239-248.
- Baskarada, S., 2010. Information Quality Management Capability Maturity Model. Springer, Wiesbaden, Germany, ISBN:978-3-8348-0985-8, Pages: 287.
- Cheruvilil, K.S., P.A. Soranno, K.C. Weathers, P.C. Hanson and S. Goring et al., 2014. Creating and maintaining high-performing collaborative research teams: The importance of diversity and interpersonal skills. *Front. Ecol. Environ.*, 12: 31-38.
- Howieson, B., 2003. Accounting practice in the new millennium: is accounting education ready to meet the challenge?. *Br. Accounting Rev.*, 35: 69-103.
- Kitindi, E.G. and V. Mgaya, 2006. Essential skills for accounting graduates: The accounting practitioner's perspective. *Afr. J. Finance Manage.*, 15: 31-47.
- Lange, P.D., B. Jackling and A.M. Gut, 2006. Accounting graduates perceptions of skills emphasis in undergraduate courses: An investigation from two Victorian universities. *Accounting Finance*, 46: 365-386.
- ME., 2015. Malaysian education blueprint 2015-2025. Ministry of Education, Singapore.
- MQA., 2016. The official portal of Malaysian qualification agency. Malaysian Qualification Agency, Petaling Jaya, Malaysia.
- Nickels, W., J. McHugh and S. McHugh, 2010. *Understanding Business*. 9th Edn., McGraw-Hill, New York, USA., ISBN:9780071314107, Pages: 569.
- Prosch, M.G., T.E. McKee and R. Quick, 2008. A comparison of the information technology knowledge of United States and German auditors. *Intl. J. Digital Accounting Res.*, 8: 45-79.
- Rammer, C., D. Czarnitzki and A. Spielkamp, 2009. Innovation success of non-R&D-performers: Substituting technology by management in SMEs. *Small Bus. Econ.*, 33: 35-58.
- Sarea, A.M. and A.F. Ebrahim, 2014. Bridging the gap between the perceptions of accounting students and accounting practitioners: Evidence from Ahlia University of Bahrain. *Jordan J. Bus. Administration*, 10: 723-740.
- Selamat, J.H., K.H. Ismail, A. Ahmad, M.H. Hussin and S. Seliman, 2013. Framework of soft skills infusion based on learning contract concept in Malaysia higher education. *Asian Social Sci.*, 9: 22-28.
- Zehrer, A., F. Raich, H. Siller and F. Tschiederer, 2014. Leadership networks in destinations. *Tourism Rev.*, 69: 59-73.