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The Maturity Of Information Technology Competencies: The Case Of A Malaysian Public University

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THE MATURITY OF INFORMATION TECHNOLOGY COMPETENCIES: THE CASE OF A MALAYSIAN PUBLIC UNIVERSITY

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ABSTRACT

Information technology plays a significant role in the accounting industry. Accounting graduates, therefore, are expected to possess necessary IT competencies to execute the day-to-day activities. However, IT competencies have been viewed as a uni-dimensional construct, with the focus on imparting technical knowledge. There is a difference between the ability to operate IT and IT competencies. IT competency refers to the use of technology for the execution of routine business, so that it contributes to the sustenance, growth and evolution of the business. Therefore, IT competencies should be viewed as a multi-dimensional construct wherein technical ability is complemented by organisational, people and conceptual skills. This study reports the results of a study which analysed the maturity level of IT competencies embedded in existing accounting curriculum in a Malaysian public university. These IT competencies were examined by reference to four major dimensions, namely: technical skills, organisational skills, people skills, and conceptual skills. In doing so, this study presents a scorecard of IT competencies and highlights the underachieving areas of the results of this case study; thus, enabling learning and working as a role map for the continuous improvement of the incorporation of IT competencies in the curriculum. This study makes a significant contribution to the academic and professional body of knowledge and provides an empirically-tested basis for developing IT competencies for knowledge workers in general and professional accountants in particular.

Keywords: Information technology, maturity, skills, competencies, accounting academics, accounting graduates

INTRODUCTION

Advances in information technology (IT) have transformed many organisations' business processes including organisations/firms in the accounting professional service industry. The International Education Guideline (IEG) 11 issued by the International Federation of Accountant (IFAC) Education Committee states that IT "is pervasive in the world of business" and claims that "competence with technology is imperative for the professional accountant". This has led academics and accounting practitioners to empirically analyse current university practices in order to detect the extent to which the importance of IT competency has been absorbed by the accounting curriculum [29]. This also includes the expectation that accounting graduates will possess a diverse range of IT skills and attributes in order to maintain a competitive advantage in a dynamic business environment.

IT has changed the way data is collected, processed, stored and aggregated for the preparation of accounting and finance-related information required by management to control and manage business activities [38]. The importance of IT skills to the accounting profession has been highlighted by many parties, including accounting practitioners, academics and professional bodies [17][11]. In a joint statement, the CEOs of the six largest international audit firms stated that, "today, it would be almost impossible to find an auditor [accountant] without a personal computer, or without the skills to operate any of a wide variety of software programs that companies now use to organise and analyse information about their operations" [32, p. 8] The present study adopted an interpretive paradigm with a qualitative approach through a case study of a Malaysian public university in order to identify the level of maturity of IT competencies embedded in existing accounting curriculum offered by higher academic institutions in Malaysia.

This paper is structured as follows. The first section provides an overview of the related work on IT competencies based on the relevant literature. The second section presents the research methodology. The third section is the main focal point of the paper, presenting the case study findings on IT competencies within the accounting curriculum. Finally, the conclusions from the case study are drawn.

RELATED WORK

The involvement of IT-related skills development in the accounting curriculum of higher learning institutions is widely recognised as a means of reflecting the realities of the use of various forms of information systems that are increasingly required in the current business world. The National Information Technology Taskforce in Australia predicted that the role of accountants will change significantly, and new skills will need to be developed in order to adapt to technological advancements [19]. According to [1], IT was not included in the accounting curriculum as existing accounting programs were already overcrowded. However, advancements in data/information management and the need for more efficient systems in conducting business have resulted in educators modifying the accounting curriculum and incorporating more exposure to IT [11].

In the 1980s and up until the early 1990s, studies on the IT-related skills of accountants focused on systems development and programming-related areas [28]. Rai et al. [28] revealed that accountants perceived systems initiation, design, implementation and control as the most necessary IT topics. This finding was supported by Van Meer and Adams [36] who stated that systems analysis, design and development, IT applications, internal control, documentation, IT audits, spreadsheet, and basic hardware and software components should be included in the accounting curriculum. Despite Ainsworth's [1] observation of an overcrowded accounting curriculum without IT integration, Mohamed and Lashine [27] believed that knowledge of basic technology not only made entry-level accounting trainees "creative" in the workplace, but also helped them to adapt to the new environment faster. The study by Burnett [8] of the future of accounting education indicated that IT or technology-related skills were becoming important for accounting professionals. The study found that skills in spreadsheet software (e.g., Microsoft Excel), Windows, word-processing software (e.g., Microsoft Word) and the World Wide Web were the top four technology skills, in order of importance, considered by employers and CPA practitioners. These findings were in line with Helliar et al. [16] who stated that accounting graduates were required to attain skills in using word processors, spreadsheets and presentation software when entering their profession. These basic technology skills help accountants to adapt to the new environment, rather than just making them creative in their workplace [27].

Greenstein-Porsch and McKee [14] conducted a literature review that resulted in the identification of 36 critical information technologies. Their study focused on determining IT knowledge levels and perceptions of accounting information systems among auditing academics and audit practitioners in the US. The authors found a relatively low level of knowledge of e-commerce and advanced technologies and audit automation constructs among both the educators and practitioners, but a relatively high level of knowledge of office automation and accounting firm office automation constructs. They also identified a potential "learning gap" between educators and practitioners in five of the 36 critical technologies that they examined. Greenstein-Porsch et al. [15] extended that study by comparing the US results with their results in Germany. Their study showed a relatively low level of knowledge for the general constructs of e-commerce, system design and implementation and audit automation technologies for both the German and US auditors. However, the knowledge of the German auditors was found to be higher for e-commerce technologies than the US auditors, while the knowledge of the US auditors was found to be higher for system design and implementation and office automation technologies than the German auditors. Mgaya and Kitindi [26] reported on a study completed to identify the level of IT skills of practitioners and accounting educators in Botswana. The results indicated that the self-reported IT skills of practitioners and accounting educators were lower than they thought practising accountants should have.

Ismail and Abidin [18] attempted to coordinate the alignment between IT knowledge and importance to current accountancy roles (as auditors) in Malaysia. Their findings indicated that the respondents perceived the highest level of knowledge in general office automation and accounting automation skills, while knowledge in audit automation, and systems development skills was low. Overall, the IT knowledge levels of the respondents were lower than the perceived importance of these skills in their careers. Another study on alignment between IT importance and knowledge levels was conducted by Rai et al. [28] in Australia. Overall, the IT knowledge levels among the Australian accountants were lower than the perception of the importance of IT knowledge. Their study indicated that accountants had high levels of IT knowledge in email and communication software, and in electronic spreadsheets, while knowledge of systems development and programming tools was low.

Information Technology Skills and Competencies Required by Accounting Graduates

IT competencies can be identified as a set of IT-related knowledge and experience that a knowledge worker possesses [5]. Carnaghan [9] viewed IT competencies as the qualities which are demonstrated by activities such as the capacity to create a spreadsheet or database for a particular purpose, or the ability to use software. According to the IFAC [17], accounting practitioners are expected to possess necessary IT competencies. In fact, the credibility of the accounting profession in general depends on their success in fulfilling this obligation. Thus, every professional accountant is expected to act as a user, designer, manager, planner or evaluator of information systems, or a combination of these roles [37]. The advancement of technology is the greatest element that changes accountants' roles from merely information provision to extended information facilitation [20]. IT has greatly affected accountants' careers since it has altered the way accounting is processed and conducted in organisations [13]. Some of the effects also include organisations' hiring policies, training policies, and even the formal curriculum in higher academic institutions [11][34]. Therefore, a complex set of competencies is required by accountants in order to offer better quality service to customers [19][2]. Table 1 presents a summary of these competencies based on the literature review.

Knowledge of and experience in IT is at the core of all these skills. However, there are certain organisations which prefer their accountants to also possess professional skills such as people, organisational and conceptual skills in order to make appropriate and optimal use of IT skills in organisational settings. For example, for an accountant, skills and competencies in the use of spreadsheets, taxation software or accounting software is required. However, these software packages are process-dependent and take input from various other areas of the organisation, at the same time provide output to additional areas of the organisation. In these circumstances, an individual needs to have complementary teamwork as well as interpersonal and analytical skills in order to understand the information requirements of the process, to comprehend process handoffs and interfaces, and to process information in order to produce useful output.

Table 1: Skills required by accountants

Skills	Elements
Technical Skills	Advanced word processing and desktop publishing, spreadsheet, presentation software, operating systems, data communication, information search and retrieval techniques, taxation software, database operations, record lifecycle management, information quality management, data analyses, reporting, querying and business intelligence, information system development, e-commerce applications, accounting packages, data auditing, financial audit automation tools, network configuration and management, IT security, project management software and techniques, workflow automation and business process re-engineering, enterprise resource planning systems, IT governance
Organisational Skills	Time management, project management, business process re-engineering, change management, resource management, prioritisation, planning, organising/designing, and controlling
People Skills	Delegation, leadership, teamwork and collaboration, communication and negotiation
Conceptual Skills	Problem Solving, Creative Thinking, Critical Thinking, Decision Making and Crystallized Cognitive Ability

Source: Developed for this study

RESEARCH METHODOLOGY

This research aimed to identify the maturity of IT competencies in the existing accounting curriculum offered by higher academic institutions in Malaysia. The research therefore focused on the real case scenario of IT skills and competencies embedded in the existing accounting curriculum at one university, referred to as "University J". This study adopted a qualitative approach which used an interpretive research paradigm wherein the interactions between the phenomenon and context were analysed and interpreted. Such research is explanatory by nature and requires effective understanding of detailed real-life behaviour [39]. This study also employed questionnaires as a complement to the data collected through interviews to increase the credibility of the research findings, in an effort to reduce bias. According to Yin[39], a survey produces quantitative data as part of the case study evidence. Therefore, a survey was useful in this study to complement the data that could not be achieved by a case study.The survey instrument measured the level of maturity of skills in maximising the use of IT (directly or indirectly imparted to students) in the accounting curriculum. Each respondent (academic) was asked to rate each of the skill dimensions (see Figure 1) using a single/multi-dimensional scale adapted from the Capability Maturity Model (CMM), with influencing factors from the Information Technology Infrastructure Library (ITIL) and Control Objectives for Information and Related Technology (COBIT). A similar scale/measurement was adapted by Baskarada [6] in his research into information quality management capability maturity models. An average of the ratings was used to assess the maturity level of a specific competency. For example, a score of 3.3 indicated that the respondents believed University J was between the DEFINED and MANAGED ranges for the specific competency.

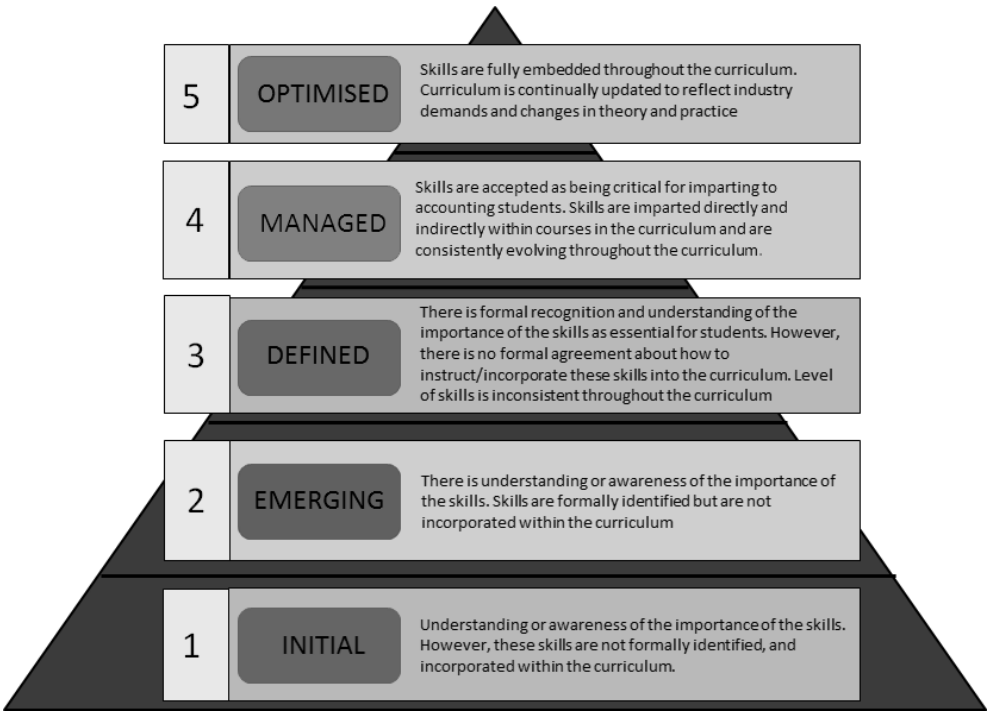


Figure 1: Scale of IT competencies maturity

The participating university that provided an accounting program was the main data collection source. This was because the university was one of the higher academic institutions directly involved in the preparation of accounting graduates in Malaysia. In addition, the program was established and developed following the requirements of the accountancy professional bodies in Malaysia such as the Malaysian Institute of Accountants and the degree was fully recognised by the Malaysian Government as a professional qualification. Semi-structured interviews were conducted through a one-to-one interview which averaged approximately one hour each. A total of seven interviews were conducted with accounting academics from the university. Academics including the head of department, program coordinator, and senior and junior lecturers who were involved in imparting accounting courses at this university were interviewed. The respondents were asked to identify the incorporation level of each dimension in the existing curriculum. The interview questions were prepared before the interviews were conducted. Interviewing academics from different departments allowed for deeper understanding, description and explanation of IT skills and competencies by obtaining in-depth insights into different aspects and identifying problems in delivering accounting courses to students. Analysis of the case under review allowed the researcher to capture the viewpoints of the respondents with respect to the skills and competencies for using IT that should be obtained by accounting graduates to ensure compliance with regulations and professional standards. The analysis involved multiple processes, namely: firstly, calculating the mean of each skill dimension (refer to Table 1); and secondly, categorising them through the level of maturity based on the scale/indicator illustrated in Figure 1. Then, the most critical process was the interpretation of the interview transcripts in order to validate or support the findings with the findings from the quantitative data.

Structure of the Accounting Degree Program at University J

The undergraduate program structure at the Faculty of Accountancy is illustrated in Figure 2. It shows two major areas that should be fulfilled by accounting students in order to obtain their degree, that is, the university core and program core. To fulfil the university's academic requirements and the Malaysian accounting profession's accreditation requirements when graduating from this program, students were required to complete all the major areas and sub-areas of the curriculum within eight semesters with an emphasis on the inter-disciplinary approach to accounting.

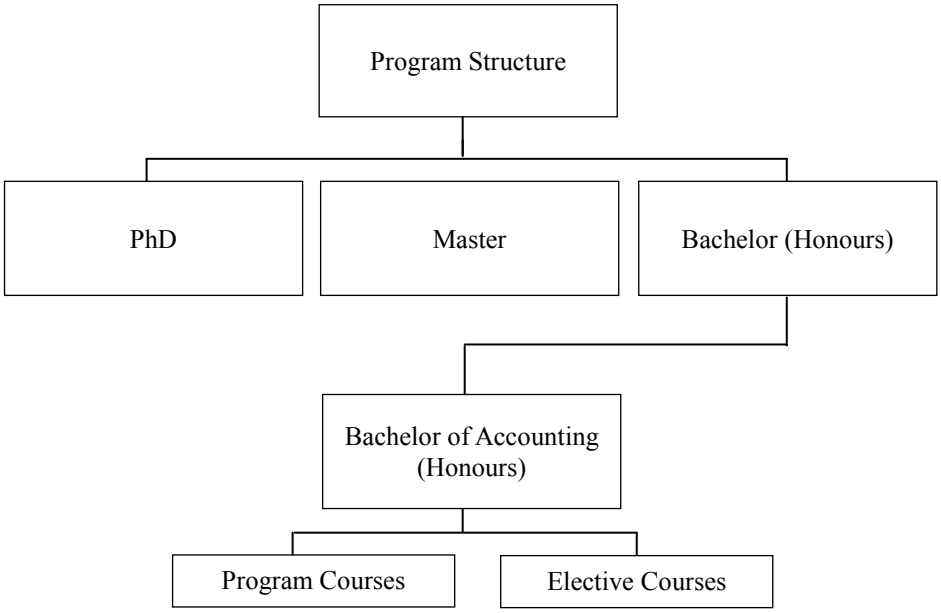


Figure 2: Program structure at University J

Table 2 presents the IT competencies elements embedded in the accounting program structure at University J. An assessment for each subject revealed that between 0%-25% weighting is assigned to individual oral presentations in tutorials, participation in group assignments and presentations, pop quizzes and lab evaluations. The balance of the assessment indicated that the lecturers placed significant emphasis on teaching students through a focus on context-specific outcomes, which were assessed through the problem-based learning (PBL) approach such as reports, peer evaluations and presentations.

Table 2: IT competency elements embedded in the program structure of Bachelor of Accounting (Honours) at University J

Course/Subject	**Direct Skills Imparted**	**Indirect Skills Imparted**
Accounting Information Systems	• Information needs & decision-making • Strategic analysis model • Value chain model • Input, process, storage, output • Internal control & system security - Threat & fraud - Computer fraud /classifications/techniques control components (control components, risk assessment & risk response, control activities, Information & communication monitoring) - Information security concepts - Preventive, detective & corrective controls - Confidentiality & privacy - Controls for active threats/processing integrity - Controls for passive threats/availability (system downtime and disaster recovery & business continuity planning) - Change management controls • UBS accounting software	• Communication skills, critical and creative thinking skills, problem-solving skills, teamwork skills, leadership skills, time management skills, controlling skills, project management and planning and organising skills • In order to impart the above skills, group work, group discussion, PBL, project work, case study, assessment and presentations are implemented in the learning process and moderated by academics
Accounting System Analysis and Design	• CASE tools • Microsoft Project • Microsoft Access • ABC Flow Charter • Project management/system development lifecycle	• Teamwork skills, leadership skills, communication skills, critical and creative thinking skills, problem-solving skills, time management skills, planning and organising skills, resource management skills, project management and controlling skills • These skills are imparted in various activities such as PBL, group work, group discussion, tutorial, project work, lab evaluation, integrated case study, assessment and presentations and moderated by academics
Communication and Negotiation in the Workplace	• Negotiation skills • Communication skills	• Negotiation skills, teamwork skills, leadership skills, communication skills, critical and creative thinking skills, problem-solving skills • To gain these skills, group work, group discussion, assessment and presentations are actively implemented in the learning process; these activities are moderated by academics
Quantitative	• Decision analysis	• Teamwork skills, leadership skills, critical and creative

Business Analysis	• Linear programming • CPM/PERT and inventory management	thinking skills, problem-solving skills, time management skills, planning and organising skills • High participation of students in group work, group discussion, case study, e-learning website, assessment and presentations for imparting these skills; these activities are supervised by academics
Speech Communication	• Develop speeches and oral presentations (verbal and non-verbal communication skills) • Presentation video aids (PowerPoint)	• Teamwork skills, leadership skills, communication skills, critical and creative thinking skills, problem-solving skills, time management skills, planning and organising skills, resource management skills, project management and controlling skills • These skills are imparted through group work, group discussion, PBL, project work, case study, e-learning website, assessment and presentations; these activities are moderated by academics

FINDINGS AND DISCUSSION

The integration level of IT and related competencies at University J was found to be at the DEFINED level, with the mean score of 3.03 (Figure 3 and Table 3). People skills were ranked with the highest score (3.13), whereas conceptual skills were given the lowest score of 2.93. This highlights that this university had formal recognition and understanding of the importance of the skills that were critical for students. However, there was no formal agreement about how to instruct/impart these skills to the accounting students and the skill level was inconsistently embedded throughout the curriculum.

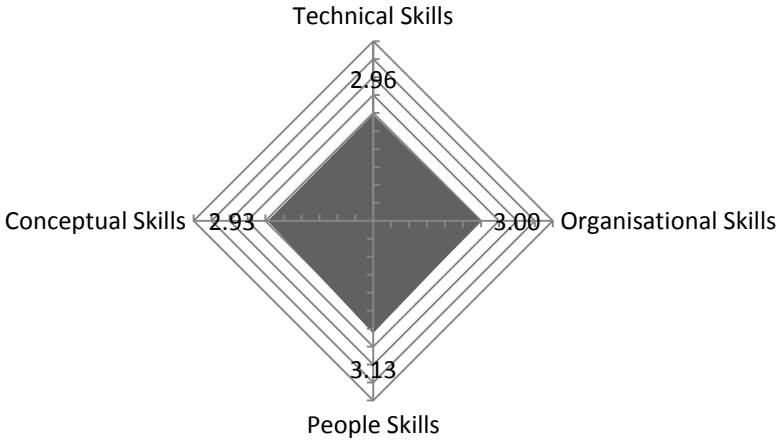


Figure 3: IT competencies embedded in the University J curriculum

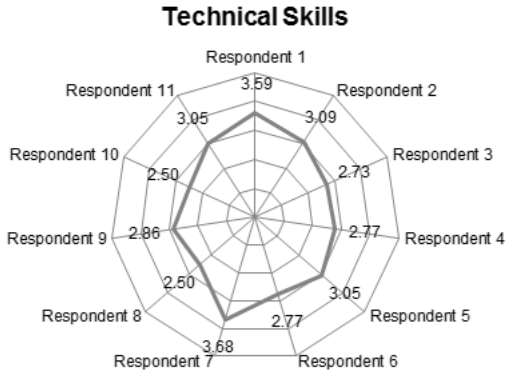
Table 3 presents the mean score for each skill/dimension as perceived by the respondents. The mean value range (overall scores) was between 2.87 and 3.32. This suggests that the majority of respondents perceived there was a moderate level of skills embedded in the curriculum. The findings showed that technology elements were not fully integrated in the curriculum. It appeared that only two technology-related courses were offered by this university, namely, Accounting Information Systems and Accounting System Analysis and Design (refer Table 2). This implied that the university was focused on the development of accounting technical knowledge (for example, new standards and regulations for financial reporting) compared to soft skills and interpersonal and technology skills development. Although an effort was being made by the university to integrate the skills, these skills were only being indirectly imparted through learning instructions (as seen in Table 2), which to some extent was delaying the enhancement of these skills among accounting students. This suggests that University J did not provide an appropriate environment for students to establish IT and related competencies prior to employment.

Table 3: Summary of IT competencies embedded in University J curriculum

Respondents	Technical Skills	Organisational Skills	People Skills	Conceptual Skills	Overall
			Mean Score		
Respondent 1	3.59	3.19	3.58	2.93	3.32
Respondent 2	3.09	2.70	3.08	2.73	2.90
Respondent 3	2.73	2.89	3.17	2.80	2.90
Respondent 4	2.77	3.07	3.25	3.00	3.02
Respondent 5	3.05	2.96	2.92	2.93	2.96
Respondent 6	2.77	3.07	3.33	2.73	2.98
Respondent 7	3.68	3.33	2.92	3.07	3.25
Respondent 8	2.50	3.11	3.00	3.00	2.90
Respondent 9	2.86	2.74	3.42	3.13	3.04
Respondent 10	2.50	3.00	2.92	3.07	2.87
Respondent 11	3.05	2.93	2.83	2.87	2.92
∑	**2.96**	**3.00**	**3.13**	**2.93**	**3.03**

Technical Skills

The technical skills at University J were at the EMERGING level of integration with an overall mean score of 2.96 (Figure 4). The majority of respondents indicated the EMERGING level, although it was relatively close to the DEFINED level. All the respondents gave a score of between 2.50 and 3.68 which showed that all the academics shared the same opinion regarding the level of integration of technical skills within the curriculum.



Respondents	Job Description	Experience	Mean Score
Respondent 1	Academic	4-7 years	3.59
Respondent 2	Academic	4-7 years	3.09
Respondent 3	Academic	4-7 years	2.73
Respondent 4	Academic	8-11 years	2.77
Respondent 5	Academic	8-11 years	3.05
Respondent 6	Academic	4-7 years	2.77
Respondent 7	Academic	1-3 years	3.68
Respondent 8	Academic	4-7 years	2.50
Respondent 9	Academic	8-11 years	2.86
Respondent 10	Academic	8-11 years	2.50
Respondent 11	Academic	1-3 years	3.05
Σ			2.96

Figure 4: IT competencies embedded in terms of technical skills (University J)

The results, as presented in Table 2, indicated that technical skills were imparted directly through two technology-related courses. For example, lessons on UBS accounting software (accounting package), internal controls and system security were found in the Accounting Information Systems course, and Microsoft Project, Microsoft Access and project management/system development lifecycle were included in the Accounting System Analysis and Design course. This was consistent with the high scores for accounting packages, project management software and techniques, database operations and IT security (see Table 4). One of the objectives of the university was to produce accounting graduates who can play an important role in workplaces where these skills and knowledge are often used routinely, not only for recording accounting transactions, but also for work involving clients' project-based tasks. The Head of Accounting Information System, Audit and Taxation at University J commented on this as follows:

"It is important that accounting graduates be taught how to operate systems and software that is often used in the workplace. Graduates who have skills to use variety types of accounting-based systems and have the ability to operate audit and taxation system would be an advantage."

Head of Accounting Information System, Audit and Taxation

However, the results included a relatively low score for the integration of important technical skills such as data analyses, reporting and querying, information quality management and record lifecycle management. This was also reflected in the view expressed by one of the senior lecturers, who admitted that the curriculum placed more emphasis on elementary technical skills:

"This university does not focus to some important technical skills in accounting curriculum. It seems that the same and basic technology have been embedded for several years. It should be revised… I was a bit worried that our graduates cannot provide good quality in their job since technology is always facing rapid changes. For example, a technology such as social media is noteworthy in our teaching because it [social media] helps the growth of business activity."

Senior Lecturer 2

Table 4: IT competencies embedded in terms of technical skills (University J)

Elements	Mean Score	Maturity Level
Advanced word processing and desktop publishing	4.00	Level 4
Spreadsheet software	3.82	Level 3
Presentation software	3.45	Level 3
Data communication/sharing (email, social networks, Web 2.0)	3.36	Level 3
Information search and retrieval techniques	2.55	Level 2
Taxation software (tax return, tax reconciliation, direct and indirect tax)	3.36	Level 3
Accounting packages (Mind Your Own Business, User Business System) Accounting(UBS, Bizztrak)	3.73	Level 3
Data auditing (audit trail, fraud control, etc.)	3.09	Level 3
Financial audit automation tools (generalised audit software and embedded audit module)	3.18	Level 3
Project management software and techniques	3.45	Level 3
Database operations (creation, manipulation and management of data; data coding, data dictionary, data control and extraction; ETL; data warehouse)	3.55	Level 3
Data analyses, reporting, querying, and business intelligence	2.91	Level 2
Information quality management (including data cleansing, purification, aggregation, etc.)	2.36	Level 2
Record lifecycle management (creation exchange, storage retrieval and retirement/ deletion)	1.91	Level 1
Information system development/procurement lifecycle	3.45	Level 3
E-commerce applications (electronic payment system, customer relationship management, website development/maintenance)	2.45	Level 2

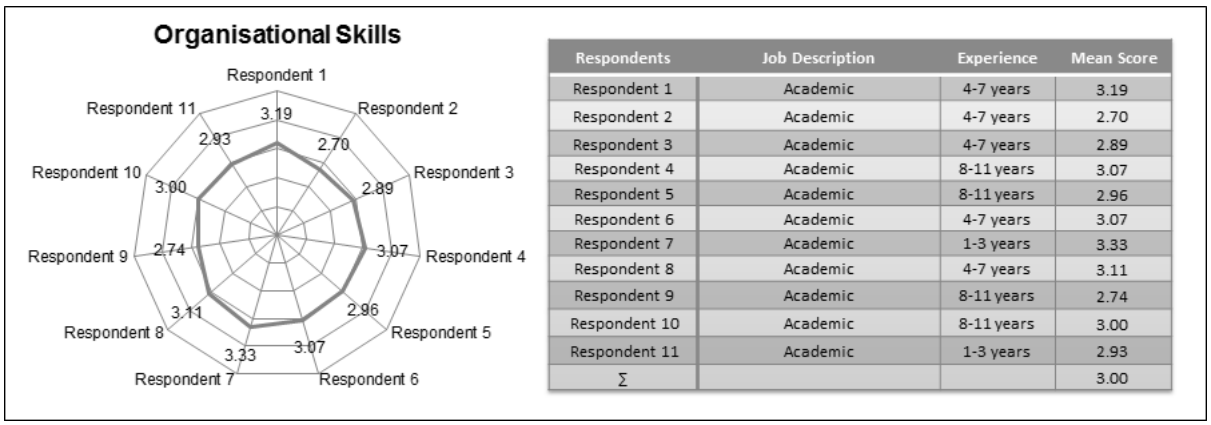
Workflow automation and business process re-engineering	2.27	Level 2
Operating systems (Windows and Linux)	2.55	Level 2
Network configuration and management	2.45	Level 2
IT security (antivirus software, firewall, backup and recovery, etc.)	3.18	Level 3
Enterprise resource planning systems	2.09	Level 2
IT governance (IT resources management, risk management, IT performance evaluation, IT value delivery, business IT alignment)	2.00	Level 2

Organisational Skills

Figure 5 presents the results from the respondents regarding their perception of the levels of integration of organisational skills into the accounting curriculum. The overall result was a score of 3.00 (Figure 5), with the individual scores ranging between 2.70 and 3.33. This overall score represented the DEFINED level of integration, indicating that the university did not appreciate the multi-dimensional view of technical, organisational, people and conceptual skills/dimensions. As a consequence, a relatively low level of technical skills and organisational skills was indicated by the respondents for this university. This is quite alarming as organisational skills are vital for accounting work. Such skills enhance students' ability to handle projects in progress and plan new projects so that they can manage their time and resources. Senior Lecturer 1 commented on this point as follows:

"When they [students] doing their tasks, they need to reflect on a real scenario and relate to topic of a problem. It takes time if they do it manually, they need to use any kind of systems that can assist them in managing their time, resources, cost as well as planning their strategy. Otherwise, they will not punctual, not meeting deadlines for their projects or assignments."

Senior Lecturer 1



Respondents	Job Description	Experience	Mean Score
Respondent 1	Academic	4-7 years	3.19
Respondent 2	Academic	4-7 years	2.70
Respondent 3	Academic	4-7 years	2.89
Respondent 4	Academic	8-11 years	3.07
Respondent 5	Academic	8-11 years	2.96
Respondent 6	Academic	4-7 years	3.07
Respondent 7	Academic	1-3 years	3.33
Respondent 8	Academic	4-7 years	3.11
Respondent 9	Academic	8-11 years	2.74
Respondent 10	Academic	8-11 years	3.00
Respondent 11	Academic	1-3 years	2.93
Σ			3.00

Figure 5: IT competencies embedded in terms of organisational skills (University J)

Organisational skills are imparted indirectly throughout the existing curriculum, with explanation-based instruction such as group discussions and presentations involved in this process. For example, in one learning strategy, a small group was given a 45 minute timeframe to discuss a complex problem in their course that had not yet been resolved. This learning strategy was aimed to provide students with skills in time management and planning. One of the senior lecturers commented about this type of strategy as follows:

"I will make sure my students work in small group. This method not only to complete the task given, but also encouraged students to become active rather than passive learners by developing collaborative and co-operative skills, and lifelong learning skills. This will promote them to save time, to plan strategy for problem solving and requires a shared workload."

Senior Lecturer in Auditing

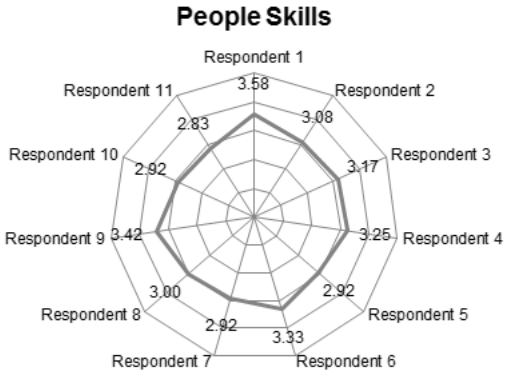
Since technical skills were not fully embedded in the curriculum, it had a profound flow-on effect on the level of integration of organisational skills in the curriculum. It is hypothesised that the low levels of integration of business process re-engineering skills (2.55), resource management skills (2.64) and prioritisation skills (2.36) (Table 5) were reflected in the low scores for data analyses, reporting and querying (2.91), information quality management (2.36), record lifecycle management (1.91) and workflow automation and business process re-engineering (2.27) (refer to Table 4). It was also indicated that these scores were influencing the low level of creative thinking skills (2.91), decision-making skills (2.87) and crystallised cognitive ability skills (2.45) within the category of conceptual skills (refer to Table 7). Therefore, the results appeared to indicate that the university should consider the TOPC dimensions for the development of IT and related competencies by integrating more IT skills/elements in the curriculum and by increasing the number of tasks or activities given to students such as project-based tasks, integrated case studies and presentations in order to nurture skills development.

Table 5: IT competencies embedded in terms of organisational skills (University J)

Elements	Mean Score	Maturity Level
Time management skills	3.35	Level 3
Project management skills	3.39	Level 3
Business process re-engineering skills	2.55	Level 2
Change management skills	3.09	Level 3
Resource management skills	2.64	Level 2
Prioritisation skills	2.36	Level 2
Planning skills	3.13	Level 3
Organising/designing skills	2.91	Level 2
Controlling skills	2.94	Level 2

People Skills

Unlike technical and organisational skills, people skills were recorded at the DEFINED level of integration in the curriculum. The overall mean score was 3.13, with the individual scores ranging between 2.83 and 3.58 (Figure 6).



Respondents	Job Description	Experience	Mean Score
Respondent 1	Academic	4-7 years	3.58
Respondent 2	Academic	4-7 years	3.08
Respondent 3	Academic	4-7 years	3.17
Respondent 4	Academic	8-11 years	3.25
Respondent 5	Academic	8-11 years	2.92
Respondent 6	Academic	4-7 years	3.33
Respondent 7	Academic	1-3 years	2.92
Respondent 8	Academic	4-7 years	3.00
Respondent 9	Academic	8-11 years	3.42
Respondent 10	Academic	8-11 years	2.92
Respondent 11	Academic	1-3 years	2.83
Σ			3.13

Figure 6: IT competencies embedded in terms of people skills (University J)

A moderately mature level of integration was perceived by respondents on people skills, which may have been due to the fact that these skills were considered to be important and that they should be acquired by accounting graduates and imparted directly into the existing curriculum. The recognition of this importance was reflected in the availability of two courses, namely, Communication and Negotiation in The Workplace, and Speech Communication (refer to Table 2) which had been established to develop the communication and negotiation skills required in job-related situations. Thus, it was likely that the establishment of both courses had influenced the respondents' perceptions about the level of integration of skills in communication, negotiation, and teamwork and collaboration, which recorded scores of 3.45, 3.65 and 3.12 (Table 6), respectively. The respondents made a number of comments about the necessity of people skills in the workplace. Some stated that it was wise for students to start developing these skills during the period of formal learning at university. For example:

"It is vital to develop communication and negotiation skills during their [student] degree. There was so much group discussion and problem based learning that require a lot of teamwork, negotiation cooperation, and presentation work must be performed by students, especially involved with projects/assignments... moreover, at present, employers consider graduates should have 'complete package' before seeking for a job. Of course, they want graduates who are able to provide returns commensurate with the value of their investment."

Senior Lecturer in Financial Accounting (University J)

At the same time, delegation and leadership skills were perceived to have a low level of integration; scoring 2.59 and 2.82, respectively. This was not surprising as these skills were only imparted indirectly through the learning process (see Table 2). One of the lecturers expressed the view that it was difficult to include these skills in the curriculum and, therefore, the active learning strategies such as group discussion and working in groups were applied in order to give them experience in tasks that simulated the workplace environment and developed their skills as leaders. Such learning strategies enhanced the social skills and interactions among the students. However, the tendency to assign too many tasks and projects to the students had made them more focused on completing their work as quickly as possible rather than on applying these skills to perform their tasks. As commented by a senior lecturer:

"I would like to say that students have given too much projects. Each course has own project requirements. My students often complained they have less time to fulfil their work. One of the strategies they are taking is by dividing the individual projects to each other [within group]. This means that each member of the group will focus on different projects. This strategy

might good with time constraints, but it difficult to enhance student skills such as leadership, communication and delegation, which are very useful in their future employment."

Senior Lecturer in Audit and Information Systems

Table 6: IT competencies embedded in terms of people skills (University J)

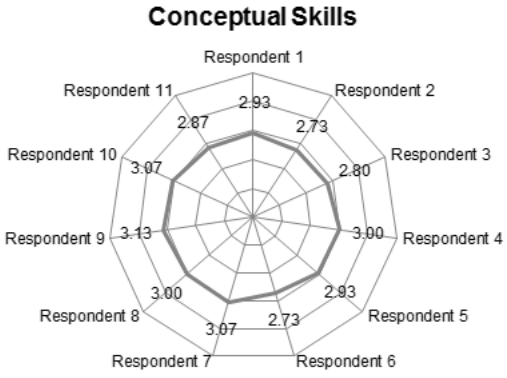
Elements	Mean Score	Maturity Level
Delegation Skills	2.59	Level 2
Leadership skills	2.82	Level 2
Teamwork and collaboration skills	3.12	Level 3
Communication skills	3.45	Level 3
Negotiation skills	3.65	Level 3

Conceptual Skills

In regard to conceptual skills, University J recorded an EMERGING level of integration within the accounting curriculum. As shown in Figure 7, all the respondents perceived the level of integration to be between EMERGING and DEFINED with the scores ranging between 2.73 and 3.13. This level of integration was likely to be influenced by the integration of technical skills in the curriculum such as data analyses, reporting, querying (2.82), information quality management (2.09) and information search and retrieval techniques (2.18) (see Table 4). Another possible reason for this result was that some of the academics believed that these skills were being developed in other courses in the curriculum (unrelated to the accounting curriculum), and therefore, they were not concentrating on the skills in their own courses. A program coordinator commented on this point as follows:

"I think some other courses have been emphasising on development of skills, especially in problem solving and decision making among students… whether the courses have been offered by this faculty or other faculties as elective courses."

Program Coordinator in Accounting Program (University J)



Respondents	Job Description	Experience	Mean Score
Respondent 1	Academic	4-7 years	2.93
Respondent 2	Academic	4-7 years	2.73
Respondent 3	Academic	4-7 years	2.80
Respondent 4	Academic	8-11 years	3.00
Respondent 5	Academic	8-11 years	2.93
Respondent 6	Academic	4-7 years	2.73
Respondent 7	Academic	1-3 years	3.07
Respondent 8	Academic	4-7 years	3.00
Respondent 9	Academic	8-11 years	3.13
Respondent 10	Academic	8-11 years	3.07
Respondent 11	Academic	1-3 years	2.87
Σ			2.93

Figure 7: IT competencies embedded in terms of conceptual skills (University J)

Table 7 illustrates the scores for the integration of each conceptual skill as perceived by the respondents. The results indicated that the integration of problem-solving, critical thinking and creative thinking skills was probably reflected by the high scores for data communication, project management software, database operations, information system development lifecycle (see Table 4), time management skills, project management skills, planning skills (see Table 5), teamwork and collaboration skills, communication skills and negotiation skills (see Table 6). One explanation for this from Accounting Information Systems (AIS) lecturer was that some of these skills, such as negotiation, critical thinking and creative thinking skills, were imparted directly in the accounting program; therefore, students were assigned a number of tasks for these particular skills. For example, through problem-based learning and case studies, students from diverse backgrounds were given the opportunity to be heard, share experiences and skills, and to participate in unique ways to encourage the development of their conceptual skills. In these ways, alternative ideas and points of view could be generated and students could learn to think critically and analytically when they handled challenges in completing the assignments and tasks.

Table 7**:** IT competencies embedded in terms of conceptual skills (University J)

Elements	Mean Score	Maturity Level
Problem-solving skills	3.26	Level 3
Creative thinking skills	2.91	Level 2
Critical thinking skills	3.15	Level 3
Decision-making skills	2.87	Level 2
Crystallised cognitive ability skills	2.45	Level 2

CONCLUSION

This study was motivated by the observation that failure and success in the provision of accounting services can often be attributed to a lack of IT skills and competencies. The case study explained the issues and challenges within a Malaysian public university with regard to developing IT competencies in the accounting curriculum. In order to reduce the impact of poor accounting and business-related services on client service and professional decision-making, a number of themes emerging from the case study should be given serious consideration. Firstly, accountants should understand and recognise the specific issues regarding services to clients and the related elements of IT skills. This recognition will enable them to determine which elements of IT skills and competencies are relevant to the issues and to ensure the level of services are at a satisfactory level. Secondly, universities should create a development plan for a comprehensive IT competency program for each stage of an accountant's lifecycle. This program should provide accounting graduates with the ability to recognise issues in delivering services identify root causes and construct possible solutions, thereby embedding these skills as part of their jobs.

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