

Assessing Information Technology Skills Using Maturity Scale Approach: A Case of Malaysian Accounting Firms

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Abstract: Due to the dynamic nature of information technologies, there is a need to assess the technology skills for the accountancy profession. Recent literature demonstrate the increasing concern about the level of skills of accountants in the use of information technologies and whether they are prepared to face the challenges of business world. This study seeks to assess the maturity level of IT skills using maturity scale for contemporary accounting practitioners, emphasising those in Malaysian accounting practices. This is due to their character of information intensive and information driven signifies the needs for comprehensive information technology based skills. A mixed-method consist of quantitative and qualitative data was chosen to achieve the objective of this study. The findings conclude that accounting practitioners in Malaysian accounting firms are not fully matured in using IT. 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 skills for knowledge workers in general and accounting practitioners in particular.

Key words: Information technology, maturity, skills, accounting practitioners, accountants, socio technical systems, practitioners

INTRODUCTION

Rapid advances in Information Technologies (IT's) have changed the way businesses are organised (Lee *et al.*, 2002). This change has affected organisations of all types. Information technology is integral to routine business as these technologies assist employees to not only execute business processes but also help them make informed decision based on quality information. In fact, IT has transformed the way data is collected, processed, stored and aggregated for preparation for accounting and finance related information required by management to control and manage business activities. The International Federation of Accountants (IFAC., 2014) states that IT is pervasive in the business world and achieving high level of competence in operating IT for accountants to perform their tasks is crucial. The traditional role of accountants has been transformed from manual to computerised accounting (Lamberton *et al.*, 2005; Harris, 2014) and these days IT is increasingly being embedded in accounting tasks (Winograd *et al.*, 2000). IT skills, therefore are imperative for accountants to perform their

tasks (Wessels and Steenkamp, 2009). Skills in operating IT are important in the routine business activities related to an accountant's work. It also helps them create an environment where these technologies operate at their optimum level for the strategic internal and external advantage of the business. Previous studies indicate that business organisations are now customer oriented, information driven, project based, flatter in structure and consist of a number of functional and cross functional teams (Bharadwaj, 2000; Tippins and Sohi, 2003). IT skills for accountants are therefore required to equip individuals with the requisite skills and knowledge to produce quality outcomes for the benefit of the entire organisation as well as to offer better quality service to customers. Knowledge of and experience in IT is at the core of these skills, thus having these skills enable accountants to learn, share and exploit knowledge to become proficient in the use of IT. For example, to develop skills 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. In order to do

this an accountant needs skills to comprehend the information needs and interpret and apply his/her knowledge to address these needs through the use of IT. Several studies analyse the views of accountants about IT skills. Chang and Hwang (2003), for example, question whether accountants are competent in the use of IT, voicing concerns over whether college education and personal training effectively and efficiently longer relevant for today's IT and business environment (Ismail and Abidin, 2009; Ling and Nawawi, 2010; Hanefah and Ismail, 2003).

Several studies analyse the views of accountants about IT skills. Chang and Hwang (2003) for example, question whether accountants are competent in the use of IT, voicing concerns over whether college education and personal training effectively and efficiently prepares accountants to meet these challenges. Similarly, Mgaya and Kitindi (2008) argue that the widespread use of IT has forced accountants to become more competent in the use of IT in order to survive in their profession. This issue also concerns by Greenstein and McKee (2004) who conducted a study looking at accounting educators and audit practitioners. Their results indicate that accountants possess a low level of knowledge of critical business technologies such as wireless communications, software security tools, network configurations and workflow technology. In addition, Rai *et al.* (2010) support the findings by Greenstein and McKee (2004) in a study conducted in Australia which revealed that the overall IT knowledge levels among Australian accountants are lower than the perception towards the importance of these technologies. Recent study by Elsaadani (2015) revealed that Egyptian accounting practitioners indicate above average and they are competent in common software such as spreadsheet, word processing and internet, e-mail, commercial accounting software and database management software.

The Malaysian scenario shows that most of businesses focused on common software such as word processing and spreadsheets. Studies found a relatively low level use of technology by participants, especially in advanced technologies such as EDI, CASE tools, agent technologies, database design and application service provider, even though these technologies are considered important (Ismail and Abidin, 2009; Ling and Nawawi, 2010). This study aims to identify the maturity level of IT skills among accounting practitioners in Malaysian accounting firms. The study also validate the maturity scale use in categorizing the degree of maturity of IT skills. The Malaysian context is different to other countries because the accounting profession is under the

provision of the Accountants Act 1967. This means that accountants must meet the qualification and requirements prescribed within the act. Although, there were studies looks at level of IT skills and competencies (Ismail and Abidin, 2009; Ling and Nawawi, 2010; Hanefah and Ismail, 2003), however, these studies place emphasis accounting graduates and audit firms and does not focus on Malaysian accounting firms from a holistic and overarching perspective. In addition, it is almost 5-10 years old and the findings are likely no longer relevant for today's IT and business environment (Ismail and Abidin, 2009; Ling and Nawawi, 2010; Hanefah and Ismail, 2003).

Theoretical background

Socio Technical Systems theory (STS): Socio technical systems theory is defined as a system-based and holistic approach to the understanding of organisations at work (ICA., 2013). This theory was developed during the 1950's by a group of researchers at the Tavistock Institute in England (Trist, 1981). Appelbaum (1997) states that in relation to STS theory, organisational design is based on the premise that an organisation is a combination of social and technical parts that is open to its environments. The theory involves people, technologies, processes and information and requires successful integration of all these elements for its proper functioning (Shah, 2006). In other words, the interactions between the elements enhance job satisfaction and improve productivity. The concept of STS was developed to emphasise the bilateral relationship between people and technology. The theory's role is to promote the program of shaping both the technical and the social conditions of work in such a way that efficiency and humanity would no longer contradict each other. In its application, STS theory became almost synonymous with work design and employee involvement and has become the major underpinning of efforts involving work design. Emry and Trist (1960) made early contributions to STS involving approaches to job design and work systems, however, more recently, STS theory is referred to as the inevitability of technology integrated into organisations in all industries. Although, STS theory is criticised by some researchers as more management oriented, it has become vital in shifting technology design away from just financial and technical concerns towards a user perspective (Dillon and Morris, 1996).

In particular, this study focuses on accounting practitioner's IT skills in performing their job. Applying IT skills to STS theory requires successful integration of people jobs and technological elements or skills for its proper functioning. An example is accounting-related

software such as accounting and taxation software used for accounting processes by accounting practitioners who prepare and manage the documents, financial transactions and internal control processes that produce client's financial and taxation reports. All elements must be integrated and coordinated for the successful operation of this system. As a result, new methods, techniques and skills are needed to help individuals make the best use of the available technology.

MATERIALS AND METHODS

A case study approach has been employed in this study as this method is a common research tool used in educational settings for professionals (Yin, 2008). The six accounting firms involved (known as A-F) located in Peninsular Malaysia that provided accounting services were the main data collection sources. The reason is that these firms are involved with the highly complex nature of accounting tasks such as preparing financial reporting, taxation and auditing where IT elements considered as important part of their processes/practices.

Data collection: A mixed-method was chosen because it focuses on the real case scenarios of IT skills amongst accounting practitioners from six firms. Therefore, the nature of this study requires the collection of both quantitative and qualitative data because it fits into the mixed-methods research genre in achieving the research

objective. 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), 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 5-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. In overall, 213 questionnaires distributed to among accounting practitioners within six firms. Of these, 107 valid response rates were returned 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.

This research also employs semi-structured interviews as a complement to data collected through

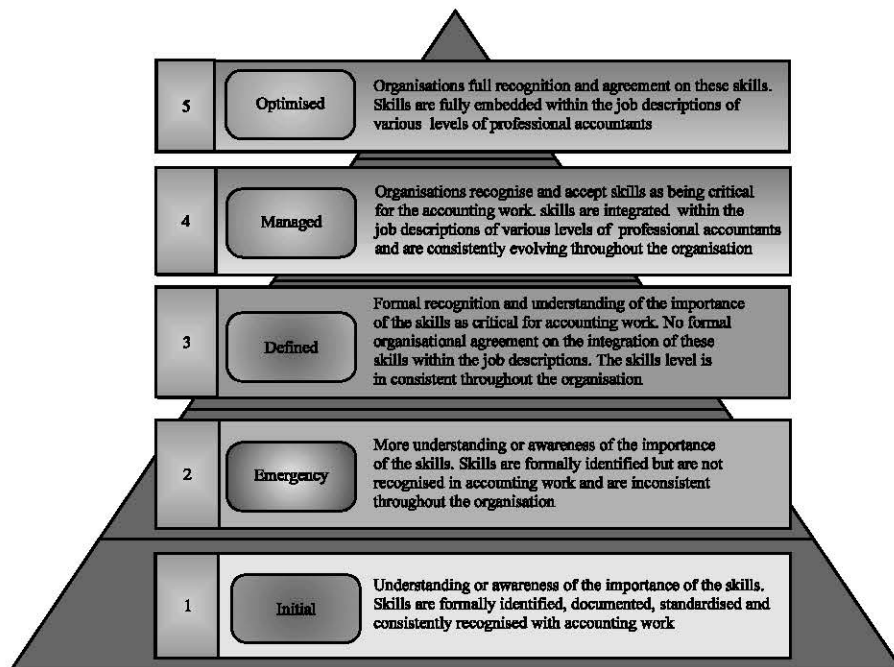


Fig. 1: Maturity scale of information technology skill

Table 1: Maturity level categorisation

Scales by mean score	Maturity 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

survey to increase the credibility of research findings in an effort to get a better understanding of the research findings. Semi-structured interviews is used to collect data from the interviews and analyse the important themes. The combination of these two research methods made it possible to analyse issues in detail and make valid inferences or conclusions.

Cross-case analysis is allowed to capture the view points of respondents from firms with respect to what maturity level of IT skills. The analysis involved descriptive statistics to analyse the survey data. Using SPSS to organise and to compile data, this study employs mean score of each IT skill elements to identify the maturity level of IT skills based on the scale/indicator illustrated in (Table 1). An average of the ratings was used to assess the maturity level of a specific skill. For example, a score of 3.3 would indicate that for the specific maturity level, respondents believed that specific organisation or firm is between the Defined and Managed ranges. For interview data, the Qualitative Research Software (QSR) NVivo 10 Software was used to interpret of interview transcripts in which the data were coded and classified according to appropriate categories.

RESULTS AND DISCUSSION

The main objective of this study is to identify the maturity level of IT skills among accounting practitioners in accounting firms. In the case studies, the overall maturity level of IT skills among accounting practitioners is rated at the defined level 3.14 (Table 2). Cases A-D reflect the same level of maturity, with mean scores ranging between 3.04 and 3.52. Cases E and F indicate an emerging level of maturity with mean scores between 2.96 and 2.87, respectively. However, put together all of the case studies, some of them are at the high end of the emerging level and others are rated at the low end of the defined level. This signifies the consistency of technical competence among the accounting firms investigated for this study. It also signifies that these firms more or less recognise and understand the importance of IT skills as critical for accounting work. The case study firms reveal that there is no formal agreement of the integration of IT skills within the job description which makes it difficult for employees to proactively pursue IT skills. At the same

time, in the absence of official recognition and acceptance of the criticality of these skills, the firms do not have a specific agenda to develop IT skills.

As a result, it shows that among Malaysian accounting firms acquiring and updating IT skills is not given a high priority on the strategic agenda. It appears that accounting firms due to limited resources available, emphasise more on the primary activity of the business value chain and do not give due importance to secondary activities. Technology being considered as a support activity for the execution of the business in accounting firms results in no plan for technological evolution of the business. Primarily these accounting firms utilise office automation technologies and scarcely engage in business automation technology. In addition, there is heavy reliance on knowledge acquired by employees through formal education and there are few opportunities accorded to them for developing their technical skills through formal on-job training. A common theme among all the case study firms is that virtually no training is provided to accounting practitioners on specialised software that they may come across at client sites such as specialised e-Commerce, taxation and enterprise management systems. The case studies also reveal a low level of skills in advanced IT skills such as network configuration and management, information quality and management, record lifecycle management, IT governance, IT security, workflow automation and business process re-engineering. Due to lack of alignment between business operations and technology, technology has not been institutionalised in the majority in these firms. STS theory suggests mutual constitution between technologies, processes and information. This theory argues for a close relationship between people, processes and information and suggests that unless there is a complementary connection between these three domains, technology will not work. Therefore, when the firms grow intellectually and economically their information needs also grow. In order to address the growth of change in information needs of the firms, the firm has to update its IT infrastructure as well as the skill set of employees.

Culturally, all the case study firms show resistance to change. This change resistance is because employees have developed a certain level of skills in using routine Microsoft-based products and they do not want to change to any other technical platform for the fear of losing their control or competency to execute their job. These findings are consistent with the two studies undertaken by Ismail and Abidin (2009), Laig and Nawawi (2010) who concluded that the majority of Malaysian businesses use Microsoft-related products such as

Table 2: IT skills level in accounting firm's case study

IT Skills elements	Cases					
	A	B	C	D	E	F
Advanced word processing and desktop publishing	4.11	3.69	4.13	4.00	4.60	3.93
Spreadsheet software	4.22	4.23	4.38	4.75	4.50	4.00
Presentation software	3.56	4.08	3.75	3.33	3.30	3.80
Data communication/sharing (email, social networks, web 2.0)	4.44	4.85	4.00	3.58	3.60	3.40
Information search and retrieval techniques	2.78	3.38	3.38	3.75	2.90	2.47
Taxation software (tax return, tax reconciliation, direct and indirect tax)	4.00	4.18	4.00	2.92	3.80	3.07
Accounting packages (mind your own business, user Business System accounting (UBS), Bizstrak)	3.11	4.46	4.13	4.00	4.40	4.00
Data auditing (audit trail, fraud control, etc.)	3.22	3.15	3.88	3.25	2.50	2.87
Financial audit automation tools (generalised audit software and embedded audit module)	3.33	4.00	3.63	3.33	2.90	2.93
Project management software and techniques	2.44	2.92	4.13	2.25	2.50	3.40
Database operations (creation, manipulation and management of data, data coding, data dictionary, data control and extraction, ETL, data warehouse)	3.00	2.92	3.75	3.08	2.70	3.27
Data analyses, reporting, querying and business intelligence	3.22	3.15	3.88	2.50	2.40	2.27
Information quality management (including data cleansing, purification, aggregation, etc.)	2.67	3.08	3.13	2.67	2.30	3.27
Record lifecycle management (creation exchange, storage retrieval and retirement/deletion)	2.44	3.15	2.50	2.08	2.10	2.20
Information system development/procurement life cycle	4.00	2.69	3.13	2.33	2.20	2.13
e-Commerce applications (electronic payment system, customer relationship management, website development/maintenance)	3.11	3.54	3.00	2.58	2.20	2.33
Workflow automation and business process reengineering	3.56	2.08	3.13	2.67	2.30	2.47
Operating systems (Windows and Linux)	3.44	3.85	3.38	2.50	2.90	2.93
Network configuration and management	1.89	2.15	2.63	2.92	2.40	2.27
IT security (Antivirus software, firewall, backup and recovery, etc.)	3.11	2.69	3.25	3.75	2.50	2.20
Enterprise Resource Planning System (ERP)	1.56	2.08	2.13	2.33	2.40	2.07
IT governance (IT resources management, risk management, IT performance evaluation, IT value delivery, business IT alignment)	2.44	2.08	4.13	3.25	3.80	1.87
Total score	3.17	3.29	3.52	3.04	2.96	2.87
Overall score	3.14					

Windows operating system, Explorer, Outlook, Word, Excel, PowerPoint and Access, together with an accounting packages such MYOB and User Business System (UBS).

Another conflict between STS and the case studies is evidenced by the fact that a small part of IT applications facilitate most of the accounting work. For example in case B workflow automation and business process re-engineering skills are not considered important for the firm because these skills are regarded as beyond the scope of their routine work. At the same time, firms engaging in secretarial and corporate advisory services place more emphasis on advanced word processing, presentation software and spreadsheet skills and do not emphasise other skills like information quality management, data analyses, reporting and querying and network configuration. This is consistent with the study by Mgaya and Kitindi (2008) who concluded that accounting work involves a small percentage of software exposure. As a result, accounting is useful for the organisation until the employee has been employed in that organisation for their professional life cycle accountants lack the requisite skills to move between jobs or move to high level accounting jobs. An analysis of individual IT skill elements reveals an interesting picture (Table 2). It shows that almost all firms reflect a very low of level of IT skills maturity in the use of ERP. With the emergence of cloud services an ERP system is well within

the financial range of small to medium sized firm. With the passage of time, more firms are expected to utilise cost intensive systems through cloud services. In those circumstances, Malaysian accounting firms will find it difficult to adopt and assimilate technology like ERP because they have not kept their employees to keep up with skill development in that area.

CONCLUSION

This study focuses on the maturity level of IT skills among accounting practitioners in using information technologies for better execution of accounting work. It concludes that accounting practitioners in Malaysian accounting firms are not fully matured in using IT. The study also reveals that the maturity of accounting practitioners is at the defined level. This level shows that the skill level among them is inconsistent throughout the firm because there is no formal organisational agreement on the integration of these skills with their job descriptions.

As a result, this study contributes to both theoretical research and accounting practice. Theoretically, the findings reflect the current level of IT skills acquired by Malaysian accounting firms. Most of the skills required are not yet mature. However, firms recognise and are aware of the importance of IT skills in executing accountancy' jobs. Second, this study provide a

foundation for professional policy makers such as professional accounting bodies 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 related skills components. Therefore, this study sets a platform for future IT skills maturity studies in Malaysian accounting professions and education.

In terms of practical contribution, this study contributes to practice by providing method/approach of assessing maturity level of IT skills. The validated maturity scale for IT skills developed in this study can be applied not only in accounting area but also can be used in other industries such as IT, commerce, marketing, finance, etc. 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.

LIMITATIONS

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 extended to other locations such as East Malaysia comprising the states of Sabah and Sarawak to see the different issues they face. The study also can be tested in other business fields such as marketing, commerce and finance.

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