

## Assessing future needs of IT Education in Malaysia: A preliminary result

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**Abstract:** Malaysia is making a frantic effort to promote its shared services and outsourcing as a preferred hub in Asia. It is projected for multiple growths in demand for IT graduates to fulfill this IT outsourcing phenomenon. In this study, we sought in-depth insights and experiences from seven senior executive managements in service provider firms in Klang Valley on the skills and capabilities requirements of fresh IT graduates to fulfill the market needs of IT outsourcing in Malaysia. The research team found that technical, soft and problem-solving skills are the main concerns raised by the key informants. This is in line with the literature review and also the present higher education policy concerns by the Malaysia government. The second stage of the study is to survey across West Malaysia and finally a roundtable discussion with panel of experts from academia and industry will be conducted in order to reach to a conclusive and consensus agreements.

**Keywords:** IT education, Malaysia, skill sets, workforce, industry, partnerships, curriculums, courses

### 1 Introduction and research questions

The rapid change in information and communication technology (ICT) and businesses practices and innovations warrant for realignment of the IT curriculum to suit the needs for business strategies. IT outsourcing (ITO) phenomenon has sparked this new requirements for skills, knowledge and capabilities of IT graduates in Malaysia. Businesses are currently outsourcing the following jobs: maintenance/repair, training, applications development, consulting and reengineering, and mainframe data centers; and executives are considering outsourcing: client/server development, networks, desktop systems, end-user support, and full IT departments<sup>1</sup> [ ].

Multimedia Development Corporation (MDec) is a government arm to spearhead the growth of IT industry with its Multimedia Super Corridor (MSC) flagship initiatives. Recently, the Prime Minister of Malaysia has launched the Shared Services and Outsourcing (SSO) initiative in Austin, Texas in an effort to make Malaysia as a preferred SSO hub in Asia. Experts

predict that although many entry-level jobs are being moved offshore, there is a looming shortage of technical workers in the US (Gibson, 2005; Kamal, 2005; Melymuka, 2006).

Recent media reports on the frantic efforts by Malaysia to become the top shared services and outsourcing hub in Asia has opened up the issue on IT workforce to complement this noble business move by the government. The global worldwide Shared Services and Outsourcing (SSO) market is expected to grow at a CAGR of 15 per cent over the next few years, reaching USD1.43 trillion by 2009 as compared to USD930 billion in 2006. "The outsourcing need is growing and we intend to fully leverage on our achievements to meet this need," said Badlisham of Multimedia Development Corporation (MDec) Chief Executive Officer. He added that ICT services like SSO contributed RM2.8 billion to the Malaysia Gross Domestic Product of RM495.6 billion. David Wong, Outsourcing Malaysia and PIKOM chairman, cited that the local SSO industry is currently worth USD300 million growing at a CAGR of 30% year on year, compared with the current global IT outsourcing size of USD24 billion. In 2012, the Malaysian SSO industry is targeted to be worth USD2

<sup>1</sup> "Executive Survey: The Outsourcing Institute's Annual Survey Of Outsourcing End Users,"  
[http://www.capacityllc.com/research/top\\_ten.pdf](http://www.capacityllc.com/research/top_ten.pdf).

billion providing 300,000 jobs.<sup>2</sup>

There are 46 public and private universities excluding colleges throughout Malaysia today. The Ministry of Education is responsible for primary and secondary education while Ministry of Higher Education (MOHE) is responsible for policy and administration of institutions of Higher Learning (IHL). MOHE recognizes the evolving changes in education requirements to meet industry needs. Various policies were drawn to make IT education is always relevant to practice and not merely providing the theoretical foundation to the students. In our faculty, Kulliyyah of Information and Communications Technology (KICT), International Islamic University Malaysia, the curriculum has always been reviewed frequently to align with the current needs. In addition, education-industry collaboration or partnership has been fostered and strengthened every year for various strategic purposes.

In light of the rapid adoption and innovation of ICT in all sectors generally and the recent ITO phenomenon particularly, we undertook a study to investigate (i) the ITO practices in Malaysia and (ii) the entry-level skills and capabilities based on Malaysia IT curriculum and the requirement of the ITO industry. This paper summarises our findings, and discusses the implications for our research question:

*Does the current IT curriculum in Malaysian university, IUM particularly, suffice and meet the requirements of industry in light of ITO phenomenon? And what are the skills and capabilities highly sought for by the practitioners?*

This study is exploratory in nature over a period of two years and three phases namely qualitative in-depth interviews, national survey and post-hoc discussion and analysis. This report presents the literature review and preliminary finding from the expert interviews in Klang Valley.

## 2 Literature review

It is clear that industry involvement is a very valuable part of the educational process, particularly in technical fields that are prone to rapid change. What is not so clear is how to make the connections needed to successfully and meaningfully integrate industry input into curriculums and courses (Courte and Clark, 2005).

<sup>2</sup>

<http://www.outsourcingmalaysia.org.my/index.php?pg=news>  
accessed on 10.7.2008

In Kulliyyah of Information and Communication Technology (KICT), the IT curriculum is designed based on the requirements of higher education ministry (MOHE), Malaysian Qualifications Agency (MQA) and industries.

## 3 Research approach

To explore the research questions, we studied the perceptions of seven key senior executive managements in ITO service provider firms in Klang Valley, Malaysia. These key informers are responsible for operations and human resource management in their organizations and therefore, are suitable respondents for us to get their in-depth insights and experiences for our study.

The research employed unstructured interviews with seven senior executive management in service provider firms in Klang Valley to get in-depth insights and ascertain the nature of entry-level positions and expectations in the ITO field. The sample was selected from a list of ITO service provider firms in well-known directories. These two groups were selected to represent diverse industries and organizations of different sizes and vertical scope to ensure that the researchers observed a broad view of the evolving entry-level positions in the field.

Subjects were solicited via an email containing a brief explanation of the study and formally soliciting participation in an interview. The letter guaranteed the anonymity of each individual. Willing subjects then received follow up phone calls or emails from the researchers to answer any questions and schedule interviews at a convenient time and place. All seven of the executives contacted agreed to participate for the study. This enthusiastic participation indicated great interest in the research topic.

No interview questions were given to each interviewee prior to any appointment. This is purposely planned to avoid any creative or inventive biased responses and also to really get their in-depth valuable and rich insights and experience on the topic. The interviews lasted an average of one hour. In most of the meetings, at least two researchers were present. The researchers began the interviews by explaining the purpose of the study and clarifying the subject's role in the study before asking questions. The interviews started with general questions and where appropriate the researchers guide them to get more focused and enough explanation on the areas. All the interviews were audio-recorded and transcribed except in three occasions due to technical problems. Subject demographic is shown in Table 1 below.

## 4 Findings

The seven key informants described a variety of knowledge and skills desired in IT graduates entering their organizations. One thing was obvious, company needs vary. There were, however, common themes that emerged from the discussions to help answer our two research questions. The summary of the skills and capabilities are tabulated in Table 1.

The respondents highlighted the need for both technical and non-technical skills and capabilities to work in IT fields. The most sought after technical skills are programming, databases and multimedia. Whereas among the important non-technical skills and capabilities raised by the informants include communication and business skills, multi-lingual spoken and written and thinking abilities. The informants also raised concerns on the ethical and attitudes of IT graduates in job market. Moral values and correct work attitudes are essential to differentiate between good or bad workers. One informant mentioned that “staff needs to have correct work attitude and attitude to learn”. This is due to some junior staff are reluctant to spend longer hours for training and certification purposes which are provided jointly by the employer and MDec. In addition, fresh graduates are said to expect good salary while not giving enough return expected by employers.

All informants agree that practical work exposure is important to equip the students for job market. Some informants express their willingness and recommendation that final year practical training are offered by their firms to students as part of their collaboration and commitment with the institute of higher learnings (IHLs), MDec and other relevant bodies in the industry. An issue of employability encapsulates all the qualities and attributes that IT graduates must have before they enter job market. This is due to some reports claiming that IHLs do not provide relevant practical courses to students which are much sought after by the industries. As a result, dialogues have often been organized between ministry of higher education, industry practitioners and IHLs to bridge this expectation gap.

In short, the overall views of the respondents are the

need for technical, soft and problem-solving skills. Communication and multi-lingual are mostly cited responses.

## 5 Discussion

Our findings concur with Benamati and Mahaney's (2007) study who investigated current and future entry-level IT workforce needs in organizations. They attempt to answer two prevailing questions: (1) How are entry-level IT positions evolving? and (2) How well prepared are today's MIS graduates for these positions? In doing that, they interviewed thirteen IS executives in the US organizations to learn their views on the state of the entry-level IS job market and what skills IS graduates lack most at that time. Their findings revealed that programming skills are still needed, and project management skills are both highly desired and lacking. Other soft skills, such as communications skills, business knowledge, and leadership skills are also desired and, like project management, projected to increase in importance. In essence, they divided the knowledge and skills into technical and non-technical aspects.

Society for Information Management (SIM) 20-US and European investigator-team conducted the research in 2005 and found that the skills and capabilities identified by respondents as being sourced to independent contractors or third-party providers are technical in nature. The following identifies skills related to sourcers, leaving in house, and critical to retain in house.

- Business skills and capabilities represent five of the top ten skills respondents identified as critical to keep in-house in 2005.
- Project management skills, such as project planning, leadership and risk management were also found in the top ten skills to keep in-house in 2005.
- The remaining two skills found in the top ten are systems analysis and design, both technical but client-facing.
- Six of the ten skills identified by respondents as currently sourced, are also categorized as the least critical to keep in-house, such as system testing and telecommunications.
- The use of a third-party provider to fill a skill demand identified as critical to keep in-house, such as systems analysis and design may indicate difficulty in hiring internally, needed for projects, or to maintain flexible staffing.
- By 2008, technical skills and capabilities will continue to leave in-house, with SME organizations targeting support/helpdesk and telecommunications.
- In contrast to SMEs, larger organizations identified

programming as a skill and capability that would leave in-house, presumably to sourcing.

- For the most part, the picture of IT skill and capability needs will not change much by 2008. There is a slight shift from business domain skills to project management skills from 2005 to 2008.

On the responses for entry-level skills their study found that, overall, the data paints a picture of IT managers building an organization of IT professionals who know the industry and business and who can work well with clients and colleagues. However, of significant concern is the apparent divergence between entry-level skills sought by organizations and skills identified as critical to keep in-house, raising questions about how to groom staff from one to the other as they move through the pipeline.

- The majority of respondents indicated that they primarily sought technical skills in entry-level hires. When skills sought in entry-level hires are compared to the skills identified as critical to keep in-house in 2005 to 2008, there is a striking disconnect.
- Communication was identified as the skill most lacking in entry-level hires.
- Typical entry to the IT workforce is from college graduates although many organizations accelerate this process through internship programs, resulting in college graduates that can enter the workforce at a more advanced level, due to the skills and experience acquired during their internship.
- Overall, respondents are not concerned with the supply of entry-level candidates; which may be a result of lower levels of hiring over the past few years and a lack of awareness of diminished IT-related enrollments.

Ferguson (2004) explored the possibility of curriculum change in light of offshore outsourcing trend. His suggested curriculum modifications assume that most of the technical content of the major remains intact. These proposed topical additions include:

- Enhanced communication skills both oral and written:
  - o Require a technical writing course
  - o Writing culturally neutral requirement specifications
  - o Encourage students to take foreign language courses
- Project management integrated throughout program:
  - o Capstone project
  - o Shadowing experience early in program
  - o Internship/apprenticeship
  - o Five-year program
- Expanded business background to include:
  - o Intellectual property laws
  - o Accounting

- o Managerial economics
- o International management

- Expanded risk assessment
- Expanded computer/network security coverage
- Expanded CMM or Six Sigma content
- Addition of multicultural component

## 6 Conclusion

The results of this study predominantly confirm the findings in the SIM study. This study, however, arrived at those results differently as subjects were free to identify their own skill and knowledge categories rather than selecting from predetermined categories as done in the previous works. The results were the same which confirms and strengthens previous findings.

## 7. Acknowledgments

Our thanks to Ministry of Higher Education (MOHE) Malaysia for the Advancement of Research and Funding at International Islamic University Malaysia for the funding and support. Our deepest appreciation also goes to the key informants for their time and efforts.

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Co	Int'vwee's profile	Type of conglomerates	Services provided	Clienteles	Workforce size	Work experience of int'vwee (no. of years)
SP1	Director	MNC	ITO, BPO	Overseas & Local	> 50K (Global group)	> 20
SP2	Vice President	Local (Sdn Bhd)	ITO, BPO	Overseas & Local	< 100	> 10
SP3	Vice President	Local with overseas presence	ITO - Offshore	Overseas	< 100	> 10
SP4	General Manager	MNC	ITO, BPO	Overseas & Local	> 50K (Global group)	> 20
SP5	Senior Manager	MNC	ITO, BPO	Overseas & Local	> 50K (Global group)	> 10
SP6	Director	Berhad	BPO	Overseas & Local	> 1K	> 20
SP7	Director	Sdn Bhd	BPO	Local	> 1K	> 10

**Table 1. Demographics of the service provider firms**

Themes	SP1	SP2	SP3	SP4	SP5	SP6	SP7	TOTAL
<b>A) Technical Skills</b>			√	√	√			<b>3</b>
i) Computer science subject								
- Programming	√	√				√		3
ii) Computer engineering subject						√		1
- Databases	√	√		√		√		4
iii) Multimedia subject						√		1
iv) Laboratory simulation	√							1
v) Practical exposure	√	√	√		√		√	5
vi) Professional certification		√						1
<b>B) Non-technical / Soft Skills</b>				√				<b>1</b>
i) Communication skills			√					1
- Ability to express	√							1
- Self-confidence	√							1
- Self-esteem	√							1
- Courage	√							1
- Culture understanding	√	√						2
- Public speaking	√							1
ii) Language subject								
- English	√		√	√	√		√	5
- Japanese, Mandarin, Korean	√							1
iii) Writing skills	√							1
iv) Skills exposure	√	√	√		√			4
vi) Thinking ability				√				1
vii) Business skills					√		√	2
<b>C) Problem solving</b>	√	√						<b>2</b>
<b>D) Career-oriented thinking</b>			√					<b>1</b>

<b>E)</b>	<b>Quality of talent</b>							√	1
<b>F)</b>	<b>Right attitude</b>			√					1
<b>G)</b>	<b>Employability</b>			√					1
<b>H)</b>	<b>Training</b>	√		√					2
<b>I)</b>	<b>Ethics</b>				√				1

**Table 2. Summary of skills and capabilities responses from interviews**