CHAPTER 5

SUMMARY, DISCUSSION AND CONCLUSION

This chapter summarises the research design and the results of the data analyses. The key findings from Chapter 4 are discussed and recommendations derived from the findings are put forward. Several suggestions are made as possible extensions of this study. Finally, conclusions are made to wrap-up the study.

5.1 Summary

The main purpose of this study was to explore the requirements of competencies and personal qualities of information professionals needed by employers of the Malaysian MSC status companies.

The need for this study arose because the Malaysian information technology-based companies in general, and the MSC status companies in particular, were known to have a high demand for skilled knowledge workers with certain skills and competencies but the country could not meet the requirements of this demand. This issue led to the study that focused on the questions below:

1. What are the key competencies needed of information professionals potentially working in the MSC status companies in the areas of information technology, multimedia, knowledge management, management, interpersonal and communication, entrepreneurial, and research?
2. What are the key personal qualities required of information professionals working in the MSC status companies?
3. Are there statistically significant differences among the three different groups (System Integration, Creative Multimedia Cluster, and Internet-based Business) of

the MSC status companies regarding the competencies required of information professionals?

4. Are there statistically significant differences between the Malaysian and foreign shareholders groups of the MSC status companies regarding the competencies required of information professionals?
5. Are there any relationships between the required personal qualities and competencies of information professionals working in the MSC status companies?

The other purpose of the study was to review and synthesise the literature relevant to the theory and findings of previous studies and relate the current findings to previous studies.

The researcher found no earlier research on a similar topic being carried out. Although a few studies on competencies were done before, the studies were based on library and information settings (Friedrich, 1885; Zhou, 1996; Young and Lee, 1997; Phisalphong, 1998; Garrod, 1998; Rehman *et al.*, 1998a; Goulding *et al.*, 1999a; Stenson *et al.*, 1999; Xu and Chen, 1999; Xu and Chen, 2000) So far, studies on the requirements of competencies and personal qualities of information professionals, particularly in the Malaysian MSC status companies, had not been conducted. This means that the present study would help to fill the gap in previous studies that excluded competencies and traits of information professionals working in this kind of environment.

A comprehensive research design was conducted to gather the necessary information to answer the research questions stated above and test the nine hypotheses in the study. The main method of collecting data was the quantitative method, using questionnaires as the instruments. Questionnaires were designed to measure all the variables while the reliability and validity aspects were also considered to enhance its

quality. The questionnaires were initially piloted before they were distributed to the population of 360 ($N = 360$) MSC status companies. The respondents selected were the Chief Executive Officers or Senior Officers of the companies.

The response rate was 35% with 125 returns ($n = 125$). All the returned questionnaires were used and analysed. The data was statistically analysed using the Statistical Package for Social Sciences (SPSS) Version 10.0. Various statistical techniques were applied to analyse the data. The factor analysis technique was performed to reduce the data to a more manageable set. Descriptive statistics were conducted to establish frequency distribution for all the variables in the qualitative data set of the company background. Mean ranking was carried out to get the highest ranking of variables. One-way analysis of variance (ANOVA), followed by Duncan's Multiple Range test, and independent-samples t test were used to determine the significant differences in the scales studied by groups. Finally, a bivariate correlation analysis using the Spearman's rho correlation coefficient tests was conducted to determine and measure the strength of relationships between two categorical variables.

The thesis for this study was reported in five chapters. The first chapter gave background information on the Malaysian Multimedia Super Corridor, the MSC status companies and issues on shortage of knowledge workers in the country. This was followed by brief information on education for information professionals in four Malaysian universities that produced information graduates. The chapter addressed the statement of the problems, purposes of the study, objectives, research questions and stated the hypotheses followed by its rationales, scope, limitations of the study and assumptions. The thesis outline was given at the end of the chapter.

In chapter 2, a comprehensive review of the literature relevant to the study of competencies and personal qualities of information professionals was reported. After

an exhaustive search and reading, five issues were identified and reported in the study. It began with the definitions of information professionals and knowledge workers. Next, issues on the shortage of knowledge workers and the role of institutions of higher learning for the MSC were reported. This was followed by literature relating to the study of employability skills. Definitions on competencies were included. Competencies for information professionals were the main focus reported, so were personality traits of information professionals. Finally, the roles for future information professionals were reviewed.

The third chapter discussed the methodology and research design applied in the study. Various methodologies were reviewed. It described the population selected and data collection procedure. It further described the instrument used and the development of the instrument. To improve the quality of the instrument, the pre-test, validation, pilot study and reliability test were carried out and these were explained in this chapter. It then described the empirical survey on how the researcher went through the process and her experience in gathering the data. The chapter concluded with a brief description on the data analysis techniques such as the factor analysis process, the descriptive analysis, and inferential statistical analysis.

Chapter 4 discussed the quantitative data analysis and its findings. It began with describing the results of the reliability test and results of factor analysis. Findings relating to the companies' backgrounds were reported. This was followed by examining the ranking of the perceived level of importance of competencies by different groups of the MSC status companies. This chapter also described statistical techniques and significance testing, analysed the results and interpreted the study data. The results of comparison of means of variables using one-way analysis of variance (ANOVA) and independent-samples *t* test were analysed, interpreted and reported in the

findings. Finally, this chapter reported the results of statistical correlation between personal qualities and competencies required of information professionals working in the MSC status companies.

Chapter 5 reported the summary of the entire study. Included in the chapter were the summary of the five chapters, discussions on the findings, suggestions of the study, directions for further research and finally, conclusion.

5.2 Key Competencies of Information Professionals

5.2. 1 Requirements in Information Technology-Related Competencies

Not surprisingly, the Internet-based Business group of companies had perceived the skills in using Internet technologies like the Internet/Intranet/Extranet (Mean = 6.57) as the highest in their priority of requirements. This was obvious because the Internet-based Business group of companies was doing most of their businesses (e.g., e-commerce, e-business) on the Internet and this meant that various skills on using the Internet are required.

This finding was consistent with a study by the Centre for Information Research and Training (1999) in which it was found that Internet skills were important information technology skills within the information profession. Woodsworth (1997) also mentioned that basic computer skills for information professionals must include knowledge about the use of Internet and working with various search engines, search strategies and emerging standards.

Both the System Integration group and the Creative Multimedia Cluster group of companies ranked knowledge of basic computer technology (Mean = 6.39 and 6.24 respectively) as the first in their priority of required skills. This was an expected result because most companies required their employees to have knowledge and competence

in at least the basic knowledge of computer technology. Studies by Stafford and Serban (1990), Zhou (1996), Phisalphong (1997), and Garrod (1998) had similar findings that knowledge of basic computer technology was an important skill.

The findings of this study is important because it indicates that the Internet-based Business group of companies have high expectations from employees with skills in using Internet technologies. On the other hand, both the System Integration group and the Creative Multimedia Cluster group of companies emphasised higher requirements on knowledge of basic computer technology. Therefore, the Information faculties and departments must prepare graduates with these skills so that graduates are able to work in these companies.

5.2.2 Requirements in Multimedia-Related Competencies

Evidence from the findings of the study showed that for the requirements in multimedia-related competencies, "creative skills and use of graphic software" were found to be the most required skills by both the Internet-based Business (Mean = 5.74) and the Creative Multimedia Cluster group of companies (Mean = 5.58). This was expected because both the Internet-based Business and the Creative Multimedia Cluster group of companies' businesses involved a lot of creativity works in multimedia production and designing of software and web-sites. Bill Gates opined that for the MSC to progress, it needs workers who are creative and innovative if they want to produce good results ("Bill Gates Officially Opens Microsoft Knowledge Capital Center," 2001). Deschamps (2000) pointed out that the digital sector needs information specialists with knowledge of multimedia especially in design for producing all kinds of digital products, computer graphics, animation, multimedia presentation and usage.

The System Integration group of companies ranked knowledge of content management and development as the highest requirement of the multimedia-related competencies (Mean = 5.02). Abell and Oxbrow (2001) mentioned that content management and business-aligned information services are emerging in many knowledge environments. Morris (2001) who reported on a survey that investigated the knowledge manager's competencies, found that knowledge in content management was most demanded by employers. Evidence from an interview between the researcher and Professor Arnott when interviewed at the Monash University, Australia in April 2000 regarding the importance of multimedia-related competencies supported this finding.

The findings of the study signify that graduates who want to work in the Internet-based Business and the Creative Multimedia Cluster group of companies must be prepared with creative skills and use of graphic software. On the other hand, graduates who want to work in the System Integration group of companies must have knowledge of content management and development. Therefore, the Information faculties and departments should train and educate students with these skills so that students will perform effectively in these types of companies.

5.2.3 Requirements in Knowledge Management Competencies

One of the major finding on the requirements of competencies in this study was that, out of the seven requirements of major competencies and skills, knowledge management competencies was found to be the most important competency required by the Internet–based Business group of companies. Many research studies have supported this finding. The international research project and TFPL research on skills and competencies needed to succeed in a knowledge economy was highlighted at the Special Libraries Association annual conference in June 2000 (Oxbrow, 2000). The

studies revealed that skills associated with creating, sharing, finding, assessing, and using information and knowledge are important skills needed to be embedded throughout the workforce including the information professionals in companies.

Respondents from the System Integration group of company had chosen abilities to acquire, retrieve, and analyse and disseminate knowledge using IT tools as the highest in importance of requirements (Mean = 5.92). However, for the Internet-based Business and the Creative Multimedia Cluster group of companies, respondents had mentioned that the ability to manage value-added information for strategic decision-making (Mean = 6.09 and 5.53 respectively) as their highest priority of requirements. In relation to this finding, Kalseth (2001) mentioned that knowledge management is strategic management. The interview with Associate Professor McIntyre at the RMIT University, Australia in April 2000 regarding the importance of knowledge management competencies, also supported this finding.

The findings of the study imply that graduates who want to work in the System Integration group of companies must be equipped with knowledge management competencies, and precisely, must have the abilities to acquire, retrieve, and analyse and disseminate knowledge using IT tools. Graduates who wish to work in the Internet-based Business and the Creative Multimedia Cluster group of companies must have the ability to manage value-added information for strategic decision-making as required by the companies. Therefore, these competencies on knowledge management should be incorporated in the syllabus by the Information faculties and departments. This is to ensure that students are better prepared with the competencies required by the companies.

5.2.4 Requirements in Management Skills

Another major finding on the requirements of competencies in this study was that, management skills were found to be the most important skills required by the Creative Multimedia Cluster and System Integration group of companies. In particular, respondents from the Creative Multimedia Cluster, Internet-based Business and System Integration group of companies all agreed that the ability to solve problems was the most important skill and gave it the highest ranking among others listed under the management skills (Mean = 6.53, 6.52 and 6.34 respectively). Phisalphong (1998) had also found that problem-solving skills were highly required by employers of both the information centres and companies and Cheney *et al.* (1990) also found similar findings. Malinconico (1999) had stressed that information professionals needed well-developed problem-solving skills. Maceviciute's (2000) survey had not found this to be true as his respondents had given low ratings on managerial knowledge and skills.

The findings of the study indicate that graduates who want to work in these three groups of companies must be equipped with management skills and in particular, the ability to solve problems. Thus, the Information faculties and departments must ensure that acquisitions of these skills are incorporated in the syllabus of their studies.

5.2.5 Requirements in Interpersonal and Communication Skills

One of the most required skills for information professionals was the interpersonal and communication skills. When Young and Lee (1997) studied the hiring criteria and skills required of information systems graduates, the findings revealed that employers regarded interpersonal and communication skills as an important hiring criteria. In this study, the three groups of companies had also emphasised on the knowledge of the English language. The Creative Multimedia Cluster and the System Integration group

of companies, both gave the greatest emphasis on speaking English proficiently and gave it the highest score (Mean = 6.37 and 6.34 respectively). Meanwhile, respondents from the Internet-based Business group of companies showed greater preference for writing in English competently (Mean = 6.35). This could mean that since English was widely used on the Internet, writing in English for business purposes on the Internet was highly required.

Studies by Friedrich (1985), Tees (1986), Mohd Sharif and Adnan (1991), Marshall, *et al.* (1996), Foote (1997), Young and Lee (1997), Stenson *et al.* (1999), and the Centre for Information Research and Training (1999) found that interpersonal and communication skills were highly required of information professionals. Literature written by Couttes (1991), Woodsworth (1997), Moore (1998), Lettis (1999), Bennett (1999), Malinconico (1999), and Morris (2001) stressed that excellent written and oral communication skills were essential requirements in information works. Phisalphong (1998) found that English writing and speaking skills were equally important, although they were not at the top of the list rated by his respondents. Professor Arnott also stressed the importance of interpersonal and communication skills when interviewed in April 2000.

The findings of the study imply that graduates, who want to work in the Creative Multimedia Cluster and the System Integration group of companies, must be proficient in speaking the English language. Graduates who wish to be employed by the Internet-based Business group of companies must be competent in writing the English language. This is important because the Internet-based Business group of companies uses the English language for various transactions in their web-sites. Therefore, the Information faculties and departments should incorporate it in the syllabus since it is an important requirement.

5.2.6 Requirements in Entrepreneurial Skills

Evidence from the findings of the study revealed that knowledge of entrepreneurship was also required by the MSC status companies. Both the Creative Multimedia Cluster and the System Integration group of companies ranked business analyses skills as the most important skills required (Mean = 5.71 and 5.70 respectively). It was also not surprising that the Internet-based Business group of companies ranked knowledge of cyberpreneurship, such as, e-commerce, e-government, e-finance (Mean = 5.65) as the first in importance in their skills requirement since most of their business was done on the Internet.

A number of studies have indicated the importance of business or entrepreneurial skills among information professionals (Cheney *et al.*, 1990; Marshall, *et al.* 1996; and Young and Lee, 1997). Cottam (1987) argued that a successful organisation needed people who were entrepreneurs, willing to take hands on responsibilities for creating innovation of any kind within an organisation.

Associate Professor McIntyre, during the interview had mentioned the importance of skills in business analyses, strategic management, and decision-making in relation to business.

The findings of the study imply that graduates who want to work in the Creative Multimedia Cluster and the System Integration group of companies must be equipped with the business analyses skills, while those who wished to work in the Internet-based Business group of companies be equipped with the knowledge of cyberpreneurship. Thus, the Information faculties and departments must prepare students with these kinds of skills and knowledge so that graduates will have better chances to work in these types of companies.

5.2.7 Requirements in Research Skills

Research and development is a very important activity in companies like the MSC status companies. The information professionals working in the companies have to embark on research work. They must have knowledge in research methodology to be able to do research for the company, analyse and interpret data, and communicate research findings. The results showed that the three groups of companies had similar opinions in stating their priority on the requirements in research skills, that was, the ability to communicate research findings. The Internet-based Business group of companies gave a mean score of 6.09, the System Integration group 5.58 while the Creative Multimedia Cluster group of companies scored 5.26.

Phisalphong's (1998) study also showed that research methods and statistics were highly required of information professionals working in companies. Lettis (1999) provided a checklist of specific requirements in intellectual and technical competencies of information specialists in a corporate and legal information center and the list included the ability to apply appropriate research methods.

The findings of the study imply that graduates who want to work in any of these groups of companies must be able to communicate findings of research undertaken by the companies. Therefore, the Information faculties and departments must prepare students with such skills to ensure them better job prospects in these types of companies.

5.2.7 Requirements in Major Overall Competencies and Skills

The overall results of the total mean score of the seven major skills and competencies which were: information technology-related competencies, multimedia-

related competencies, knowledge management competencies, management skills, interpersonal and communication skills, entrepreneurial skills, and research skills were also analysed. It was found that both the Creative Multimedia Cluster and System Integration group of companies had on average rated management skills as the most required skills when compared to the other six major skills and competencies (Mean = 6.02 and 5.89 respectively).

Management skills here included: (a) the ability to solve problems, (b) ability to make fast decisions, (c) time management skills, (d) organisational skills, (e) strategic planning skills, (f) leadership skills, (g) supervisory skills, and (h) training skills.

Management skills have very often been mentioned in the studies as being highly required by employers. Xu and Chen (1999) in their studies found that many systems librarians were involved in managerial responsibilities and human-related jobs. Mohd Sharif and Adnan's (1991) study revealed that management skills were essential requirements. However, Maceviciute's (2000) survey found that low ratings were given to managerial knowledge and skills.

The Internet-based Business group of companies has ranked knowledge management as the most required competency (Mean = 6.01). Knowledge management included: (a) ability to manage value-added information for strategic decision-making, (b) abilities to acquire, retrieve, analyse and disseminate knowledge using IT tools, (c) ability to package specialised information products for company's use, (d) ability to give advice on the use of internal and external knowledge resources, and (e) abilities to organise and codify information sources. This was in line with the nature of the companies' business, which they dealt with a vast knowledge in the Internet and has to be dealt with, professionally. A study by the TPFL (1999) had already identified knowledge management as an important skill. Other studies who have mentioned the

importance of knowledge management for information professionals in their workplace were DiMattia and Oder (1997), Corcoran (1997), Duffy (1998), Guns (1998), and Abell and Oxbrow (2001).

The findings of the study imply that graduates who want to work in any the Creative Multimedia Cluster and System Integration group of companies must be equipped with the skills in management. Meanwhile, graduates who wish to work in the Internet-based Business group of companies must have the knowledge management skills. Thus, the Information faculties and departments should equip students with these skills and competencies to ensure them better work opportunities.

5.3 Key Personal Qualities in Information Professionals

The Internet-based Business group of companies rated being "responsible and reliable" as the most important trait needed (Mean = 6.74). Previous studies had mentioned that responsibility and reliability was one of the traits needed by employers. A study by the SCANS ("Secretary's Commission on Achieving Necessary Skills [SCANS]: Final Report Available," 2000) had identified "responsible" as the necessary skills required. The study by Buttlar and Du Mont (1996) found that employers' demands on employees, among other things were responsibility for organisational structure, function, and performance. However, Goulding *et al.* (1999a, 1999b) found that employers perceived the ability to accept pressure and change as the most essential for information professionals. Nevertheless, they also perceived new information professionals as unreliable and lack the commitment to organisational goals.

The Creative Multimedia Cluster and the System Integration groups of companies have ranked "works well with others in a team" as the most important trait that they require (Mean = 6.63 and 6.59 respectively). Various other studies have found that

"works well with others in a team" was one of the most required traits of employees (Marshall *et al.* 1996; Phisalphong, 1998; Stenson *et al.* 1999; Centre for Information Research and Training, 1999; Arnott, 2000). Bennett (1999) also reported that teamwork ranked near the top of the list that led to management success. However, Goulding et al.'s (1999a, 1999b) study found that teamwork did not feature among the top ten essential qualities that information professionals possessed.

The findings of the study imply that graduates who want to work in the Internet-based Business group of companies must have the quality of being responsible and reliable. Meanwhile, graduates who have the personality traits of working well with others in a team will have better chances in working in the Creative Multimedia Cluster and the System Integration groups of companies. Therefore, the Information faculties and departments must prepare their students with these personality traits so that they will have better chances to work in these types of companies.

Figure 5.1 summarises the required key skills and competencies for information professionals and Figure 5.2 shows the required key personal qualities for information professionals needed by employers of the three groups of the MSC status companies.

Figure 5.1
Key Skills and Competencies for Information Professionals

Company	IT-Related Competencies	Mean
IBB	Skills in using Internet technologies	6.57
SI	Knowledge of basic computer technology	6.39
CMC	Knowledge of basic computer technology	6.24

Company	Management Skills	Mean
CMC	Ability to solve problems	6.53
IBB	Ability to solve problems	6.52
SI	Ability to solve problems	6.34

Company	Interpersonal and Communication Skills	Mean
CMC	Speaks English proficiently	6.37
IBB	Writes English competently	6.35
SI	Speaks English proficiently	6.34

Company	Knowledge Management Competencies	Mean
IBB	Ability to manage value-added information	6.09
SI	Abilities to acquire, retrieve, analyse and disseminate knowledge	5.92
CMC	Ability to manage value-added information	5.53

Company	Research Skills	Mean
IBB	Ability to communicate research findings	6.09
SI	Ability to communicate research findings	5.58
CMC	Ability to communicate research findings	5.26

Company	Multimedia-Related Competencies	Mean
IBB	Creative skills and use of graphic software	5.74
CMC	Creative skills and use of graphic software	5.58
SI	Knowledge of content management and development	5.02

Company	Entrepreneurial Skills	Mean
CMC	Has business analyses skills	5.71
SI	Has business analyses skills	5.70
IBB	Has knowledge of cyberpreneurship	5.65

Company	Major Competencies and Skills	Mean
CMC	Management skills	6.02
IBB	Knowledge management competencies	6.01
SI	Management skills	5.89

Figure 5.2
Key Personal Qualities for Information Professionals

Company	Personal Qualities	Mean
IBB	Responsible and reliable	6.74
CMC	Works well with others in a team	6.63
SI	Works well with others in a team	6.59

Note. SI = System Integration group of companies.
CMC = Creative Multimedia Cluster group of companies.
IBB = Internet-based Business group of companies.

5.4 ANOVA Tests on the Competency Ratings among Company Groupings

A one-way analysis of variance (ANOVA) at the level of significance of 0.05 was run for each competencies among the three groups of companies: System Integration, Creative Multimedia Cluster and Internet-based Business. After performing ANOVA among the three groups of companies, only 10 (11.4%) of the 57 competencies were significantly different at 0.05 level. Duncan's Multiple Range Tests confirmed these findings.

The data in Table 5.1 shows that statistically significant differences were observed in five (38.5%) of the 13 information technology-related competencies. They were: skills of using application software like word processing, desktop publishing, spreadsheet, graphics and presentation software; ability to use programming languages, skills in using Internet technologies like the Internet/Intranet/Extranet; skills of using project management tools; and skills in system maintenance, operating, installing and testing of systems.

The findings of the study revealed that both the System Integration and the Creative Multimedia Cluster group of companies had similar requirements in the skills of using application software; skills in using Internet technologies; and skills in using project management tools. However, the Internet-based Business group of companies

emphasised higher requirements for the three mentioned skills. The findings revealed that both the System Integration and the Internet-based Business group of companies had similar and higher requirements in the ability to use programming languages; and skills in systems maintenance, operating, installing, and testing of systems compared to the Creative Multimedia Cluster group of companies.

A statistically significant difference was observed in one (12.5 %) of the eight multimedia-related competencies that was "creative skills and use of graphic software" and one (12.5%) of the eight management skills that was "the ability to make fast decisions." The Duncan's Multiple Range Test confirmed that both the Creative Multimedia Cluster and the Internet-based Business group of companies had similar and higher requirements in having "creative skills and use of graphic software," and "ability to make fast decisions," compared to the System Integration group of companies. These findings implied that employers of the Creative Multimedia Cluster and the Internet-based Business group of companies were needed graduates who has higher creative skills, who could use graphic software and able to make fast decisions in their work. These are the skills needed to equip graduates if they wish to work in these types of companies.

Interpersonal and communication skills which had 11 skills had only one (9.1%) skill that showed significant difference, which was, ability to do technical writing. The results indicated that both the Creative Multimedia Cluster and the Internet-based Business group of companies had similar requirements in needing information professionals who are competent in technical writing. The System Integration group of companies, however, rated strongly on this skill, indicating their need for graduate who possess the ability to do technical writing for their companies.

For research skills, two (40 %) of the five competencies showed significant differences. These were: ability to interpret data, and ability to communicate research findings. Both the System Integration and the Creative Multimedia Cluster group of companies have similar requirements in the ability to interpret data, and ability to communicate research findings. However, the Internet-based Business group of companies, rated higher requirements on these skills, indicating their stronger needs for graduates who possessed these abilities.

However, the ratings on knowledge management competencies and entrepreneurial skills did not show any significant difference among the company groupings.

Comparison of means using ANOVA at the level of 0.05 was carried out for the overall major skills and competencies among the three groups of companies. The results indicated that statistically significant difference was observed on only one (14.3%) of the seven competencies, which was, information technology-related competencies. The Internet-based Business group of companies rated higher requirements in the information technology-related competencies. This implied that employers of the Internet-based Business group of companies require graduates who had higher competencies in information technology. This suggests that the Information faculties and departments should prepare students with skills related to information technology if they wish to compete with graduates of other faculties.

In an effort to relate the research results to the existing literature, no empirical research could be located. Therefore, it was not possible to make a comparison with other studies. However, these results implied that there was not much difference in the requirements of skills and competencies required of the three groups of companies of the MSC status companies- the System Integration, the Creative Multimedia Cluster and the Internet–based Business. In other words, there were many similarities in the

requirements and priorities of skills and competencies required by the three groups of companies. The non-significance could also mean that the three groups of companies are IT and business entities and therefore have similar requirements.

Table 5.1
Key Competencies Tested Significant Using ANOVA

Competencies	Sig.	SI (Mean)	CMC (Mean)	IBB (Mean)
Information Technology-Related	0.044*	5.20[b]	4.99[b]	5.67[a]
Skills of using application software	0.043*	5.77[b]	6.03[b]	6.43[a]
Ability to use programming languages	0.047*	5.58[a]	4.71[b]	5.43[a]
Skills in using Internet technologies	0.030*	5.89[b]	6.05[b]	6.57[a]
Skills of using project management tools	0.002**	5.03[b]	4.68[b]	5.96[a]
Skills in system maintenance, operating, installing, and testing of systems	0.022*	5.20[a]	4.29[b]	5.17[a]
Multimedia –Related				
Creative skills and use of graphic software	0.025*	4.86[b]	5.58[a]	5.74[a]
Management				
Ability to make fast decisions	0.007**	5.96[b]	6.42[a]	6.39[a]
Interpersonal and communication				
Ability to do technical writing	0.003**	5.70[a]	5.00[b]	4.83[b]
Research				
Ability to interpret data	0.019*	5.47[b]	5.13[b]	5.96[a]
Ability to communicate research findings	0.050*	5.58[b]	5.26[b]	6.09[a]

Note. SI = System Integration group of companies.
CMC = Creative Multimedia group of companies.
IBB = Internet–based Business group of companies.
* The test is significant at $p = 0.05$ level.
** The test is highly significant at $p = 0.01$ level.
[a] and [b] are groups with significant mean differences using Duncan's Multiple Range Test at 0.05 level of significance.

5.5 *T* Test on the Competency Ratings Between Malaysian and Foreign Shareholder Groups of Companies

After performing the independent-samples *t* test between the Malaysian shareholder and foreign shareholder group of companies, it was found that only four (7%) of 57 of the competencies were significantly different at the 0.05 level.

Statistically significant difference at the level of 0.05 was not found on the information technology-related competencies, knowledge management competencies, management skills, and entrepreneurial skills.

However, significant differences were observed in two (18.2%) of the 11 competencies from the interpersonal and communication skills. The two competencies were "speaks Bahasa Malaysia proficiently" and "writes Bahasa Malaysia competently." The mean scores for "speaks Bahasa Malaysia proficiently" and "writes Bahasa Malaysia competently" of Malaysian shareholder companies were significantly higher than that of the foreign shareholder companies.

This suggests that there were differences between the two groups of companies in the requirements of competencies in speaking Bahasa Malaysia proficiently and writing Bahasa Malaysia competently. This was expected because the Malaysian shareholder companies could be dealing businesses with other local companies or government agencies, or probably most of the employees are Malaysians. Therefore, it was obvious that the two different groups of companies put different emphasis on the need to speak and write in Bahasa Malaysia.

Statistically significant differences were observed on two (40%) of the five competencies of the research skills, which were: ability to do research for the company, and knowledge of research methodology. The mean scores for "ability to do research" and "knowledge of research methodology" of Malaysian shareholder companies were significantly higher than that of the foreign shareholder companies. This implied that the Malaysian shareholder companies have higher requirements on their information professional's ability to do research for the company and have the knowledge of research methodology. The reason for the differences could be due to the fact that the Malaysian shareholder of the MSC status companies are research and development-

based. Therefore, they place high requirements on the ability to do research and knowledge of research methodology compared to other companies.

When the *t* test at the level of 0.05 was subjected to major overall skills and competencies, the results indicated that there were no statistically significant differences observed on all the major skills and competencies.

Another important finding was that, the foreign shareholder companies have higher requirements on "writing English competently" and "ability to speak one or more foreign languages" from the local graduates compared to the Malaysian shareholder companies. The reason for this is that, the foreign shareholder companies are doing businesses internationally; therefore, it is important that their employees are competent in writing and speaking the English language and other foreign languages. This suggests that the Information faculties and departments preparing the syllabus for graduates in this field should emphasise such skills in the syllabus. Thus, graduates will be well-prepared with such skills if they wish to be employed by the companies.

The findings showed that out of the 57 competencies from the major skills and competencies, only four (7%) competencies showed significant differences ($p = 0.05$). It could be generalised that the results supported the null hypothesis (*Ho*: There are no statistically significant differences between the Malaysian and foreign shareholders groups of the MSC status companies, regarding the competencies required of information professionals).

In an effort to relate the research results to the existing literature, no empirical research could be located; therefore, it was not possible to make a comparison to other studies. Nevertheless, this result suggested that there were many similarities in the requirements and priorities of skills and competencies required of the Malaysian and foreign shareholder groups of the MSC status companies.

5.6 Analysis on Relationships

In this analysis, five dimensions or characteristics of personal qualities which were the products of factor analysis were correlated with the seven major skills and competencies to examine the degree of relationship, if any. The five dimensions were: dynamic and responsible, ability to interact with all levels of people, sees the big picture, creative and innovative, and confidence and commitment. The seven major areas of skills and competencies were information technology competencies, multimedia-related competencies, knowledge management competencies, management skills, interpersonal and communication skills, entrepreneurial skills, and research skills. These relationships were explored through the results of rank order correlation or Spearman's rho correlation coefficient. The data supported the hypotheses at the 0.05 level of significance.

Positive relationships from slight to moderate correlations were found to exist between the major required skills and competencies and the five dimensions or characteristics of the personal qualities of information professionals. Results also revealed that the correlation between the major required skills and competencies and the five dimensions or characteristics of personal qualities were all highly significant. This implied that the requirements in the major required skills and competencies and the five dimensions or characteristics of personal qualities by the employers of the MSC status companies are equally important. These findings were comparable with those found in a study done by Finlay and Finlay (1991) and Garrod (1998). The result of this study supported Garrod's (1998) findings that personality is linked to the acquisition of skills and expertise. Information professionals with a proactive approach to IT, confident and interested in technology are important skills to have. Those who consider themselves

"professionals" took more responsibility for their own personal development and keeping up-to-date with development. Finlay and Finlay's (1991) study on relationship between personality trait of innovativeness and knowledge on Internet, revealed that those high in the innovativeness tend to hold more positive attitudes toward the Internet, regardless of knowledge level.

The results from this study show that there is a relationship between the required personal qualities and competencies among the employers of the MSC status companies. The findings suggest that the required personal qualities and competencies of information professionals are equally important. Therefore, graduates who possessed the required personal qualities and competencies would have better chances to work in the MSC status companies.

To summarise the hypotheses, Table 5.2 summarises the results of the hypotheses testing.

Table 5.2
Summary of Results of Hypotheses Testing

H#	**Research Hypotheses**	**Support**	**Reject**
H1	There are no statistically significant differences among the three different groups of the MSC status companies (System Integration, Creative Multimedia Cluster, Internet-based Business) regarding the competencies required of information professionals	/	
H2	There are no statistically significant differences between the Malaysian and foreign shareholders groups of the MSC status companies regarding the competencies required of information professionals	/	
H3	A significant relationship exists between the required personal qualities and information technology-related competencies for information professionals working in the MSC status companies	/	
H4	A significant relationship exists between the required personal qualities and multimedia-related competencies for information professionals working in the MSC status companies	/	
H5	A significant relationship exists between the required personal qualities and knowledge management competencies for information professionals working in the MSC status companies	/	

Table 5.2, continued

H6	A significant relationship exists between the required personal qualities and management skills for information professionals working in the MSC status companies	/	
H7	A significant relationship exists between the required personal qualities and interpersonal and communication skills for information professionals working in the MSC status companies	/	
H8	A significant relationship exists between the required personal qualities and entrepreneurial skills for information professionals working in the MSC status companies	/	
H9	A significant relationship exists between the required personal qualities and research skills for information professionals working in the MSC status companies	/	

5.7 Suggestions

Based on the findings, several suggestions and recommendations are put forward to solve the problems and to assist the relevant authorities in the academic institutions and in the industry, in achieving the requirements needed by employers of the MSC status companies. The suggestions and recommendations include strategies for developing the skilled information manpower resources, innovative curriculum design at national and faculty levels, curriculum revision and update, developing a national competency model, compulsory subjects required by employers (including subjects in information technology, multimedia, knowledge management, management, interpersonal and communication, entrepreneurship, and research), smart partnership between faculty and industry, pool of skilled and talented lecturers, and continuous competency and validation process. Some suggestions and recommendations are made by the researcher on the basis of the findings; others are based on studies, articles, and personal opinions in the literature, where the authors' names are mentioned.

5.7.1 Reevaluation of Educational Curriculum for Information Professionals

The Eighth Malaysian Plan 2001-2005 (Economic Productivity Unit, 2001) mentioned that investment in human capital will be increasing, with greater emphasis on nurturing creativity and cognitive skills to give momentum to the knowledge-based economy. It further stated that "*the education and training system will be geared toward producing multi-skilled and knowledgeable manpower that is versatile, willing to learn continuously, technopreneurial as well as with the ability to acquire and apply knowledge, particularly in modern technology*" (p. 111).

Therefore, those who are involved in human resource planning, education and training must think of strategies for building skilled and quality information professionals to escalate the global and national demand for skilled knowledge workers in which information professionals are included. The authorities should give serious considerations to the quantity and quality of skills and knowledge that information professionals need to acquire in order to become successful players in nation building. The demand for local knowledge workers by world-class firms that have moved their major operations in the country, and specifically in the MSC region, should motivate the authorities in the Malaysian institutions of higher learning to produce quality and "world-class knowledge workers." Therefore, a more comprehensive and holistic approach to train and educate future information professionals must be adopted.

5.7.2 Innovative Curriculum Design at National and Faculty Level

To ensure students are prepared to work in the knowledge-based and multimedia industry, educators must design a curriculum that includes the cutting-edge information and information technology components. Technologies should underlie all

specialisations within the professions (Woodsworth, 1997). The curriculum design should be innovative and be applied not only at faculty level but also national level.

Dosa (1985) had earlier reminded that "*educational programmes aimed at preparing people for emerging roles in an information society need to integrate curriculum, social awareness, professional standards and ethics, research, policy analysis and field experience with practitioners.*" In order to develop an effective information science curriculum, educators and the learning authorities must identify competencies and skills which are needed by practitioners and employers. In the field of librarianship, there has been no instrumentation developed specifically to measure practitioner attitudes towards curricular content.

An innovative curriculum design should think of producing graduates who acquire up-to-date competencies so that they could work in any kind of knowledge-based industry or multimedia companies. Since information graduates are competing with computer science graduates, it is important that they acquire hybrid skills which are the soft and the technical skills. Information professionals should be equipped with information knowledge not in isolation, but they must also be strong in knowledge such as information technology, multimedia, communication, entrepreneurship, and human management. Bill Gates appropriately noted that:

> "Building a pool of software developers to meet the needs of Malaysia's digital economy starts with education. We need to accelerate the transfer of skills and knowledge to students and teachers, so that they can enhance their core competencies for today's Internet economy." ("Microsoft Knowledge Capital Centre," 2000)

A triangular holistic curriculum model was put forward by Tengku Mohd *et al.* (1999), on the IT-based curriculum for the creation of knowledge workers for the MSC (see Fig. 5.3). The proposed model would create a wholesome and rounded knowledge worker who is knowledgeable, skilful, possesses entrepreneurial ability, and

professional in his undertaking. He also possesses a strong spiritual, ethical and social awareness when carrying out his duties. This holistic manpower model was particularly designed to create IT knowledge workers but can be used to create knowledge workers in all fields. Perhaps, curriculum designers in the information field could think of adapting this model when designing their curriculum.

Figure 5.3
A Holistic Model of Manpower Creation of Knowledge and Skills

Source: Tengku Mohd *et al.* (1999)

5.7.3 Curriculum Revision and Update

The global change in the information, communication and technology (ICT) has forced the Information faculties and departments to tune their curriculum content toward these changes. Curriculum design is a continuous activity and not a one-time effort. The curriculum must be periodically reviewed, updated and reorganised. Wright (1997) also stressed that library and information schools must have an obligation to on-going curriculum review. The present research reinforces the feasibility of a core curriculum based on critical competencies for information professionals.

Moore *et al.* (1998) provided guidelines that should be included in a curriculum for the training of information professionals to equip them for work in an information society. They suggested four basic sections. They are: creation, collection, communication, and consolidation. It will be necessary to cover all the four sections of the curriculum even though they produce a degree of duplication and repetition. Knowledge, skills, and tools are the three elements the curriculum should cover.

Knowledge management is the most recent addition to the curriculum. An evidence from the study revealed that competencies in knowledge management were the most important requirement of competencies for the Internet-based Business group of companies of the MSC status companies. The Faculties and Departments of Information Studies can improve the syllabus by adding the required knowledge management competencies in the newly revised curriculum.

Knowledge management requires a mix of technical, organisational and interpersonal skills. Those involved need to be able to understand the business, communicate effectively and have at least basic competence in handling information and using IT. Davenport and Prusak (1998:110) remarked that:

> "Good knowledge workers at any level should have a combination of 'hard skills' (structured knowledge, technical abilities and professional experience) with 'softer traits' (a sure sense of the cultural, political, and personal aspects of knowledge). Well- rounded isn't necessary for everyone, but it is particularly important for those who work closely with knowledge users. At a minimum, knowledge management teams should combine these orientations, and each member must respect all required skill sets."

Curriculum revision and update could be achieved through collaboration between universities and industries, between the universities and the professional associations, and between universities and the alumni.

5.7.4 Developing a National Competency Model

Developing a national competency model is essential. The results of this study can form the basis for a national competency model. The faculties involved with the information studies programmes must work together with other universities running the similar programmes, and later, work together with the Ministry of Education to form a national competency model. This model can be followed by faculties and departments preparing for information studies' programmes as a guideline to design their curriculum.

5.7.5 Compulsory Subjects Required By Employers

The results of the study indicate that there are certain subjects that have been emphasised as being essential by employers and therefore, they need to be made compulsory. Subjects that can be made compulsory are multimedia, knowledge management, management, interpersonal and communication, entrepreneurship, and research, which form the "softer skills" and information technology which forms the "hard skills" and essential to be included in the curriculum.

The literature mentions that information professional needs to be a well-rounded person who possesses "hard skills" and "soft skills" or a hybrid of skills. Besides having the traditional information studies subjects as core subjects, a "softer" technical subject could also be made compulsory. Information-based subjects such as developing multimedia modules, designing on the Web, and developing search engines could be made compulsory, no matter what stream the students are in.

(a) Information Technology and Multimedia

In this study, "skills in using Internet technologies," and "knowledge of basic computer technology" ranked ahead of other skills in the information technology-related competencies. Meanwhile, "creative skills and use of graphic software" and "knowledge of content management and development" ranked top of other skills in the multimedia-related competencies.

When Rehman *et al.* (1998a) conducted a survey among the professional leadership of library and information organisations in Malaysia, the respondents were skeptical about the adequacy of computing and IT application skills among the information professionals. They were critical that the professionals lacked the needed information technology capabilities. Currently, information technology has been taking an increasingly larger share of the curriculum.

Although there is an overlap with the computer science and management studies, both are relevant to the management of information. Information technology is a tool for information professionals. Besides being a user of information technology, information professionals are crucially involved in the planning and development of databases, systems and networks of IT-based information services, and Internet technologies.

It is important that information professionals be creative and able to use graphic software, and have the knowledge of content management and development since the MSC status companies do most of the jobs that require this knowledge and skills. Abell and Oxbrow (2001) mentioned that content management is fast becoming a fundamental pre-requisite of success. Information technology and multimedia should be taught as a compulsory subject from the early to the advanced stages, and information technology elements should underlie all subjects.

(b) Knowledge Management

An evidence from this study reveals that abilities to acquire, retrieve, analyse and disseminate knowledge using IT tools; and ability to manage value-added information for strategic decision making ranked ahead of other skills in the knowledge management competencies.

Knowledge management is a subject that should be made compulsory right from the degree level. In this knowledge age, it is very crucial that competency on knowledge management be mastered by information professionals. The knowledge management environment is demanding. Abell and Oxbrow (2001:105)) stated that:

> "KM environments need reflective and thoughtful people as well as those who seize the opportunity. They need completers and finishers as well as visionaries, mavericks and facilitators; people with an eye for detail as well as those with vision on the grand design. It is the mix of skills and personalities, and the ability to manage that mix well, that provides the potential creativity required."

(c) Management

An evidence from this study shows that the System Integration group and the Creative Multimedia Cluster group of the MSC status companies placed management skills as the top most required skills of information professionals. The findings in this research also reveal that all the three groups of the MSC status companies agreed that the ability to solve problems was the top most required skill in management. Unfortunately, this ability to solve problems is lacking in information professionals as found in a study by Garrod (1998). Several managers felt that their staff lacked critical thinking and problem solving abilities and they tend to have "doing" not "thinking" skills (Garrod, 1998:250). Thus, educational institutions should include management subjects in the curriculum and lecturers delivering this subject must give great emphasis on these skills requirement.

(d) Interpersonal and Communication Skills

The success of students would not merely depend on the theories and concepts of the subjects they have learned; they would also require adequate interpersonal and communication skills to work effectively at their workplace. According to Abell and Oxbrow (2001), many organisations are developing competency profiles or frameworks that reflect the need for interpersonal skills, and the development of learned experience throughout the organisations.

In this study, "speaking English proficiently" and "writing English competently" ranked ahead of other skills in the interpersonal and communication skills. Rehman (2000) found that many respondents were concerned about the deficiency in foreign language skills of the new graduates particularly in the English language. Therefore, curriculum designers and academicians must think of ways of improving the standards of spoken and written English language in their curriculum design. Most organisations especially the IT and multimedia-based companies interact mostly in the English language and they prepare and create documents in the English language.

(e) Entrepreneurship

The findings of this study shows that "business analyses skills" and "knowledge of cyberpreneurship" of the entrepreneurial skills ranked the top most required skills of information professionals.

Businesses are increasingly using ICT to perform business-to-business and business-to-customer transactions. The Internet has fueled the growth of e-commerce offering access to global markets. The growing numbers of e-commerce industries and dotcom companies reflect the increasing demand for knowledge and skills in cyberpreneurship. This new type of industry needed the most sought after job titles in

the market, among them are: web application developer, web designer, e-business specialist, and web master. Because of the growing need for the e-commerce workforce, students could be trained to prepare them to join this type of workforce.

Besides having business knowledge and information skills, graduates are expected to be literate in both technical and non-technical areas of e-commerce as this will help them manage these businesses effectively. They should be trained to have the business analyses skills as required by the employers. They should also be equipped with cyberpreneurial and web design skills in order to complement with other IT and computer science graduates.

Norsaidatul *et al.* (1999) mentioned that knowledge workers should not only be information literate and have paper qualifications, but also have the knowledge to understand global, business and organisational and technological issues. However, Abell and Oxbrow (2001) felt that the skills developed by many information professionals were diluted by the lack of business understanding. Thus they should develop these interpersonal and business skills.

(f) Research

An evidence from the findings of this study shows that research skills are important, and particularly, the "ability to communicate research findings" is the most important research skill.

The rapid global, economic and social changes have put significant pressure on the education system to promote research. The faculties should think of the importance of research and set out a commitment to develop and enhance research. Research should be made a compulsory subject in the curriculum beginning from the under-graduate level. Students need the fundamental skills and knowledge of doing research. They

will learn basic research using scientific methodology, acquire skills of investigation and analysis, and show their persistence, patience and ability to complete their research projects. Conclusions and findings of research will be based on supporting evidences. Problems solved and decisions made will foster life-long learning. This will encourage them to be habitual high-level critical thinkers, inquisitive, open-minded, and adaptable to changes.

Research is important for the advancement of knowledge and it should be made a principal element in the faculty. Research and graduate education should be the fundamental roles of the faculty's strategic plan because of the prominent role research plays. Under-graduates work with the graduate students and faculty members on research and they can become partners in the pursuit of knowledge discoveries. These research students will be research leaders of the future and wherever they work, research will play a vital role. As Steid (1992:97) pointed out "*research keeps the mind alive, research makes a contribution to knowledge.*" Furthermore, research provides value to the students, the university, the professions and the industries.

(g) Personal Qualities

In this study, employers of the MSC status companies ranked "responsible and reliable" and "works well with others in a team" as the most required personal qualities of information professionals. Therefore, these are the characteristics of a person that employers of the MSC status companies are looking for.

In preparing the information professionals to work in the new environment of the K-economy, there are certain traits required by the information professionals if they want to be successful workers in the global environment. It is important for graduates to have proper values and attitudes. There is greater need for information professionals

to acquire "soft" skills such as communication skills, and a high EQ (emotional quotient) ("Get Set for the K-economy", 2001).

Grover *et al.* (1997) emphasised that professional curricula must support the preparation of professional problem-solvers who are creative, flexible and innovative besides being fluent in the technologies. This is also in the Malaysian context where educational institution are encouraged to be creative and innovative in the curriculum design ("Get Set for the K-Economy," 2001). The education and training systems could help foster and inculcate positive values by embedding these skills in teaching and learning of subjects.

5.7.6 Smart Partnerships Between Faculties and Industry

There should be a partnership between the industries, practitioners and educators. Educators need to provide a policy that involves collaborating graduates from the information faculty with the MSC status companies or the private sector IT companies. For a long-term solution to workforce needs, faculties must develop partnerships with companies to expose students to high-tech careers and students learn the skills needed in business environments. The industry should provide avenues where information students are given the opportunities to do on-the-job training or practical training.

The Multimedia Development Corporation (MDC), in collaboration with the Ministry of Science, Technology and Environment, is coordinating an attachment programme for students to carry out industrial training at the MSC status companies. This programme intends to provide experience relevant to the industry, and entrepreneurial exposure to students pursuing ICT-related courses in institutions of higher learning (Multimedia Development Corporation, 2002b). The Faculties and Departments of Information Studies can participate in this initiative.

Practitioners from industries can jointly help design a curriculum that recognises the realities of information, information management, and knowledge management by including both theoretical and practical components.

5.7.7 Pool of Skilled and Talented Lecturers

Evidences from the results of the study indicate that the employers of the MSC status companies emphasise certain skills that are highly required of information professionals working in their companies. This implies that we need better quality students and therefore, lecturers need to improve their knowledge and teaching skills.

To produce quality graduates, the lecturers themselves must be competent, highly skilled and most up-to-date in their subject fields. Lecturers must continuously improve their teaching methods and update their subject knowledge. Lecturers must evaluate their teaching performance from time to time. They must go for continuing education, short-term courses, seminars or acquire knowledge through distance learning so that they will be continually upgrading their skills and knowledge. They should also undertake research in areas that are beneficial to the faculty, institution or the country so as to contribute to the world of knowledge.

This opinion is in line with the Eighth Malaysian Plan 2001-2005 (Economic Productivity Unit, 2001:112) that remarked "*the ability of the education system to increase the supply of knowledge will depend, to a large extent, on a pool of highly trained and motivated teachers.*" Therefore, the Faculties and Departments of Information Studies can produce quality students if the lecturers themselves are highly skilled and talented in their teaching.

5.7.8 Continuous Competency and Validation Process

An on-going process of competency and validation identifications could provide an objective framework for the design of education and training programmes in the information field of study. The validated competencies assist in the designing of the desired core contents of the curricular of information education and training programmes. Competencies related to information, information technology applications, management skills, communication skills, business skills, and research skills are considered essential for future professionals. Curriculum designers should embed these competencies within a strong theoretical and conceptual information studies framework. Education and training programmes should be evaluated against validated sets of competencies. The current state of the information technology and multimedia, the level of professional maturity, national priorities, and the country's vision require a definition of professional competencies. Competencies that have been identified years ago need to be reviewed from time to time in accordance with current global changes.

Directions For Future Studies

The findings from this research represent a promising area for future work and developments on the requirements of competencies. Several possible areas of future research resulting from this study are:

1. Larger scale study that could include nation-wide IT-based companies to identify the skills, knowledge, and attitudes required by the industry and to match them with the skills, knowledge, and attitudes acquired by information graduates.

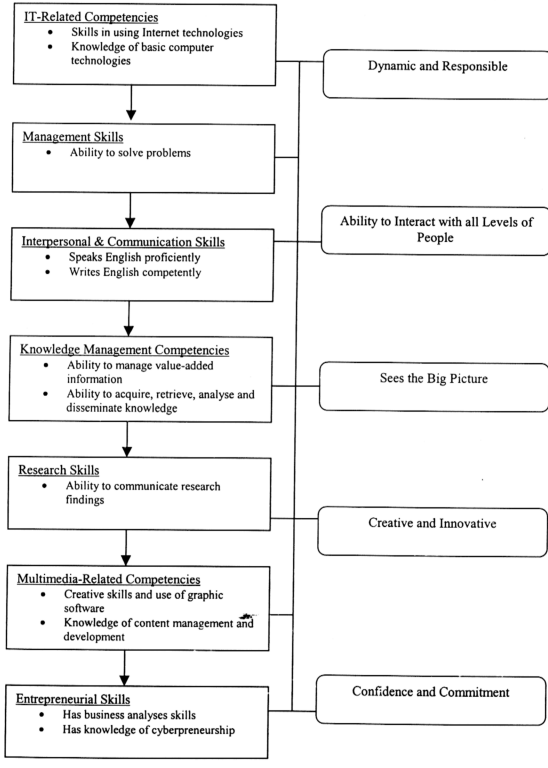
2. Studies comparing the employer's ratings on required competencies against the employees' actual job specifications.
3. Studies comparing information studies curriculum against the skills and knowledge demanded by the industry.
4. Studies on determining the factors that influence employers' demand for the competencies required of information professionals.
5. Studies comparing the competencies required of information professionals by employers of information-based organisations and the IT-based industry.
6. Studies on knowledge management competencies, since this area has become very important.
7. Studies on personal qualities or attitudes of information professionals required by employers from various background of industries to be done separately but on a larger scale.
8. The present study could be replicated or modified to explore a different list of competencies.
9. An in-depth study on determining the relationships between required competencies and personal qualities of information professionals working in information-based organizations could be conducted.
9. A more in-depth competency study could be conducted, similar to that conducted by the King Research, the Special Library Associations or the SCANS.

Conclusion

This study has presented information from employers of the MSC status companies regarding their requirements in competencies and personal qualities of information professionals who want to work in their organisations. The study found that the MSC

status company environment requires information professionals to have a mix of "hard" and "soft" skills and knowledge, and personality or personal qualities that are appropriate competencies for the organisations. It also suggests that graduates should be multi-skilled. In particular, the most required skills and competencies needed by the MSC status companies are management skills and knowledge management competencies. The personal qualities of information professionals are also important requirements. The results of the hypotheses testing also reveal that the requirements of competencies are almost similar among the three groups of the MSC status companies. Another important finding was, there was a relationship between required competencies and personal qualities of information professionals and both are equally important requirements needed by employers of the MSC status companies. Figure 5.4 illustrates the required key competencies and the relationship between the key competencies and the five dimensions of personal qualities of the MSC status companies.

Figure 5.4
A Conceptual Model of Required Key Competencies and the Relationships with Personal Qualities of Information Professionals of the MSC Status Companies



The findings reveal that there is not much difference in the ratings by the different company groupings, indicating that the requirements are generally alike across companies. The results also seem to imply that the required competencies and personal qualities can be applied across other types of companies. The different company groupings also gave moderate ratings on the competency scales and rating differences between company groupings are not significant in the majority of cases. The reason for this could be the companies are likely to be information technology and business entities so they placed equal importance and similar requirements in the required competencies. Another reason could be that the employers are not really sure of what they want from the information professionals. It could probably be that the employers could not distinguish the differences between the job specifications of the information professionals and the computer science and information technology graduates. Furthermore, more than half of the companies sampled did not employ information professionals and the employers might not know what they want from the information professionals.

One clear limitation of this study is that it looks at only the employer's point of view. A small sample of the information professionals already working in the MSC status companies could provide information about what were their actual job specifications, what limitations they felt that they lacked in performing their duties, and how much they agreed with the competencies listed. This could be compared to the employer's ratings to find out whether there were overlaps or dissimilarities in the job perceptions between the two parties. This would perhaps provide a more wholesome picture of the situation being studied. The interviewing of currently employed information professionals was beyond the scope of this study, and would have

introduced other elements to the objectives of this study. This input from the working information professionals can be taken up in a subsequent study.

It is hoped that the information produced through this study will be of use to the betterment of the information professionals, and serve as a contribution to the body of knowledge.