

MANAGERIAL PERFORMANCE MEASURES IN MANAGEMENT ACCOUNTING PRACTICES OF MALAYSIAN INSTITUTIONS OF HIGHER LEARNING

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Abstract

While attention has been paid to other industries exhibiting effective use of management accounting practices (MAPs) and performance measurement systems, Malaysian service industry in general and education sector in particular have received less. At its inception, this research examines the performance of Institutions of Higher Learning (IHLs) in providing management accounting functions by way of looking at the relationship between the application of management accounting techniques (MATs) and the performance of managerial activities of IHLs. This takes into account the ramifications on two different sets of techniques used, i.e., traditional MATs (TMATs) and advanced MATs (AMATs). This study also identifies the relevant key performance indicators (KPIs) of IHLs as to determine the best practiced measures for tertiary institutions within the Malaysian context.

Data are drawn from a survey among finance offices of both public and private IHLs of 32 responses. Findings indicate the use of performance measurement by in institutions of higher learning (IHLs) is pervasive, although survey respondents are less enthusiastic about measurement effectiveness. Study results show subtle distinctions between public IHLs and private IHLs in their use of performance measurements for management accounting functions. Research findings further indicate the eagerness of Malaysian IHLs in using KPIs as one of their MATs in order to obtain the benefits of best management accounting practices.

Keywords: *management accounting practices; managerial performance measures; institutions of higher learning; Malaysia.*

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Introduction and Objectives of the Study

It is undeniable that the education sector in Malaysia is growing and progressing very rapidly. This can be observed from the emanation of new Institutions of Higher Learning (IHLs) especially those with the status of ‘*university*’ and ‘*university college*’ that are aggressively eager to capture the global market as the Malaysian education industry starts turning global. To date, there are more than 20 public IHLs and 25 private IHLs (Department of Private Education, Ministry of Education Malaysia, 2007). Such a status represents the backbone of this study.

Imaged as academic centres of excellence, institutions of higher learning are expected to demonstrate sterling performance by way of revamping and improving existing systems to remain competitive. Providing world-class education and attaining international recognition have been their main agenda. In this vein, education providers in the country are urged to exercise pro-activeness to complement the former Prime Minister, Datuk Seri Abdullah Ahmad Badawi’s vision to promote educational excellence that can attract and enhance the competitiveness of tertiary education industry with appropriate standards that reflect their credibility to offer world-class educational services. The Prime Minister has highlighted on the education tourism that will continue to be promoted in years to come as a national agenda to further encourage quality education system. As such, education providers are expected to give their fullest support to make this effort a success. In a similar tone, there are calls that demand Malaysian IHLs to push for excellence by working harder to become centres of academic excellence to attract more foreign students (Sarban, 2004).

On a critical note, IHLs are seen to be in a state of turmoil and fiscal crisis (Tatikonda and Tatikonda, 2001). Tatikonda and Tatikonda (2001) assert that escalating costs, diminishing resources, increased competition, unhappy customers (students, parents, etc.) and legislators demanding accountability are pressuring these education institutions to manage their costs better without reducing quality. Hence, to achieve the national agenda and tackle the crisis successfully, reforms have to be made by improving or upgrading existing systems to meet these specific needs. One of the reforms is the management accounting aspect of organisational activities such as planning, decision-making, performance appraisals, etc. All these activities contribute to the academic vitality and financial well being of IHLs and monitoring how effective they are in delivering their services to the final clients or customers (Azhar and Abdul Rahman, 2008). This gives them an alternative view as to how they should formulate better planning and make informed decisions for organisational activities. Thus, we propose good manageable systems be installed within Malaysian IHLs with management accounting being an important agent within this diverse operational framework.

In line with the above, it is timely for tertiary institutions to make vital and necessary changes to its financial and non-financial administrations to respond to those global challenges in order to remain resilient. In this respect, appropriate management accounting techniques (MATs) must be used as best practices to assist them in making informed decisions. When MATs are put into practice, performance and prestige will certainly be enhanced to a greater height.

This study is undertaken based on the notion that some successful service organisations in Malaysia have effectively used MATs as their strategic tools for example in Malayan Banking Bhd. (a financial institution), and Telekom Malaysia Bhd. (a telecommunication operator). They both won the Excellence Award in the *National Award for Management Accounting (NAfMA) Best Practice in 2004 and 2007* respectively. Considering their best management accounting practices (MAPs), we attempt to look at some of the practices in another sector of service industry, i.e. education sector, to better understand the usefulness and relevancy of the diverse management accounting functions. An insight on how IHLs can assimilate the practices of other service organisations is therefore useful.

We acknowledge that many organisations, including service organisations, have traditionally regarded management accounting as a field of activity that mainly focuses on calculating costs and prices. However, in today's scenario, it is seen as a field that encompasses an ever-increasing number of activities as indicated by Evans and Bellamy (1995); Laitinen (2003); and Azhar and Abdul Rahman (2008). This can include planning, evaluating and analysing, controlling, rectifying problems, justifying the decision-making processes involving both the financial and non-financial aspects and perspectives.

Based on the overview, the objectives of this research are two-fold. Specifically, this study is carried out to achieve the following objectives:

- i. To examine the correlation between the application of MATs and managerial performance measures in IHLs; and
- ii. To identify the key performance indicators (KPIs) of the best management accounting practice that are applicable to IHL settings in Malaysia.

Managerial performance measures are included as part of the discussion to measure the effectiveness of the application of MATs in IHLs' setting. The research then recommends steps to be taken in promoting management accounting functions within tertiary education institutions in the pursuit of centres of excellence to improve future performance.

In addition to the discussion on the performance measures of managerial activities, the identification of KPIs for universities in Malaysia in attaining world recognition is also included as part of the review in the following section.

Literature Review

The purpose of management, as described by IFAC (1998), is to enable making people capable of joint performance of people through common goals, common values, right structure, and providing the training and development they need to perform and respond to change. The central purpose of the management process is to secure, as it faces change, the vitality and endurance of an organisation through the ongoing co-ordination of activities, efforts and resources (IFAC, 1998). Thus, the management process includes establishing organisational directions; and aligning organisational structures, processes and systems to support established directions; securing the commitment at a requisite

level of those contributing essential skills and effort. All these are taken care of by MAPs in strategic management accounting functions discussed below.

The Management Accounting Techniques and Practices

Most management accounting communities realise that there are many developments within the management accounting areas based on Kaplan's and his proponents views over the contemporary management accounting issues. According to Roslender (1995), this might be best understood as an important aspect of a more general response to the challenge of securing a sustainable competitive advantage in the global marketplace. Such an aspect is common in the manufacturing environment. However, this does not mean that only manufacturing organisations are affected. Instead, it applies to the others as well including service organisations like education institutions in particular, even though there are obvious environmental differences between educational institutions and manufacturing entities.

An important issue brought up by many business practitioners is centred on a claim that MAPs are applied in a very limited way in service organisations. However, a number of studies reported that they are experiencing otherwise. In general, service organisations in Malaysia are indeed applying a good practice of management accounting as reported by Azhar and Abdul Rahman (2008). They further indicated that service organisations are far more inclined to apply more advanced and sophisticated techniques as part of MAPs like any other organisations. Some education institutions (specifically universities in the UK) have even started to develop or adopt new systems that provide accurate and timely information for planning and controlling their activities (Cropper and Drury, 1996). The same view is also observed in a study conducted by Azhar and Abdul Rahman (2006) whereby it reveals that the extent of advanced MATs (AMATs) used in Malaysian IHLs, especially the private IHLs, is significantly greater than traditional MATs (TMATs). Most adoptions are assumed to occur because of the benefits and efficiencies gained through the implementation.

We contend in this study that the development of MATs is a result of business activities that demand management accounting technologies to assist organisations in making informed decisions. In this vein, MAPs are claimed to evolve based on organisational needs that have resulted in MATs being used to date by business organisations, both service- and non-service-based. The IFAC's evolution model proposed by IFAC (1998) as shown in Table 1 below summarises the evolution and development of MAPs.

Table 1 suggests that the management accounting evolution can be clearly distinguished into four recognisable evolutionary stages. Each stage is a combination of the traditional and advanced techniques. The processes could be by way of absorption, reshaping or addition. The traditional techniques were reshaped to fit with the new in addressing a new set of conditions in management environment. Thus, the development of management accounting provided by the IFAC's evolution model in a chronological order above is indeed based on organisational needs.

Table 1: IFAC's Evolution Model

Stage one (Prior to 1950)	Most organisations were focusing on cost determination which relate to stock valuation and location of overheads. Managers used cost estimation to control their financial position. Main source of data included financial, income, balance sheet and cash flow statements. Some of the management accounting techniques developed for cost estimation were the Last in First Out (LIFO), First in First Out (FIFO), ratio analysis, financial statement analysis and budgeting.
Stage two (1965 – 1985)	By 1965, the organisations moved into generating information for the purpose of management planning and control. Valuable information was needed to lead managers in making correct decisions and create strategic units. Management accounting techniques such as marginal costing, standard costing, Cost-Volume-Profit analysis, transfer pricing and responsibility accounting were introduced.
Stage three (1985 – 1995)	At this stage, management focused on the reduction of waste and process analysis with emphasis on the cost management technologies. The aim was to eliminate 'non-value' added activities. Some of the techniques practiced were EOQ, Just-in-Time (JIT) and Activity-Based Costing (ABC).
Stage four (1995 onwards)	Organisations focused on enhancing the creations of value through effective use of resources and technologies. Factors or drivers that could enhance customers, shareholders and organisational values were identified. The popular techniques include Total Quality Management (TQM), Activity-Based Management (ABM), Benchmarking and Reengineering.

Critics of management accounting have questioned the relevancy of many MATs, especially the traditional techniques. Kaplan (1988) has argued that the traditional MATs may no longer be valid as the processes change. They concluded that these techniques fail to provide relevant, useful, and timely information on processing activities that management needs for planning and control purposes.

Despite the usefulness and effectiveness of traditional practices being challenged by changing economic environments, many players still prefer to use old methods. The findings from a number of studies (e.g. Chenhall and Smith, 1998; Joshi, 2001; Azhar and Abdul Rahman, 2008) have supported this claim. Their findings indicate that the rates of adoption and the benefits obtained from TMATs are higher than those of AMATs. Studies undertaken by Chenhall and Smith (1998) and Joshi (2001) indicate that the adoption rate for the recently developed techniques had been rather slow and the future emphasis of management accounting in Australia and India would still be on traditional practice due to the fact that higher benefits would be derived from these traditional techniques. However, Azhar and Abdul Rahman (2008) result indicate that Malaysian organisations perceive AMATs to be more useful than TMATs. This is particular to service organisations such as hotel operators, hospitals, educational organisations, etc.

Shields (1998) argued in a study that the new MAPs in Europe and other nations are spreading due to certain factors, such as increased global competition, availability of similar operating technologies, cheap and fast communication methods, increasing global homogenisation of management education, rise of global consulting firms and global

corporations. Likewise in the Malaysian scenario, similar arguments are also presented by Azhar and Abdul Rahman (2006) supporting this notion.

The Management Accounting in Public and Private Sectors

There is no doubt that management accounting is important to both private and public sector organisations in managing their activities. In most cases, public sector organisations (PSOs) are not only influenced by economic considerations but also the social and political factors to carry the mandates and agenda of the ruling government. In line with this, Han (1991) argued that management accounting in public sector should concentrate on three objectives for the value-for-money criteria, which include *economy*, *effectiveness*, and *efficiency*. Han (1991, p. 7) defined each objective as follows:

“Economy is concerned with obtaining and using quality and least-cost input factors to yield maximum results. Effectiveness refers to the degree to which the set of predetermined objectives is achieved i.e. reaching the goals set. And efficiency is indicated by the productivity ratio of input/output.”

Even though it is difficult to achieve these objectives, there are several ways that can be considered by PSOs. One of the ways could be the use of MATs such as standards and budgets to compare with actual data for both accounting and non-accounting information. As such, in order to implement this method successfully, organisations need to have sound and quality accounting systems that suit their environment and management information system (MIS) to produce reliable and accurate management accounting reports. This claim is somehow valid particularly when a large pool of government funding to public IHLs depends on the achievement of quality as judged by an external committee for quality assurance in higher education (Evans and Bellamy, 1995). This would help finance managers of PSOs to make proper planning, decision-making and control of organisations as a result of management accounting information that are both meaningful and stimulating.

According to Anand (1988), management accounting reporting in the public sector should possess seven characteristics, which include *comprehensiveness*, *reliability*, *validity*, *relevance*, *output-relatedness*, *decision-integratedness*, and *timeliness* (pp. 263-265). Han (1991) further added four properties: *acceptability*, *comparability*, *responsibility* and *exceptionality*. He stressed that management accounting in the public sector should provide adequate information flow in respect of direction, size, frequency, and quality. Thus management tools, including MAS that support managerial work, are under pressure to change and meet changing information needs (see Clarke, 1995; Horngren, 1995; Innes, 1999; Lukka and Shields, 1999). Literature also indicates that the traditional role of MAS in PSOs is concentrated on financial planning and control (Drury, 1996).

Improvement in communication and information processing would have stimulated the development of PSOs. According to Tatikonda and Tatikonda (2001), customers have become increasingly demanding about quality, delivery performance and flexibility, as well as cost. In response, innovative management accounting practices (MAPs) such as

Total Quality Management (TQM), MIS, ABC, and BSC are becoming increasingly popular, especially in “*university setting*”.

Although the techniques have played central roles in PSOs’ activities, management accounting in the public sector, however, has been claimed as being practised minimally and it is only from 1980s that government has looked at it seriously (Pendlebury, 1989). Pendlebury (1994) argued that much of the management accounting emphasis, particularly in local government, has traditionally been directed at the process of budget preparation and budgetary control. PSOs, especially in developing countries, often do not prepare management accounting reports. Even when reports are prepared, they are often insufficiently detailed and produced only once a year for the purpose of meeting the external audit requirements. This is because there is no proper guideline on monitoring performance measurement.

On the contrary, MAS are often assumed to be implemented fully in well-managed private sector organisations. This is partly because top management expresses the objectives of the private sector organisations clearly and explicitly to face challenging and competitive business environment. In this respect, performance of the private sector organisations is often assessed on profitability as well as the movement of their share prices in which their shares are traded on the stock exchanges (in the case of public listed companies). Hence, reliable MAS become necessary to facilitate measurement of each unit’s performance within private entities.

As observed by some researchers¹, many private sector organisations still use the conventional approaches even though there are new approaches to management accounting that can help them in managing the decision-making processes better. However, some studies have proved otherwise. Abdul Rahman *et al.* (2002), for example, pointed out that private organisations are now considering implementing new MATs based on their culture and surrounding. Whether they like it or not, appropriate MAS have to be installed and applied accordingly so that organisations can benefit from the implementation of carefully chosen MAS for better organisational results.

The Transformation Demands of Management Accounting Practices in Institutions of Higher Learning

Looking at the context of tertiary education institutions, while public IHLs in Malaysia are serving social and political purposes on behalf of the government, private IHLs are believed to strive for profit maximisation. However, there are a number of initiatives taken by public IHLs such as the formation of subsidiaries and other profit centres² to generate their own income as preliminary measures to prepare for future reduction in government’s allocations. In this regard, wise spending, profit-generating activities, and good MAS should be of public IHLs’ consideration due to their limited resources. Not only that, the issue of cost effectiveness should also be seen as a legitimate public concern because education is a public good in which taxpayers directly subsidise many higher education institutions as noted by Tatikonda and Tatikonda (2001).

Given the current trend of wise government spending, these views have to be seriously taken by affected parties including IHLs. To date, there are a number of initiatives formulated that have been translated into actions by the Malaysian government through the formation of Committee of Public Higher Learning Institutions³ and the introduction of Code of Practice: Quality Assurance in Public Universities of Malaysia, just to name a few. All these initiatives are useful in enhancing the quality in public higher education. In this context, it is interesting to note that the Higher Education Department of the Ministry of Education, Malaysia (2004, p. 9) once quoted:

“...It is no surprise that societal concern for quality in higher education has increased. Demands for transparency in public expenditure and the necessity of defining priorities in education in relation to other socially desirable activities have focused the attention of higher education policy-makers on adopting formal methodological approaches to provide guarantees of quality...”

Based on these criteria, IHLs can develop clear objectives of both qualitative and quantitative and relevant KPIs, as part of the diverse management accounting continuum to cater for various activities. Importantly, by focusing on significant activities, MATs such as ABC could expose long-standing shortcomings in academic planning and potentially challenge the status quo by systematically addressing the issues of cost, productivity, efficiency, and effectiveness (Tatikonda and Tatikonda, 2001) to meet desired objectives. Nevertheless, as far as the common objectives are concerned, most IHLs' aims are more related to customers' satisfaction issues (Tatikonda and Tatikonda, 2001) as well as the objective to achieve the recognition and academic excellence (MOHE, 2004) despite their differing motivations discussed above.

Hence, whether differences between public and private sector management accounting are due to fundamentally different factors or merely representing historical lags or fast development, as Hood (1991) claims that public sector imitates the private sector, is not yet apparent. As noted by Hopper (1999), given the experience of the private sector with conventional accounting techniques, it is possible that similar cracks and unanticipated consequences are emerging within public sector practice sometimes with dysfunctional and bizarre results. This calls for a more detailed comparative analysis of public sector and private sector practices by referring to tertiary education institutions in Malaysia.

Performance Measures

IHLs have been selected as the focus of this study because they account for the bulk of work in providing numerous educational and non-educational services to their customers as well as other clients. As such, the areas that management accounting covers in relation to the performance measurements include the managerial performance and some performance indicators of IHLs with a number of supporting literature considered in this section.

Managerial Performance

In Malaysia, many universities have changed their operating philosophies of services and administrative procedures to improve performance and provide better services to remain competitive. In this regard, the concern is on how the managerial activities in universities are evaluated with the help of MAS. Performance evaluation should be considered as an important aspect of MAS in any organisation since performance evaluation techniques are being heralded as the way to achieve newfound levels of effectiveness and efficiency, particularly in key areas of public enterprise such as education (Evans and Bellamy, 1995).

Ideally, performance measures in management accounting should, encompass main aspects of performance of service organisations that may affect the existing activities, especially the managerial activities, as to monitor their effectiveness in delivering their services. This includes the areas of [1] planning; [2] investigating; [3] coordinating; [4] evaluating; [5] supervising; [6] staffing; [7] negotiating; [8] representing; and [9] general performance as adapted from Mahoney's (1963) framework of managerial performance.

Performance measures should also encourage goal congruence of the units and departments as a whole, focus on future operating results, include both financial and non-financial criteria, and provide means of communication between operations and accounting. Indeed, the use of accounting performance measurement, which is derived from MAS as a control means for performance evaluation purposes, has been advocated by several researchers (e.g. Demski and Feltham, 1978; Merchant, 1981; Kaplan, 1984).

The scope of managerial performance can also be observed in a study by Chia (1995) that examined a pattern of relationship on the interaction effects of control sub-system variables on managerial performance. The implication of the organisational designer is that any changes in one of the control sub-systems (e.g. organisational structure) may necessitate compensating changes in other control sub-systems (e.g. sophistication level of different MAS information characteristic) so as to promote higher organisational performance. The findings reveal that decentralisation significantly moderates the sophistication level of each of MAS information characteristics to affect managerial performance, thus highlighting the benefits that can be derived from a joint consideration of the appropriate control subsystems in an organisation to promote higher managerial performance.

World-Class University Performance Indicators (KPIs)

There is no agreed-upon existing definition of what constitutes a world-class university. The dictionary has defined the term world-class as: "...*Ranking among the foremost in the world; of an international standard of excellence...*".

The context of KPIs in a world-class university can be seen in different perspectives, as there are a number of views offered as to what it is all about. Altbach (2004) lists the following characteristics as benchmarks of international competitive status involving [1] excellence in research; [2] top quality academic staff and favourable working conditions; [3] academic freedom and an atmosphere of intellectual excitement; [4] freedom to pursue

knowledge (academic freedom); [5] significant measure of internal self-governance; [6] adequate facilities for academic work; and [7] consistent and substantial funding to support the university's research, teaching and other functions.

A different perspective of KPIs has been provided by Simmons (2003) where she emphasises that the bedrock of university quality in the US is peer review, a system in which leaders of the field set standards and those leaders are themselves challenged and judged by this process. On the other hand, Mohrman (2005) noted that Ambrose King, former vice-chancellor of the Chinese University of Hong Kong, provides three characteristics of a great university. First, it has faculty regularly publishing their research in the top "defining" journals in their respective disciplines. Second, the graduate student body is truly international in origin. And third, the graduates are employable anywhere in the world. According to Altbach (2004), the concept of a world-class university reflects the norms and values of the world's dominant research-oriented academic institutions. The world-class idea falls into the global sphere. It assumes that the university is competing with the best academic institutions in the world and is aspiring to be the pinnacle of excellence and recognition.

Within the Malaysian context, Dato' Seri Professor Dr. Ibrahim Abu Shah, Vice-Chancellor of Universiti Teknologi MARA Malaysia, had listed the following dimensions to reflect the world-class status. These include [1] academic excellence that is internationally acknowledged; [2] student intake based on meritocracy; [3] expert teaching faculty of international standing; [4] academic programmes that are recognised by international organisations; [5] graduates that are readily accepted by industry and employers; [6] financial and human resources that support academic excellence; [7] good governance; [8] conducive facilities and environment; [9] practice of policies, procedures and mechanisms of evaluation that ensure academic quality; [10] excellent achievements of faculty and students in international academic activities; and [11] establishment of academic linkages with industry and universities, both nationally and internationally (Shah, 2005).

The assessment of performance in service industries is that service activities are extremely diverse and the accounting systems for control are not easily translated from the manufacturing environment where they were developed initially. In service industries, cost control and product profitability present major difficulties. Service organisations in the Australian public sector, for example, are increasingly being required to monitor how effective they are in delivering their services to the final customer, especially where the government is the main provider of their funds. Including "effectiveness" in the control model implies that one must develop a variety of indicators to measure how well an organisation is performing in terms of providing a pre-determined quality of service and value-for-money (Evans and Bellamy, 1995).

Likewise, KPIs have somehow attracted most support from PSOs as advocated by Lapsley and Wright (2004) in their study on the diffusion of management accounting innovations in the public sector. According to them, local authorities reported that the most successful accounting technique is KPIs since the mandated introduction of KPIs on councils by the government.

Accordingly, the performance measurement systems in universities are strongly based on the number of scientific publications on an annual basis (Laitinen, 2003). He further added that Finland financial resources between and within universities are allocated more on the basis of the number of refereed and non-refereed articles. The above have formed parts in the study in such a way that the world-class universities' KPIs within the Malaysia context can be determined.

Research Methodology

This study is carried out in Malaysia where its focus was centred on MAPs in IHLs with the status of '*university*' and '*university college*'. Exploration of MAPs in Malaysian IHLs basically involves two sample groups identified for the purpose of this research, i.e. public IHLs and private IHLs.

As this study limits the samples to those centres of excellence with the status of '*university*' and '*university college*' only, the college- and polytechnic-type institutions and any other non-'*university*' or non-'*university college*' institutions are therefore not included as part of the sample. The reasons are due to the following:

- i. The nature of services offered by these samples of public IHLs and private IHLs is comparable;
- ii. These IHLs are competitive in offering tertiary educational programmes and therefore, more likely to apply MATs to support their operations; and
- iii. The study can be more focused because it is restricted to certain types of IHLs only, i.e. public IHLs and private IHLs with the status of '*university*' and '*university college*'.

This study uses the approach of questionnaire survey where a personally administered questionnaire has been prepared and appropriate statistical analysis techniques have been conducted that are relevant to this study. The questionnaire was sent to 20 and 25 respondents of public IHLs and private IHLs respectively. All questionnaires were sent directly to the finance head or financial manager of each selected IHL for them to respond to the questionnaires themselves or identify other relevant persons able to respond. The questions in the survey were divided into four parts: Part A consists of a series of questions on the background of respondents and general organisational information. Part B consists of five questions related to the application of MATs. Part C relates to the performance measurements of the IHLs, in which respondents were asked to self-rate their universities' performance and identify the relevant KPIs.

This study distinguishes TMATs and AMATs based on the criteria provided by the IFAC's evolution model and also from the literature review (e.g. Azhar and Ibrahim Kamal, 2008; Azhar and Ibrahim Kamal, 2006; Abdul Rahman *et al.*, 2002). For the purpose of this study, TMATs identified include Financial Statement Analysis; Ratio Analysis; Product Costing; Process Costing; COQ; Cost-Benefit Analysis; Decision-Making Analysis; Long-Range Forecasting; Priority Analysis; and Training Needs

Analysis. AMATs, on the other hand, include MBS; TQM; ABC; ABB; Benchmarking; KPIs; AWIS; IAIS; and BSC.

Prior to this, a personally administered pilot survey was initially undertaken involving a total of 10 respondents with the objective to ensure that the instruments used were well understood by respondents, that the wording and measurement were correct and appropriate, and it did not contain sensitive questions that might jeopardise the response rate of the study. Consideration was deliberately emphasised on such issues and revisions were made based on the feedback of the initial questionnaire. The results of the pre-testing suggested that the rating scale provided in the questionnaire was consistent and did not appear to pose confusion to respondents.

The Development of Research Hypotheses

The current study seeks to examine whether there is a correlation between the extent of MATs application and the managerial performance in IHLs. The extent of the application of management accounting in this study refers to the actual usage level of the techniques. This performance measurement is analysed by using nine activities related to managerial activities. They are: [1] planning, [2] investigating, [3] coordinating, [4] evaluating, [5] supervising, [6] staffing, [7] negotiating, [8] representing and [9] general performance. Thus, to organise this study in an objective manner, it is possible to develop research hypotheses. The null hypotheses tested are:

HO₁: There is no significant correlation between the application of MATs and the overall managerial performance in IHLs.

HO₂: There is no significant correlation between the application of MATs and the performance of individual managerial activities in IHLs.

Research Findings and Discussions

Questionnaires in this study were distributed to 45 IHLs with the status of '*university*' and '*university college*' throughout Malaysia. From the 45 questionnaires distributed, there are 32 respondents, which constitute about almost 72 percent of the response rate for this study. Structured telephone calls and reminders not only helped in enhancing response rate, but also provided an understanding on why there was no response from some quarters. Among the reasons for non-response include: [1] claims that they do not have enough time to participate in this survey; [2] finance offices do not have the authority to reveal information to outside parties and the questionnaires should be directed to the vice-chancellors or presidents of the university in question; [3] the absence of managers to act on the surveyed matter (out-station or post vacant); and [4] an expressed unwillingness to participate in the survey. This study finally utilised the 32 completed responses for data analysis.

The results of the study are discussed below.

Background and General Organisational Information of Respondents and IHLs

Profiles of respondents derived from Part A of the questionnaire are shown in Table 2 below. The survey results reported that nine out of the 32 respondents held the position of bursar and CFOs indicating that 28.1 percent of the bursars and CFOs responded to the questionnaires themselves. Hence, the target to obtain some direct responses from this group was achieved with evidence of many responses from bursars in public IHLs compared to CFOs in private IHLs. Their participation was vital as the study aimed to obtain a balanced and comprehensive response from the top management to reflect IHLs' of MAPs. Such direct responses were well welcomed as indicated on the cover letter of the questionnaire. Similarly, deputy bursars and deputy CFOs made up 28.1 percent of nine questionnaire replied. Other respondents comprised of assistant bursars, accounts executives, financial planners, etc. made up another 43.8 percent of the total respondents for this study.

Table 2: Profiles of Respondents

Profiles	Frequency	%	Valid (%)
Present Position			
a. Bursar/CFOs	9	28.10	28.10
b. Deputy Bursar/Senior Accountants	9	28.10	28.10
c. Others	14	43.80	43.80
Total	32	100.00	100.00
Education Level			
a. Doctoral Degree	1	3.10	3.10
b. Master Degree	8	25.00	25.00
c. Bachelor Degree	14	43.80	43.80
d. Professional Qualification	9	28.10	28.10
Total	32	100.00	100.00

Respondents' academic background comprised of one doctoral degree; 25 percent master degree holders; while the remaining had either bachelor degrees or other professional qualifications. From the total of 9 respondents, five are ACCA holders; two CIMA; and another two are CPA Australian graduates. It is noticed that only one of the 15 public IHLs respondents is an ACCA graduate and a fellow member of the association. This conclusion is that private IHLs prefer to employ professional qualification holders for their technical skills in accounting than public IHLs. Other information on the profile of IHLs can be found in Table 3 below.

Table 3: Profile of IHLs

Profile	Frequency	%	Valid (%)
Types of IHLs			
a. Public IHLs	15	46.90	46.90
b. Private IHLs	17	53.10	53.10
Total	32	100.00	100.00
Size of IHLs			
a. Small IHLs	19	59.40	59.40
b. Large IHLs	13	40.60	40.60
Total	32	100.00	100.00
MA Unit Structure of IHLs			
a. IHLs With MA Unit	15	46.90	46.90
b. IHLs Without MA Unit	17	53.10	53.10
Total	32	100.00	100.00

Use of Management Accounting Techniques in Malaysian IHLs

A specific outcome has been generated for the study by classifying each group of IHLs into either TMATs or AMATs. We classify MATs into these two categories by referring to the characteristics provided by the IFAC's evolution model and review of relevant literature. Actual usage of the prevailing MATs is determined using the Likert-type scale of above than "3" to denote the practices. A cross-sectional analysis on the practices of MATs reveals another set of findings as depicted in Table 4 below.

Table 4: A Cross-Sectional Analysis of Current Management Accounting Practices in Public IHLs and Private IHLs

Variables	Public IHLs (% Use)	Private IHLs (% Use)
Traditional Management Accounting Techniques (TMATs)		
1. Financial Statement Analysis	60.00	47.06
2. Ratio Analysis	46.67	41.18
3. Service/Product Costing	60.00	47.06
4. Process Costing	40.00	11.76
5. Cost of Quality (COQ)	33.33	35.29
6. Cost-Benefit Analysis	60.00	47.06
7. Decision-Making Analysis	73.33	58.82
8. Long-Range Forecasting	53.33	64.71
9. Priority Analysis	60.00	23.53
10. Training Needs Analysis	40.00	23.53
Advanced Management Accounting Techniques (AMATs)		
1. Modified Budgeting System (MBS)	80.00	35.29
2. Total Quality Management (TQM)	20.00	23.53
3. Activity-Based Costing (ABC)	20.00	47.06
4. Activity-Based Budgeting (ABB)	26.67	52.94
5. Benchmarking	53.33	58.82
6. Key Performance Indicators (KPIs)	26.67	82.35
7. Academic Workload Info. System (AWIS)	26.67	29.41
8. Integrated Accounting Info. System (IAIS)	66.67	88.24
9. Balanced Scorecard (BSC)	20.00	58.82

The questionnaires listed 19 MATs according to their phases as set out in Part B of the questionnaires. A five point Likert-type scale ranged from “1” (never) to “5” (always) was used to determine the actual usage or extent of MAPs in public and private IHLs considering all of the techniques listed.

Table 5 below presents the mean scores and the ranking of 19 MATs used in public IHLs.

Table 5: The Mean and Rank of Selected Management Accounting Techniques in Public IHLs

No.	Techniques	Mean	Rank
1.	MBS	4.33	1
2.	IAIS	4.00	2
3.	Priority Analysis	3.87	3
4.	Financial Statement Analysis	3.80	4
5.	Service/Product Costing	3.80	5
6.	Decision-Making Analysis	3.80	6
7.	Cost-Benefit Analysis	3.73	7
8.	Long-Range Forecasting	3.67	8
9.	Training Needs Analysis	3.40	9
10.	Ratio Analysis	3.33	10
11.	Benchmarking	3.27	11
12.	Process Costing	3.13	12
13.	KPIs	3.00	13
14.	TQM	2.93	14
15.	AWIS	2.80	15
16.	COQ	2.67	16
17.	ABB	2.33	17
18.	BSC	2.27	18
19.	ABC	2.20	19

The first 13 techniques (ranging from MBS until KPIs) as shown in Table 5 above are the techniques that have the mean scores of at least 3.00. These are among the most frequently used techniques in many Malaysian public tertiary institutions. Interestingly, the above table highlights that there are two AMATs, i.e. MBS and IAIS that public IHLs use most with mean score of at least 4.00.

As opposed to MAPs in public IHLs, the mean scores of each technique practiced in private IHLs are shown in Table 6 below with some differing results. The first 14 techniques (ranging from KPIs to AWIS) are the common techniques adopted and practiced by private IHLs that have the mean scores of more than 3.00.

Table 6: The Mean and Rank of Selected Management Accounting Techniques in Private IHLs

No.	Techniques	Mean	Rank
1.	KPIs	4.41	1
2.	IAIS	4.29	2
3.	Long-Range Forecasting	4.06	3
4.	Decision-Making Analysis	3.71	4
5.	Financial Statement Analysis	3.65	5
6.	Benchmarking	3.65	6
7.	Service/Product Costing	3.47	7
8.	MBS	3.41	8
9.	BSC	3.41	9
10.	Ratio Analysis	3.35	10
11.	ABB	3.29	11
12.	Cost-Benefit Analysis	3.24	12
13.	ABC	3.24	13
14.	AWIS	3.06	14
15.	COQ	2.94	15
16.	TQM	2.88	16
17.	Training Needs Analysis	2.71	17
18.	Priority Analysis	2.59	18
19.	Process Costing	2.35	19

The Correlation between the Application of Management Accounting Techniques and the Managerial Performance in Malaysian IHLs

The most important aspect of MAPs lies in its performance in the context of managerial activities, which determines MATs' effectiveness in assisting the organisational activities. In this study, the correlation between the application of MATs and the managerial performance in IHLs itself could be observed in two measures to determine the validity of the first null hypothesis (H_{01}) that there is no significant correlation between the application of MATs and the overall managerial performance in IHLs.

This involves using Pearson's coefficient of correlation test to investigate whether there is a significant relationship between the extent of application of MATs and the average mean of the overall performance of managerial activities' means concerning [1] planning; [2] investigating; [3] coordinating; [4] evaluating; [5] supervising; [6] staffing; [7] negotiating; [8] representing; and [9] general performance.

To test the second hypothesis, i.e., whether there is a relationship between the application of MATs and the average performance mean of each managerial activity, the Spearman's coefficient of rank correlation is used in order to satisfy part of the first objective of the study.

Table 7: The Relationship between the Application of Management Accounting Techniques (AMATs and TMATs) and the Overall Managerial Performance in IHLs

	Pearson's Coefficient of Correlation	Overall Performance
TMATs	Pearson Correlation	0.255
	Sig. (2-tailed)	0.159
	N	32
AMATs	Pearson Correlation	0.220
	Sig. (2-tailed)	0.227
	N	32

Based on the outputs of Pearson's coefficient of correlation test in Table 7 above, it can be concluded that there are no significant correlations between TMATs and overall performance of managerial activities (p-value = 0.159) and between AMATs and the overall performance of managerial activities (p-value = 0.227). Thus, the null hypothesis (H_0) failed to be rejected. A similar result (no significant correlation) is also produced when the overall performance of managerial activities mean score is correlated against the overall mean usage of MATs. Hence, it cannot be concluded that the overall performance in universities' managerial areas in Malaysia is related to the extent of the overall MATs used.

Nevertheless, when the performance of individual managerial activities is tested against the extent of MAPs, the same results emerged but offer a slightly different revelation as explained in the subsequent page. Table 8 (see Appendix I) portrays the findings on the relationship between the application of MATs and the performance scores of each managerial activity by using Spearman's coefficient of rank correlation test.

The results reveal that there are no significant correlations between the extent of MAPs, being it TMATs or AMATs, and the individual performance of managerial activities, except in the Planning-AMATs (p-value = 0.034) and General-TMATs (p-value = 0.005) relationships that offer significant revealing with positive low correlations in both sets of relationship ($\rho = 0.376$ and 0.486 respectively). This suggests that the extent of AMATs and TMATs used in public IHLs and private IHLs are significantly influenced by planning activities and general activities' performance respectively due to their important roles to make use of the available techniques to increase organisational performance but yet the correlations are still low.

In such instances, IHLs would consider that these activities do not compensate the extent of MAPs practiced and hence, perceive that MAPs do not promote higher managerial performance except for planning activities and general activities. This has produced a contrary result as compared to Chia's (1995) study⁴ in which the pattern of relationship on the interaction effects of control subsystem variables on managerial performance produced otherwise. A point that can be inferred here is that the focus of roles among accountants in making use of the available techniques to increase organisational performance has been devoted more towards the reporting process to meet statutory requirements rather than to improve organisational performance based on information generated and used for decision-making purposes.

The KPIs of Malaysian IHLs

Numerous views have been advocated concerning what constitute world-class universities' KPIs in this study as noted earlier. We acknowledge that performance measurement has become significant in service organisations especially in private IHLs. From the survey responses, it can be seen that 82.4 percent of private IHLs use KPIs as one of their MATs and many private IHLs will start or continue to use these indicators in the future. In contrast, the study found that only 26.7 percent of public IHLs favour the use of KPIs. Nonetheless, there is a move for public IHLs to adopt KPIs as 60 percent of public IHLs respondents plan to use or continue to use this measure in later dates. In line with the aforementioned views and results, this study provides an interesting analysis of KPIs applicable in tertiary education institutions and provides the research agenda concerning performance measures. Based on the Malaysian scenario in public IHLs and private IHLs, the KPIs identified to be relevant in moving towards world-class arena are presented in Table 9 (see Appendix II). These KPIs are based on the survey responses from both public and private IHLs.

Changes in trends and different environment are identified to have persuaded service organisations especially higher education centres to set their KPIs clearly. Respondents of this survey confirm that the stakeholders' satisfaction level was the main element of KPIs in almost all of the Malaysian universities with the highest percentage of 90.6 percent. Ranked next are the excellence in students' academics; effective management resources; efficiency in administrative works; effective management of costs; excellence in researches; inventions and innovations; adequate physical infrastructure; and utilisation of information technology in academic and administration with more than 60 percent of responses in the survey. Out of 32 IHLs, 59.4 percent regard the establishment of academic linkages with industry to be part of KPIs; and 56.3 percent agree that employment or education destination of graduates and world's recognition should be seen as basis to become world-class universities. KPIs that ranked from 12 until 16, however, are not preferred by the majority of respondents with the percentages between 12.5 percent and 46.9 percent. The remainder (3.1 percent) assume other KPIs to include value of grants for R&D; and number of top-notch professors and researchers employed in a university.

To this end, a number of KPIs that are deemed to be more relevant to Malaysian IHLs setting have been concluded to include [1] stakeholders' satisfaction level; [2] excellence in students' academic achievements; [3] effective management of resources; [4] excellence in research, invention, and innovation; [5] adequate physical infrastructure and utilisation of information technology in academic and administration; [6] establishment of academic linkages with industry; and above all, [7] getting world recognition especially those matters relating to world-class university KPIs. As this is a preliminary study, some of these criteria have been somehow taken and adapted based on sources provided by Shah (2005); Altbach (2004); and Laitinen (2003) as discussed earlier. The rest are based on the opinions of the respondents.

As such, it is vital that best MAPs will be based on the above KPIs as a yardstick that will further encourage both public and private Malaysian IHLs towards attaining world-class

universities. This suggests that these institutions see the application of MAT will bring benefits to them. It is also hoped that these new criteria will be referred to by other organisations especially those within the service industry sector to consider them as part of their performance measures of good and manageable systems in the diverse operational framework.

Conclusions and Recommendations

The results of managerial activities performance do provide an insight that the extent of AMATs and TMATs used in public HLI and private HLI are only significantly correlated with planning activities and general activities' performance respectively. This could probably be due to their important roles to make use of the available techniques to increase organisational performance.

In short, MATs or rather practices have changed in response to the challenges of global competition, technological advances and complexity of activities as advocated by Kaplan (1984); Roslender (1995); Shields (1998). All these have been discussed in the earlier part of the study. The adoption of these innovations by IHLs suggests a changing role for the management accounting to better serve their operations and activities. In this vein, it is noted that management accounting provides information aimed at assisting management in the formulation of policies, directing, organising, planning and controlling of activities. The body of thought and practice encompassed by management accounting has changed and evolved in Malaysia and it will continue to do so as determined by time and any other factors to reshape future MAPs in Malaysian IHLs.

Limitations of the Study

The findings of this study should be viewed in light of their limitations. An investigation that merely looks at relationship between the application of MATs and performance of managerial activities is identified as its major limitation. As a result, a model of MAPs in IHLs could not be established. In addition, the findings of this study cannot be generalised to all IHLs like the college- or polytechnic-type and any other non-*'university'* or non-*'university college'* institutions in Malaysia since it is only conducted on the total of 45 IHLs involving public and private educational institutions with the status of *'university'* and *'university college'*.

Another limitation observed in this study surrounds the external validity as it involves primary data. Although external validity is enhanced by the survey approach in this study, the survey is somewhat limited by a lack of contextual information and verbal exchange. And although tests were performed to look for evidence of non-response bias, there was no way to directly test whether the non-respondents are systematically different than respondents. Thus, generalising the results of this study to the entire higher educational institutions population should be done with caution.

Recommendations for Future Research

It would be interesting if this study can be expanded to a larger sample size, to include college- and polytechnic-type institutions and any other non-‘*university*’ or non-‘*university college*’ institutions. Larger sample size might improve the statistical data that can be used; hence, a more holistic picture can be captured. It is also suggested that a qualitative research be conducted, involving in-depth interviews with appropriate persons in respective IHLs.

Also, the contribution of this preliminary study in relation to KPIs of Malaysian IHLs should be utilised fully by IHLs so that extensive studies in this area can be possibly done in the future and that a framework of MAPs in tertiary education industry can be established. Future research is advised to make more contributions in the field of management accounting with regard to service industry in Malaysia as this sector’s contributions to the national development has always been neglected.

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Notes

- 1 See, for example, Abdul Rahman *et al.* (2002) and Omar *et al.* (2002).
- 2 For example, ITM Hospitality Management Services Sdn. Bhd. and UiTM Document Services Sdn. Bhd. in UiTM; USAINS Group of Companies in USM; etc. that become the commercial arms of the public HLI concerned.
- 3 Committee of Public Higher Learning Institutions is better known as JKIPTA (Jawatankuasa Institut Pengajian Tinggi Awam).
- 4 Although the subject of testing may differ, the managerial performance scope is somewhat deemed to be relevant to the current study.

References

- Abdul Rahman, I.K., Tew, Y.H. and Omar, N. (2002). *Management Accounting Practices of Small and Medium Industries (SMI) in Malaysia: A Preliminary Study*, Paper Presented at The Asian Management Accounting Forum, in Fukuoka, Japan, November 1-4.

- Altbach, P.G. (2004). The Costs and Benefits of World-Class Universities, *Academe*, 90, 1: (January-February).
- Anand, P. (1988). Monitoring and Auditing Value for Money in the UK: The Scope for Qualitative Analysis, *Financial Accountability and Management*, 4, 4: 253-270.
- Azhar, Z. and Abdul Rahman, I.K. (2008). Enhancing Management Accounting Practices in Malaysian Service Organisations: What the Present Demands of the Future? *Accountants Today*, 21, 12: 30-33.
- Azhar, Z. and Abdul Rahman, I.K. (2006). The Application of *Management Accounting Techniques in Malaysian Higher Learning Institutions: A Survey of Practices*, Paper Presented at The 10th IAAER World Congress of Accounting Educators, Istanbul, Turkey, November 9-11.
- Chenhall, R. H. and Smith, K.L. (1998). Adoption and Benefits of Management Accounting Practices: An Australian Study, *Management Accounting Research*, 9: 1-19.
- Chia, Y.M. (1995). Decentralisation, Management Accounting System Information Characteristics and Their Interaction Effects on Managerial Performance: A Singapore Study, *Journal of Business, Finance and Accounting*, 22, 6: 811-830.
- Clarke, P. J. (1995). The Old and the New in Management Accounting, *Management Accounting*, 73: 47-49.
- Cropper, P. and Drury, C. (1996). Management Accounting Practices in Universities, *Management Accounting*, 27, 2: 28-30.
- Department of Private Education of the Ministry of Education, Malaysia* (2007). See www.studymalaysia.com (accessed on July 20, 2007).
- Drury, C. (1998). Management Accounting Information System in UK Building Societies, *Service Industries Journal*, 18, 2: 125-143.
- Drury, C. (1996). *Management and Cost Accounting*, Fourth Edition, 1996. London: Chapman and Hall.
- Evans, P. and Bellamy, S. (1995). Performance Evaluation in the Australian Public Sector: The Role of Management and Cost Accounting Control Systems, *International Journal of Public Sector Management*, 8, 6: 30-38.
- Han, K.H. (1991). Management Accounting in the Public Sector, *International Journal of Public Sector Management*, 4, 3: 5-17.
- Higher Education Department of the Ministry of Education, Malaysia*. (2004). Code of Practice: Quality Assurance in Public Universities of Malaysia.

- Hood, C. (1991). A Public Management for All Seasons? *Public Administration*, 69: 3-19.
- Hopper, T. (1999). Postcard from Japan: A Management Accounting View, *Accounting, Auditing and Accountability Journal*, Bradford, 12, 1: 58.
- Horngren, C.T. (1995). Management Accounting: This Century and Beyond, *Management Accounting Research*, 6, 3: 281-286.
- International Federation of Accountants (IFAC)*. (1998). International Management Accounting Practice Statement: Management Accounting Concepts. (Revised March 1998): 82-100, New York.
- International Federation of Accountants (IFAC)*. (2001). A Profession Transforming: From Accounting to Management, Financial and Management Accounting Committee. (March 2001): 199-201.
- Joshi, P.L. (2001). The International Diffusion of New Management Accounting Practices: The Case of India, *Journal of Accounting, Auditing and Taxation*, 10: 85-109.
- Kaplan, R.S. (1984). The Evolution of Management Accounting, *Accounting Review*, 59, 3: 390-418.
- Laitinen, E.K. (2003). Future-Based Management Accounting: A New Approach with Survey Evidence, *Critical Perspectives on Accounting*, 14: 293-323.
- Lapsley, I. and Wright, E. (2004). The Diffusion of Management Accounting Innovations in the Public Sector: A Research Agenda, *Management Accounting Research*, 15: 355-374.
- Lukka, K. and Shields, M. D. (1999). Innovations in Management Accounting Focus, *Management Accounting*, 77, 3: 33-34.
- Mahoney, T.A., Jerdee, T.H. and Carroll, S.J. (1963). *Development of Managerial Performance: A Research Approach*, Cincinnati, Ohio: South Western Publishing Co.
- Mohrman, K. (2005). *World-Class Universities and Chinese Higher Education Reform*, International Higher Education. (Spring 2005).
- National Award for Management Accounting (NAfMA) Best Practice (2004)*. Management Accounting Evolution – Appendix 1.
- National Award for Management Accounting (NAfMA) Best Practice (2004 and 2007)*. See www.mia.org.my/misc/nafma/2008/pas_07.htm (accessed on August 3, 2008).

- Pendlebury, M.W. (1989). *Management Accounting in the Public Sector*, Heinemann Professional Publishing.
- Pendlebury, M.W. (1994). Management Accounting in Local Government, *Financial Accountability and Management*. (May 1994): 10, 2.
- Roslender, R. (1995). Accounting for Strategic Positioning: Responding to the Crisis in Management Accounting, *British Journal of Management*, 6, 45-57.
- Sarban, S. (2004). Push for Excellence, Public Varsities Told, *New Straits Times*, September 14, 2004.
- Shah, I. (2005). *11 Dimensi dan Petunjuk: Ke Arah Universiti Bertaraf Dunia*, Published by Institute of Quality and Knowledge Advancement (InQKA), Universiti Teknologi MARA, Shah Alam, Malaysia.
- Shields, M.D. (1998). Management Accounting Practices in Europe: A Perspective from the States, *Management Accounting Research*, 9, 4: 501-513.
- Tatikonda, L.U. and Tatikonda, R.J. (2001). Activity-Based Costing for Higher Education Institutions, *Management Accounting Quarterly*. (Winter 2001).
- Wright, D.T. and Burns, N.D. (1998). New Organisational Structure for Global Business: An Empirical Study, *International Journal of Operations and Production Management*. Bradford: 1998, 18, 9/10: 896.

Appendix I

Table 8: The Relationship between the Application of Management Accounting Techniques (AMATs and TMATs) and Each Managerial Performance Activity in Malaysian IHLs

Spearman's Coefficient of Rank Correlation Test			TMATs	AMATs
Spearman's rho	Planning	Correlation Coefficient	0.333	0.376*
		Sig. (2-tailed)	0.062	0.034
		N	32	32
	Investigating	Correlation Coefficient	0.198	0.046
		Sig. (2-tailed)	0.277	0.802
		N	32	32
	Coordinating	Correlation Coefficient	0.324	0.167
		Sig. (2-tailed)	0.070	0.362
		N	32	32
	Evaluating	Correlation Coefficient	0.150	0.239
		Sig. (2-tailed)	0.412	0.187
		N	32	32
	Supervising	Correlation Coefficient	0.185	0.194
		Sig. (2-tailed)	0.310	0.287
		N	32	32
	Staffing	Correlation Coefficient	0.031	0.303
		Sig. (2-tailed)	0.867	0.092
		N	32	32
	Negotiating	Correlation Coefficient	0.108	-0.015
		Sig. (2-tailed)	0.555	0.937
		N	32	32
	Representing	Correlation Coefficient	0.100	0.191
		Sig. (2-tailed)	0.585	0.294
		N	32	32
	General	Correlation Coefficient	0.486**	0.270
		Sig. (2-tailed)	0.005	0.135
		N	32	32

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Appendix II

Table 9: KPIs in Malaysian IHLs

No.	KPIs	Rank	Freq.	%
1.	Stakeholders' satisfaction level (e.g. students, suppliers, staff etc.)	1	29	90.63
2.	Excellence in students' academics	2	23	71.88
3.	Effective management of resources (e.g. staff, funds, waste, etc.)	3	22	68.75
4.	Efficiency in administrative works (practice of good management)	4	21	65.63
5.	Effective management of costs	5	21	65.63
6.	Excellence in research/invention/innovation	6	20	62.50
7.	Adequate physical infrastructure (e.g. computers, libraries, etc.)	7	20	62.50
8.	Utilisation of information technology in academic and administration	8	20	62.50
9.	Establishment of academic linkages with industry	9	19	59.38
10.	Employment/education destination of graduates	10	18	56.25
11.	World's recognition (e.g. student exchange programmes, awards, etc.)	11	18	56.25
12.	Total university's graduates to-date	12	15	46.88
13.	Student numbers currently studying	13	13	40.63
14.	Student-academic staff ratio	14	12	37.50
15.	Conformation to the world's standards (e.g. ISO, curriculum, etc.)	15	12	37.50
16.	No. of systems employed in university's operating environment	16	4	12.50
17.	Others	17	1	3.13