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A Project Management Curriculum Review through the Interviews with Project Managers

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Abstract

This paper presents a snapshot of the industry practitioners' perspectives on project management practice, indicative from their expectations and reservations toward the discipline as a taught course. The data collection stage involved carrying out interviews with practicing project managers from public and private sectors. After the full transcripts of the interviews were completed and compiled, key themes were picked out and rearranged to reflect findings for project management knowledge and practice. At best, their narratives have determined that the essential modules for reading a project management degree must include general project management studies before specialization can take place. Some key subject areas are business acumen, leadership, communication, soft skills, managing people, budgetary and finance and the process areas. Next, when specializing in construction project management, this must be approached from the practice framework, giving a deeper treatment in the teaching of planning tools, in issues of initiation, procurement and procurement strategy, execution process and monitoring tools. And lastly, the course of study is substantiated with research dissertation exercise and project simulation. This framework potentially affirmed the rule that "trial and error" is no longer an option, particularly when graduate students are expected to undertake assignments in practice project management competently.

Keywords: Project Management, Knowledge, Practice, Construction Project Management

1. INTRODUCTION

The MSc. Project Management Programme at the School of Housing Building and Planning, Universiti Sains Malaysia is perhaps one of the longest running programmes in the higher education sector in the country. The original scheme to the programme was prepared by the members of the committee on Building Economics and Management of the School. They received strong support from prominent academics of the Master of Science degree course in Project Management at the University of Reading, UK and Professor Anthony Walker from the University of Hong Kong, then (Fisher, 1989).

The scope of the course was formulated in such a way as to "cover wider [sic.] spectrum and encompass various disciplines that are related to construction project management" (Fisher, 1989).Therefore in this respect, the programme prepares students for project management in the field of construction without losing the full meaning of project management for the client, from inception; design and planning; construction until completion and operation stages (Fisher, 1989).

Over the years, the programme has grown from strength-to strength and the students have done very well; this is seen from the favourable figures for student intake, sometimes totaling 40 to 60 registrations per academic year. However recently, there has been a reduction in the intake that, at its worst, saw an average of only 10 registered students. Besides, there are a lot more project management courses on offer either at graduate or undergraduate levels. Today, in view of global and local challenges, it begs the question whether the programme is still relevant.

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Therefore, the School saw the need for reviewing the MSc. Project Management programme, to find ways to improve the range and quality of its courses while remaining current. The present report, documents the findings from interview sessions carried out with Project Management practitioners in the industry. The main objective was to ascertain topic areas and subjects that are all-important and should be offered in a project management taught course.

2. METHOD OF APPROACH

A key question that arose in this study was, "What are the other important subject areas that should be taught in project management courses to ensure students have the knowledge to meet the demands of the industry?" The data collection stage entailed carrying out interviews with practising project managers with the aim of drawing out their personal narratives that formed their perceptions on the body of knowledge for Project Management. The goal of the interview is to allow both the interviewer and the interviewees to shape the course of the interview in an active manner rather than respond to pre-set questions passively (King, 1994).

The selection of Project Managers was sourced from the Associations of Project Managers registered in the country namely, The Association of Construction Project Managers (ACPM) and The Malaysian Asset and Project Management Association (MAPMA). Letters were sent out through e-mails to the Presidents of the Associations and subsequently, a few Project Managers were identified. The interviewer planned for two half day slots over a two week period in April 2017; this provided up to 8 slots for the interviews. Six project managers agreed to participate in the interviews which were held in Kuala Lumpur (see Table 1).

Table 1. Schematic Interview Schedule – Actual Take-up.

Dates	**20 April 2017**	**21 April 2017**	**27 April 2017**	**28 April 2017**
Morning session	Project Manager #1 ca: 9:00am – 11:30am	X	Project Director #3 ca: 10:30am – 11:40am and Project Manager #4 ca: 12:00pm – 02:00pm	Project Manager #5 ca: 9:00am – 11:20am
Afternoon session	Project Manager #2 ca: 2:30pm – 4:30pm	X	X	Project Director #6 ca: 3:30 – 5:30pm

2.1 Participants' Attributes

Prior to the interview sessions, participants filled up the information sheets together with the consent forms duly signed. It ensured that their information would be kept confidential. The participants were all active practising project managers in the public and private sectors. A short description of each interviewee's bio-profile is given below:

- Project Manager #1 is a male with 30 years' working experience in a specialist industry sector and is currently a freelance trainer. He has been a Certified Project Manager (PMP) since 1995.
- Project Manager #2 is a female with more than 20 years' working experience in the public service sector and she was among the pioneers of assessors in the department. She is a Certified Project Manager (AIPM) CBAS (PWD).
- Project Manager #3 is a male with close to 30 years' experience with PMCs delivering projects from the private sector. He is a Certified Project Manager (PMP) CCPM (CIDB).
- Project Manager #4 is a female, who was the protégée of Project Manager#3. She is currently on track to vie for the CCPM (CIDB) certification and has the MSc. Integrated Construction Project Management (UiTM).
- Project Manager #5 is a male with more than 20 years in the public service sector and he was among the pioneers in the development of the risk management knowledge base for public sector use. He was trained as an Electrical Engineer and is a Certified Project Manager (AIPM) CBAS (PWD).
- Project Manager #6, a male who has trained as a Civil Engineer with more than 20 years' experience in PMCs delivering mega infrastructure projects. He is now serving the company in the capacity of a Project Director. He is registered with the BEM.

2.2 The Interview Guide

The session typically began with preliminary greetings and a summary introduction to the MSc. Project Management Programme of studies offered by the school. Then, participants browsed through results of the comparative analyses of current subject courses against other project management curricula that have been offered

locally and globally across institutions and professional bodies. After that, the participants began their narratives and responded to the issues and questions raised throughout the sessions.

2.3 Analysing the data

After the full transcripts of the interviews were completed and compiled, the analysis stage was carried out. The narratives were analysed whereby key themes were picked out and then rearranged to reflect the findings that were pertinent to the main subject matter and these were recorded under two broad topics: I) Project management practice and II) Project management knowledge.

3. KEY FINDINGS

Table 2 shows a summary of perspectives framed by each participant, followed by their collated viewpoints that set the scene to uncover the important subject topics to be pursued in project management studies. Due attention was also given to the consequential results relating to project management and the industry expectations.

Table 2. Summary of perspectives framed by participants.

Participants	Project management and the construction industry	Subject areas that matters
Project Manager #1	Narrates from the perspective of a private sector practioner through some case studies he has worked on. To meet the industry's expectations, graduates are advised - *when you are not in the know, seek knowledge before you set out to manage projects*.	The PMBOK as the knowledge document; it is important to know and understand soft skills, techniques and interpretation; risk management; data, statistics and project management tools.
Project Manager #2:.	Reiterated the importance of a thorough understanding of the knowledge processes when managing projects; the need for individual assessment of knowledge, skill and attitude.	The importance of teaching a soft-skill module as this is likely to have a direct bearing on a project's success.
Project Manager #3:	Narrates on the evolution of Project Management Consultants (PMC) – how project management has gained and lost its traction in the industry. There is a need for project managers but there is inadequate supply to meet the demand.	Advocated for the ACPM / CCPM (CIDB) programmes based on its comprehensiveness in dealing with construction project management.
Project Manager #4:	A hands-on narrative of a Project Manager's job tasks and skills and industry expectations regarding PMCs. Able to appraise project management courses, and advise in the building up of experience in managing projects.	Has a passionate pro-Alma Mater view on its project management studies; offering details of a syllabus.
Project Manager #5	*Do people actually employ project managers?* Reflected on public sector project management practice and the certification programme for Project Managers; raised awareness on how demand can be created.	Engineers do not see themselves as project managers – therefore their technical skills have precedence over other skills; they need to enhance their facilitation skills.
Project Manager #6:	A systemic project management organised around years of practice in the field. The details are in the process.	The need for knowledge is tied to the situation and context when managing projects.

3.1 Project Management in Malaysia

There is a limited and unsystematic documentation on the genesis of project management in Malaysia. Therefore the narratives presented below outlines the evolution of project management from growth to the cessation of Project Management Consultants or Companies (PMCs) in the built environment and construction industry. The descriptions also featured some of the special developments that have been project managed and completed over the years.

3.1.1 Project Management and the Construction Industry

Public awareness on project management in this country was perhaps brought about by the *disrepute* it gained from poorly executed development projects under the 8th Malaysia Plan of the Ministry of Education. At that time, PMCs were appointed to supervise the implementation of public projects because the Public Works Department (PWD) was over-burdened. Subsequently, with the privatization policy under way and the design and build system in place, many engineering consultants would bid to be PMCs (PM#3) and the increase in number of PMCs went unchecked. Consultants were set up with one engineer or 2 or 3 other professionals without an actual track record. By 2004, the register has a total of one thousand PMCs, comprising professionals from Civil &Structural (C & S) and Mechanical & Electrical (M & E) and lawyers or bankers. In effect, everyone was taking the opportunity to register under the Ministry of Finance (MoF). People were more concerned with registration than the services that were to be provided (PM#3). So when PMCs performed badly and could not deliver their projects, the MoF decided that no more licences were to be issued or renewed and as licences expired, so too PMCs ceased to exist (PM#3; PM#6). Since then, "PMC" became a taboo, to a point that government implementation agencies such as the Ministry of Transport (MoT) or Public Works Department (PWD) could not gain approval from the MoF to appoint PMCs (PM#6).

As for the mega structures of the 90s, infrastructural development projects such as the North-South Express Highway, Putra LRT, Star LRT, the Commonwealth Games and the Penang Bridge were entrusted to the Renong Group. Renong, as the concession and as asset owner has a PMC arm which was Kinta Kellas. Therefore any project by Renong, owned by Renong, money spent by Renong, was managed by Kinta Kellas Plc. That made Kinta Kellas one of the pioneer PMCs in Malaysia. Later, Kinta Kellas changed its name to OPUS International Group Plc. In dealing with these mega projects, OPUS also served as project consultants and needed to be registered with the Board of Engineers Malaysia (BEM) and the MoF. Depending on the type of projects, OPUS performed either as a technical support or as an Independent Consultant Engineer (ICE) or as a PMC; all these designations were in fact somewhat similar in terms of scope of services (PM#6). Other mega projects such as the KLIA and KLCC took a radical turn because of the Project Management Organisation (PMO) entity. The KLIA was project managed through KLIA Bhd. a separate company comprising PWD personnel taking on a new company and a new procedure and culture in doing things. Similarly with the KLCC, its PMO, KLCC Bhd. was formed with a foreign entity as a means of fulfilling the requirement of international and financial bankers (PM#3).

3.2 Project Management Practice

The narratives relating to project management practice have been structured into two parts: the first reports on the current project management practice followed by the profile of project managers and their competence and certification requirements. The second part reports on the prevailing body of knowledge (BOK) and then looks into some Masters degrees in project management.

3.2.1 The current practice

The findings suggest that between 2004 until today, the PMCs for development projects are no longer given recognition in the industry although the function is still required. The responsibility has since reverted to the Lead Consultants who are either architects, engineers or quantity surveyors. However, that did not stop the industry from using the designation, PMC. One example was the Malaysian Investment Authority (MIDA), who appointed a project management consultant for a renovation job on its headquarters building (PM#3). The PMC conducted meetings with all contractors, suppliers and then were reported back to the client (PM#4). In other examples on Private Public Partnership (PPP) projects, the PMC company (PM#3), prepared the documents for request for proposal (RFP) *before* being awarded the project. Nonetheless, the PMC was duly appointed based on their track record and their team of qualified personnel (PM#4).

The demand for project management is always there for projects of any size and scope but the merits for carrying out small projects are that all the knowledge areas can be applied and everything is within control. As for big projects, it is a matter of scaling it up (PM#1). On a cautionary note, even if a team has vast experience in carrying out projects and even if the project is the same, the logic is totally different, the team is different and the environment is different (PM#2). A detailed practice route was demonstrated and shared by PM#6, which explained through itemized phases of the project life cycle, the issues that arise from each phase together with suggested improvements. This line of interrogation provides a helpful framework when discussing the course topics requirements regarding project management studies. Some of the project management phases are captured in Table A1 in the appendix and a few are discussed in Section 4.1.

3.2.1.1 Assessment of outcome

Another important stage pertaining to the project management practice is the assessment of outcome process or *lessons learned*. In essence, the assessment of outcome occurs at the completion of the project to find out how well the project manager has performed. Some probing questions are, "What did I do today?"; "Did I do well or not?"; "What went well?" ; "What did not turn out well?; "How do I improve what has been done?". As questions get answered, innovative measures may appear in increments to improve the processes. This has to be a regular procedure in project management (PM#2).

3.2.2 The Project Manager

Recognition of the project manager's crucial role was communicated throughout the interview sessions. The narratives confirmed that the project manager is the mainstay of the project's success; the person who will handle the project from A to Z, from scoping, planning through to handover (PM#2; PM#5). A Project Manager is a figurehead (sic.), an integrator, a communicator and he or she must have solid expertise regarding the knowledge areas and processes (PM#1). In the PWD, the designation of a project manager is known as the Head of the Project Team (HOPT). He or she is in-charge and responsible for the processes at the implementation stage to ensure the smooth delivery of the project. To date the HOPT is already embedded in many documents and it is unlikely he or she will be re-designated as Project Manager. But it is also likely that *anybody* can be a Project Manager (PM#5).

It is very important that the Project Manager understands clearly his or her role. At the same time, the portrayal regarding attitudes and behaviour defines the character of the project manager (PM#5); for example, the way he or she talks and interacts with team members will translate into how the respective persons have managed their projects (PM#1; PM#2). Case in point, a project manager may need to supervise team members closely in order to create a learning environment despite their differences (see also Section 4.1.1.5) (PM#4). Simultaneously, a project manager must avoid conflict of interest. In a situation where the architect may also be the project manager. The architect must distance himself or herself from decisions of other architects. The project management office comprises people from different backgrounds and they all play their roles in managing the project by achieving the target milestones that have been promised to the client. They will make the expert decisions, but as project manager, he or she will make the decision in collaboration with all these people (PM#2).

The role of project manager may also be executed by a client. In the example of the school projects, the Ministry of Education (MoE) was *the* project manager while the architect served as the lead consultant. The lead consultant will call all consultants for a meeting with the client, the MoE, and at this meeting, each consultant will conduct their presentations. It is likely that the project manager is a technical person holding a quantity surveying degree and may not possess a master's degree in project management. In this case, the project manager plays the role as a client representative in managing the consultants but is unlikely to be involved in the project implementation (PM#4). For new graduate students in the role of project manager, the industry has expected them to "hit the ground running" (PM#2). He or she is supposed to work independently, in planning and in communicating with the client. In preparation for such circumstances, graduates must choose to work for a few years in the industry, followed by the acquisition of a Master's degree and then return to the industry. Usually the PMC is a multi-disciplinary entity and graduate students are likely to benefit from the experience gained from the years of working with these companies (PM#1; PM#4). Ultimately, having gained the necessary skills, graduate students can apply for a certification as a project manager (that is discussed in the next Section 3.2.3) and can be planted anywhere (PM#2).

3.2.3 Competence and Certification requirements

As mentioned earlier, a project manager's competence is a major contribution to the success of projects. The question is to what extent does generic skills and behavioral competence be adequate for him or her to function? In this section the issue at hand is the skills requirements that shape the competence of the project managers which ultimately lead toward a certification. This is important because there is a big difference between a project manager who is certified *vis*-à-*vis* an uncertified project manager; from the way he or she communicates, resolves problems, handles people and the human resources. The soft skills have become an essential criterion in the certification process (PM#5). Therefore, the evaluation toward the certification of a project manager focuses on three dimensions: knowledge, skill and attitude. Knowledge is acquired during the course of studies and skills are manifested when knowledge is applied (PM#1; PM#2). As for attitude, probably only the behavioural aspect can influence this (PM#1; PM#5). So to get a certification, there must be evidence to show if his or her knowledge is applied in their work (PM#2) or when he or she can follow the (project management) system. Only then is he or

she is ready for an assessment (PM#1). Certified project managers are qualified people who have the licence to sign off like professional engineers (PM#3) and gaining a certification, such as the Project Management Practitioner (PMP)®, is a symbol of self-actualisation (PM#1). The anomaly is that, there is still no recognition for Project Managers, although this has been discussed at national level (PM#5). In anticipation of our country moving toward developed status, the task now is to create a lot more Certified Project Managers in the market. The route to recognised competence is extended from professional or regulatory bodies. The findings of the interviews offered two models for project management certification: the Competency-Based Assessment System (PWD) and the Certified Construction Project Manager (CIDB). These are explained below.

3.2.3.1 Competency-based Assessment System (CBAS)

In 2005, the top management in PWD realised that they needed to develop the Project Management competency. They saw that most of their engineering staff members had become too technical and there was no system in project assignment. Junior engineers were being assigned complex projects and problems emerged because they were not competent to handle such projects. Therefore it was imminent that top management strategized on how to appoint project managers (PM#5).

The competency-based assessment system (CBAS) was developed for the PWD competency standard for project managers. It was equivalent to conducting a workplace assessment, which means that the candidate will demonstrate his or her knowledge through courses of studies taken and the ways in which the knowledge have been applied (PM#2). Before the assessment, one has to submit a project write-up and then sit for an interview. During the interview, questions were asked to test the candidate's knowledge and situations were given, to gauge his or her attitude and the way problems were handled. "It's not *what* question was given but a *how* question was answered" (PM#5). The idea is to discover how well he or she has understood all the knowledge areas. When an answer is satisfactory, the candidate gets a tick and so on until he or she passes all and he or she is duly certified. In case of incompletion, then the candidate gets a 6-month period to do the rest and sit for another interview. So in this case, he or she is not competent yet (PM#5).

The CBAS offers three levels of certification: i) the Qualified Project Practitioners (QPP) ii) the Registered Project Managers (RPM) and iii) the Registered Project Director (RPD). Entry into the programme requires at least 3 years' experience as a team member. Then one can go for the QPP certification. As Qualified Project Practitioners, they do not follow any hierarchy and the level of responsibility does not entail decision making (PM#2). For those who are Registered Project Managers (RPM) means they are registered as project managers supervising the projects. He or she has certain responsibilities and makes decisions at the project level. If he or she has many different projects, then he or she is a manager of multiple projects (PM#2). It takes 5 years' experience in Project Management before one can go for the RPM. As a senior playing the role of a project manager, one can start showing evidence of having done scope management; cost management; risk management from all the Knowledge Areas. That will be tested for every minute of the job (PM#5). Lastly, as a Registered Project Director (RPD), one manages at the programme level not at project level. As RPD it is possible that one may not be a good project manager because one is an expert at looking at items at the programme level and one is managing different project managers and managing separate teams (PM#2). A practitioner can go straight to being certified as an RPD if that was the role at that point during the assessment, because each role has different set of evidence from the other (PM#2).

In the case of the categorisation problem mentioned at the beginning of this section concerns with the different project types. Some projects are very complex and have a great level of uncertainty and some are simple standard projects. Government projects are initiated at the ministries and the PWD serves as the single point of entry and the implementer of the projects. Therefore there has to be a system to categorise the projects and assign them to suitable project managers. The system was built on some criteria and weightage points which then were translated into 5 categories: ACAD 1, ACAD 2, ACAD 3, ACAD4 and ACAD 5. The latter, ACAD 5 will be the simple, very standard project that does not cost so much while ACAD 1 will be the most complex and the costliest project (PM#5). Hence, as regards the Project Management certifications, the ACAD 1, ACAD 2 will be given to the Registered Project Director (RPDs), those with the higher level certifications who manage programmes and portfolios. Then the Registered Project Managers (RPMs) will supervise ACAD 3 ACAD4 while the Qualified Project Practitioners (QPPs) will oversee the ACAD 5 level (PM#5).

3.2.3.2 Certified Construction Project Manager (CCPM)

The project management of physical development projects typically has five phases, namely: planning, design, procurement, construction and handover. In terms of scoping, construction project management is limited to the construction site while the scoping for a project covers the initial stage. So inadvertently, the Certified Construction Project Manager (CCPM) practitioner will be limited to the construction scope. The CCPM was developed for the CIDB and it catered for the construction managers because they do the construction and site management and they were less likely to be involved in the early stages of planning and procurement (PM#5).

The training programme, was originally drafted in 2004, and there are two ways to achieve the CCPM: 1) through a professional interview (registration and interview) 2) through a training scheme system which has 15 learning packages (PM#3). The process may take months or even years (PM#4). To be registered as a Certified Construction Project Management (CCPM), one is assessed on experience and competency rather than academic considerations. So this is open to all people who have worked and who do not have the paper qualifications. But they can be certified because of their knowledge and their experience. For those with a Master's degree, the route is faster compared to those working in industry who may take 20 years for the certification programme (PM#4). Nonetheless, CCPM is a personal journey because the practitioner fills up the forms personally and sits for the interview. The interview itself is very tough; there is knowledge assessment and performance assessment. Those who finally achieve the CCPM really deserve it (PM#4). There is no outright failure because a person may lack communication, so he or she has to go back and take that communication learning package (PM#4)

Presently, an estimated 10,000 Project Managers are needed in the construction industry at all levels: project director, project manager, construction manager and so on. However today, those who are qualified, number just over one hundred persons only (PM#3). Therefore there is a big gap in terms of numbers of certified personnel. To date, this registration cannot be enforced due to the low numbers of qualified project managers. In future, all registered contractors from G4 must have their registered CCPM personnel (PM#3). The implications are far-reaching, because when bidding for projects, a condition will be inserted in the tender document that the company must have their certified construction project managers to run the project (PM#4).

3.3 Project Management Knowledge

The acquisition of knowledge is all too important before one can practise project management. Practitioners are recognised through their application of their knowledge. So how do you start to manage projects? The clarion call was:

> *"with the 9 knowledge areas and 47 processes and 5 process groups, you start from scratch*"(PM#1).

In this section the discussion centres on the availability of the project management body of knowledge and an appraisal of some MSc. degrees in Project Management in the country.

3.3.1 The Body of Knowledge

The findings suggest that the PMI Project Management Body of Knowledge (PMBOK) is generally taken as a good foundation for students and practitioners to study, so as to be able to enhance their job performance skills. Among the most fastidious proponents (PM#1) has positioned it as a standard for project management, maintaining that half the globe has adopted it while others may have adopted PRINCE2 (UK) or AIPM (Australia) (PM#1). The PMBOK was structured like the Wikipedia, with materials developed by hundreds of authors with global input from the experts. In the case of China, successful project managers have the background of PMBOK and they have also gone to the extent of translating the material into their language (PM#1). To date, the PMBOK 5th edition has 10 knowledge areas and 47 processes and these are likely to increase as new knowledge is demonstrated in the industry (PM#1; PM#2). This is reaped from the constant reviews of project management application to physical and non-physical projects (PM#2) that even the nursing, teaching and the finance sectors have adopted its system and are using it (PM#1). But as far as the construction industry is concerned, the general project management body of knowledge remains valid because there is an construction extension which has additional knowledge areas such as conflict management, contract management, finance and procurement that specifically address the industry sector (PM#1). In retrospect, the basic technical specialisation knowledge is most important. The project management is just another skill on top of that (PM#4):

> *"If you are an engineer you need to be a good engineer first then you can manage better"* (PM#2).

3.3.2 The M.Sc. Project Management Degree

It has been mentioned that the purpose of the interview session was to examine and re-examine the subject areas offered for a Master's project management course. The participants tended to revert to this discussion when the interview was already well underway. More than half of the participants suggested that projects do not necessarily mean physical projects such as in construction (PM#1, PM#2, PM#5 and PM#6). There is project management in event management, for example, when Malaysia hosts the South-East Asia (SEA) Games; the person has to be very competent if he or she is to manage the project successfully (PM#5).

With reference to the current MSc. Degree in Project Management under review, questions were also raised by the interviewees, such as:

- "What is the demand for these graduates in Malaysia?"
- "Do they have employment opportunities in other workplaces besides construction?"
- "What level of capability is the project management programme addressing?"
- "Is there an option to do non-technical approach and do away with construction?

Upon scrutinising the syllabus, some participants claimed the range of subjects was interesting but did not show depth (PM#2; PM#4). There were a lot of general subjects which, in future will not equip the graduate student with sufficient knowledge. The range of subjects also demonstrated a bias toward say, economics. So how to package it so that engineers can understand the materials from the outset, bearing in mind that most project managers have a background in engineering. It is a common practice to take in civil engineering graduates to be Project Engineers (PE) because of their course of study advantage. However, there are also good financial management topics but then one needs to be in a senior position to apply the knowledge. Quite a number of topics are not at application level for junior graduates. Take for example organisational management: how to prepare an effective organisational chart? That is more likely to be under the purview of a senior level position who will do such planning so that a team of 200 people can work together and deliver the project (PM#6). Other subjects such as Strategic Management, Sustainable Design Construction or sustainable development, international construction, innovation, are topics of construction rather than in project management directly (PM#2).

Similarly, the other project management courses like those offered in Universiti Malaysia Pahang (UMP) and that in Universiti Malaya (UM) are offering the same general approach (PM#4). An assessor has duly advised these universities to create electives for Project Management and Construction so that students can find jobs when they graduated (PM#4). In comparison, the MSc. Integrated Construction Project Management (ICPM) at UiTM has focused on integration because construction has many sectors (PM#4) and their teaching faculty comprised all the senior lecturers, including part-timers who are practitioners with experiences of the real world (PM#4).

4. DISCUSSION

The narratives will now be discussed with the purpose of revising the project management course of study. However, the extended list produced from the practitioners' viewpoints is reviewed first against the process stages as a basis to equip students with the knowledge to meet the demands of the industry.

4.1 Consequential results for project management focus areas

The results offered in this section are a distillation of the findings from Sections 3.1-3.3. The participants established early on in the interview that the project management concept has a wide scope but the fundamental entity is the project, which, by definition has a beginning and an end. However it does not always have to be a physical construction project. It can also refer to non-physical projects such as poverty eradication or event management and the project management knowledge is applied to everything (PM#PM#2; PM#3; PM#4; PM#5; PM#6). Thus, the findings suggest that project management focus areas should begin from the general concepts and then continued with the application areas that are industry specific. At best, an enhanced knowledge corpus can only be created when there is good interaction between academician and practitioners (PM#2).

4.1.1 General project management

The general management principles in Project Management are what the market wants (PM#6). Graduate students must understand that in any course of study, the starting point is the theory.

> *"If you jump directly into a practical situation without any theoretical basis, you are getting yourself into a lot of uncertainty which is not right"* (PM#1).

It is imperative to map out the "*9 knowledge areas, 47 processes and 5 process groups*" (PM#1). A case in point is the Project Management course for government officers at the Institut Tadbiran Awam Negara (INTAN). The study incorporates the entire process from project initiation, when a project proposal is received from a ministry. Then the feasibility study was carried out followed by a proposal submission to the Economic Planning Unit (EPU). At the EPU, the budget approval is dependent on the scope of the project after which it will be implemented by the PWD. A review of this programme could offer some subjects that are relevant which could be incorporated in the masters programme (PM#5). Nonetheless, a list below offers the breadth and depth of focus areas in the light of project management practice (see also Table IV and Section 3.2.1), namely: business acumen, leadership, communication, soft skills, managing people and budgetary & financial concerns.

4.1.1.1 Business acumen

A project manager must know business when he or she is doing a project (PM#1). As in the private sector, the initiation is developed by the business development manager who must also understand projects. When a project is created, the project manager must understand the business case including the strategic kit. It is all about business decisions and so the business idea and the business case is a given. Once the business is understood, then the project manager will develop the activities further, package it and then deliver the assets (PM#1)

4.1.1.2 Leadership

It is inevitable that the project manager will end up as a leader therefore some kind of leadership training must be given. Furthermore the project manager must be in the know; to be able to read and give appropriate comments on outstanding issues. Not everybody has the opportunity to undergo this training, especially in the private sector because they do not put this as priority. It will be good to consider leadership and organisation either as a major subject or at best, a supporting topic (PM#5).

4.1.1.3 Communication

In practice, the skills in communication are perhaps the most frequently expressed as important in project management. Every stage of the project process entails communication. Take for example the situation where projects have been awarded; who are the authorised representatives to sign letters? There has to be a clear line of communication in power delegation upfront to avoid confusion later. Another example is when there are many packages involved, how to make sure the design team and contract teams are focusing on the same package? Then take the ordinary activity of preparing the meeting structure: how should the organisers manage and decide who should attend? How should they communicate the decisions that can be shared? In the planning stage, they have to ensure that the schedules for all meetings are planned 3 months ahead; plan for the design coordination meeting say, every first Friday of the month; and plan for monthly progress meeting on say, every Monday. Then distribute to all parties and if there are 40 contractors, all must be in the know and ready. No one should say he did not know and neither can he attend the other meetings (PM#6). However, in the situation where the team is made up of many different cultures, will require skills in communication on how to manage multi-disciplinary and multi-cultural working environments (PM#3). There is a need for internal communication (PM#6) where project managers have empathy towards their team members (PM#4). On the other hand, in the situation where stakeholder issues must be managed, what do you need to do with each one of them; what are the items of information that we want to share and when will we meet them? Different stakeholder must be handled differently (PM#2).

4.1.1.4 Soft skills

As most project managers are trained in engineering, they are technically competent people in the fields of electrical, civil or mechanical engineering. Therefore it is highly likely that they have viewed all projects "*as an engineer*" and not likely "*as a manager*". So they manage projects like technical people rather than managers. They lack the soft skills, they have issues in communication, problem solving, and dispute resolutions (PM#5). Hence, soft skills should be taught as that is likely to be inadequate in a project manager because he may have an objective to deliver to his client and he is dependent on his team; does he have the empathy for them? What if the team cannot deliver? Is he adept at negotiating for the best option to work as a team? The project manager has to resolve this (PM#2). Some of the soft skill modules that have been developed are: negotiation skills, understanding what has been said and handling effective meetings. Then how does one keep the team on track? Develop the soft

skills that have not been tackled very well such as arbitration. (PM#2) This is a must have subject (PM#4). Finally, equally important is the skill for facilitation. Nobody knows everything and to manage a project, one has to get the expert to do it. Hence, the project manager has to search and source out the right person for the job (PM#6).

4.1.1.5 Managing People

A subject on managing people is not about teaching psychology. It is about how to manage conflict and human resources. In a situation where a team member has made an error in his submission and that error needs to be rectified, then the project manager has to learn to manage people. This is difficult because not all members have the same energy levels and passion in their effort (see also Section 3.2.2) (PM#4). As regards the human resource approach, the project manager has to look at personality assessment to make sure members can talk and be in harmony with each other through the use of personality categories, for example: DISC - Dominant – Introvert – Stability – Conscientiousness- to build a team. In this sense, the project manager has to have the right attitude and this is more important than being knowledgeable and smart. The question is, can attitude be taught? This means that the project manager must understand the context he is managing and leverage from the angle of strategic and system thinking (PM#2). That is why the focus area on managing people is very important as it is managing people at the individual level and it is about managing relationships because the work will get done when the team functions. Therefore there has to be due focus given to people management (PM#2) (PM#4**).**

4.1.1.6 Budgetary concerns and finances

The topic on budgetary and financial analysis is helpful. The activity on cash flow analysis of the feasibility study will differ from that of a construction project (PM#4). Therefore the project manager must be proficient with their financial ratios and must understand fully the appraisal techniques such as Net Present Value (NPV) and Internal Rate of Return (IRR). This is because clients are likely to be unaware of these ratios (PM#4).

4.1.2 Construction Project Management Application Areas

With reference to Table 3 Section 3.2.1 again, the list below offers the breadth and depth of focus areas in the light of construction project management. These include the planning tools, initiation issues, procurement and procurement strategy, the execution process and the monitoring tools.

4.1.2.1 The Planning Tools

The project managers are supposed to make sure that all the phase managers are aligned to project time line and that the Project Management Plan is prepared from the start right through to handover to the client and to closing. The expectation is that the project manager has knowledge of the right tools, techniques and the technology to carry out the function (PM#2; PM#4). A tool to check the consultant's or the contractor's understanding on the scope of work is through the use Work Breakdown Structure (WBS). At best, this can be a mandatory criterion to see the A to Z about the project. Where there is a gap, it means the project manager does not understand his scope of work (PM#1). Next, risk is produced the moment a project is created. The project manager must integrate all the functions to manage risk. In estimating risk using say, the Monte Carlo simulation, always go for the probability of the schedule and its chances of success. The project manager must understand risk so that there are reasons to rationalise when the project experiences delays and when the probability of success has changed (PM#1). Another tool in the planning stage which manages the project progress is through Earned Value Management (EVM). A project manager has data at hand to measure the project's progress and anticipate delay.

4.1.2.2 Initiation issues

Land matters relating to acquisition must be taught and studied because land acquisition "*is killing the project*" (PM#6). In some situations, the development land has major encumbrances relating to the property owner, hence the use of Land Acquisition Act through compulsory acquisition or other obstructions like squatters on the land (PM#6). Therefore the project manager must have the knowledge and experience when implementing the project, so that land is acquired as soon as possible otherwise the repetitive effort will be costly (PM#6). Similarly, authority approval is also "*killing the project*", so how to manage authority approval? What are the types of authority approvals to gain? Engineers do not study this and are oblivious to the bureaucratic process in managing projects in Malaysia. It is likely that project managers learn it from the mistakes made so it is a trial and error process. The knowledge of this process becomes incumbent for the project managers (PM#6).

4.1.2.3 Procurement and procurement strategy

The majority tend to focus on construction management after the work has been awarded. When the project is managed properly before it is awarded, one can minimize a lot of things during construction; fewer changes to design; fewer re-design attempts and fewer delays. Integrating the design with tendering is a major issue. As the designer prepares drawings, the contracts department prepares the tender document. But do they speak to each other? We need to merge planning with the procurement contract (PM#6). Take the case of Public-Private Partnership (PPP) projects, there must be in-depth knowledge about procurement types, understanding concessionaire agreements; looking at the legal environment and studying contract law among many other things. Usually this is covered during the undergraduate degree course, so at Master's level, candidates should study about PAM contracts – PWD 2003 or the PWD design and build. How does each instrument deal with dispute resolution and how you would advise your client (PM#4). In other words, project managers must possess substantial knowledge regarding all the legal instruments and familiarise themselves with various contract terms (PM#5). On the other hand, a project has many disciplines so there must be a procurement strategy to make sure that the right company bid. The reason is to restrain big players from having a monopoly. How does one ensure that small contractors are able to participate? Therefore small packages must be created. In the LRT project, each contractor will take care of small stations of RM40-50 million, parked as a nominated contractor (PM#6).

4.1.2.4 Execution process

When the tender has been awarded then construction can be started. But changes always occur so between tender and construction, many modifications may have to be done and this must be managed, perhaps by tracking the drawing number (PM#6). If this is a taught module then the junior project manager will be quick to investigate and will know where to explore.

> *"We teach them how to learn"* (PM#6).

More importantly, the pre-requisite to Construction Project Management is the Construction Management background. So before work starts, the project manager has to be aware of the fact that he has to follow the proper procedure. Take for example, method statement. This means that the contractor has worked on it and the consultant has reviewed it. So when an accident occurs, this accident is not due to negligence. Method statement safeguards everybody (PM#6).

4.1.2.5 The Monitoring tools

During the project processes, there are many phases that require monitoring: monitoring design progress, monitoring physical progress, monitoring planning and progress. Take monitoring design progress for instance. What tools do project managers use to estimate weightage and progress? It is essential to adopt this during the planning. In monitoring physical progress you need to monitor resources and study the programme to ensure project completion will not be delayed. In planning and progress monitoring via engineering, procurement & construction (EPC), the use of monitoring and scheduling tools like primavera is crucial (PM#6).

4.1.3 Supplementary Topics

Some participants agreed that two topics would substantiate the Master's degree course on offer namely, conducting research dissertation and carrying out a project simulation. These topics demand emphasis (PM#4). Firstly, an introduction to research methodology precedes the actual dissertation production. The methodology explains the research sequences to guide students in their investigation into the management topics of interest. On the other hand the dissertation preparation and production trains them to think and write seriously and creatively. The benefits to graduate students are tangible when they are compelled to carry out documentation activities, data collection and analysis and report writing (PM#4). Secondly, the project simulation topic is a feature not only in the UiTM syllabus but also in the UTM (PM#4). What the UiTM syllabus offered was two geographical simulation projects. The first is a local and domestic project and the other is on foreign land. The latter includes the internationalisation dimension of project management that deals with the process and procedures of construction work in a foreign country (PM#4). At best, the project simulation trains the students to role play their project management insights (PM#4).

4.2 Revising The Project Management Course of Study

The narratives have identified some modules for reading a project management degree. These have been categorised as i) general project management elements ii) construction project management application areas and iii) supplementary topics to substantiate the courses. Therefore, a strong emphasis must be placed on providing general project management studies before specialisation can take place (PM #1; PM#2; PM #5;PM #6). The coverage on business acumen, leadership, communication, soft skills, managing people and budgetary & finance knowledge and process areas have been discussed (see Sections 4.1.1.1 – 4.1.1.6). The current curriculum needs to be revamped to incorporate these elements. On the other hand, there is an agreement among participants that we should approach the construction project management application areas from the practice framework. At best, there has to be deeper treatment for planning tools, initiation issues, procurement and procurement strategy, execution process and monitoring tools (see Sections 4.1.2.1 – 4.1.2.5). Finally, to substantiate the course of study, it is recommended that a research dissertation exercise and a project simulation regime be included (Section 4.1.3).

There were suggestions that a two part curriculum be created. The essence is to establish a clear concept of Project Management issues first and then devise a way to take that knowledge into the construction environment. On the other hand, even if one specialises in construction project management, the overall programme will not limit the graduate student to work only in construction (PM#1, PM#2, PM#5).

5. INTERIM CONCLUSION

In summary, the overall results of the interviews point to a positive direction particularly for the construction project management studies, provided that the dissemination of knowledge include subjects that matters, which are likely to contribute to the preparation of graduates to be industry-ready. These are as follows:

- The fundamentals of the project management body of knowledge must be taught up front in accordance with the all –important "*9 knowledge areas and 47 processes*".
- Concurrent knowledge of industry practice is equally crucial as this simultaneously hones the project manager's skills in addressing issues that arise.
- As skills and competence are the likely critical success factors to managing projects, gaining the recognition from authoritative project management professional bodies will become imperative
- The industry is in dire need for project management expertise as a means to sustainable development practices. Therefore the notion of sustainability will be the driver for project management.
- The demand for qualified project managers will grow in tandem with the increasing supply of projects which will ultimately smoothen the route to enforcement of project management professionals.

At best, the findings presented from the industry perspectives provide the framework where "trial and error" is no longer an option when adopting project management practices.

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APPENDIX

Table A1. Project Management Phases along with Related Issues

Project Management Phase	**Issues that define module development**
Initiation	Some clients require the PMC to do the feasibility study; Land acquisition title search; any encumbrance with property owner could *kill* the project
Design management	Design team - manage design at preliminary level. Authority approval – how to track many authorities; stakeholders like MHA, TNB. Manage drawings - young engineers are less capable to capture changes at site. Procurement & procurement strategy – integrate design with tendering; manage detail; compile contract document; track well Monitor design progress – method of calculation; trace outstanding issues; mark the status Line of communication – prepare delegation of power; who can sign documents; meeting structure Variation Order – VO committee; consensus approval; track budget; prepare financial report
Pre-Award	Select only those who are qualified to bid Prepare procurement strategy – create small packages; appoint nominated sub-contractor; main contractor & client; profits; liability; risk agreement
Planning & Progress monitoring	Planning after post award - how to combine the tender with design and with construction? Master Management program - as project progresses the critical path changes, revise programme; project implementation plan become more accurate; revise monthly. Monitor physical progress – identify problem; how to mitigate it; get the expert. Construction management is a prerequisite – method statement; check list; prepare mobilization; work permits; safety is everybody's concern. Management tracking ensure you can deliver the project within time, cost and quality