

**An inquiry into a project management body of knowledge in the  
Japanese construction industry and roles of a Japanese PMBoK  
for Japanese managers**

**A Thesis Submitted for the Degree of Master of Philosophy**

By

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I, Shinichiro Hiyamizu, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

## **Abstract**

This research explores Project Management Body of Knowledge (PMBoK) in the case of the Japanese construction industry. As guides for project management, PMBoKs are developed and updated by project management associations, and used for individual certification programmes and corporate standards of project management in best practice.

Because a PMBoK is expected to express project management philosophy, its design should be based on empirical research. Research on PMBoK has been done in the Western context, but its investigation outside Anglo-Saxon economy has not been well explored.

Therefore this research focuses on the differences in the selection of PMBoK topics between English and Japanese managers and those that exist between the two groups. The case of the Japanese construction industry in 2000 is surveyed as a research field, wherein project management approach is needed. This research seeks answers to the following questions: ‘What PMBoK topics are used in Japanese construction projects?’ and ‘How do the Japanese guidelines for project management differ from those of the Western ones?’

A potential Japanese PMBoK proposed in 2000 refers to the existing PMBoK concepts and literature. The model is tested through questionnaires and interviews of Japanese managers. The data obtained from the survey is compared with similar data from the UK. The comparison indicates that there are significant differences between Japan and UK, classified into five categories.

To describe the differences between the Japanese and the English PMBoK, the five categories are compared with the selection of PMBoK topics published during 2001–2013; this information is then elaborated in an effective framework.

The study concluded that the Japanese group thinking possibly explains the selection of PMBoK topics compared with the English professional approach. The research output enhances an understanding of the thinking in the formation of the PMBoK by Japanese and their English counterparts.

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# **Chapter 1 Introduction**

## **1.1 The PMBoK in the Japanese construction industry – differences between the situation in Japan and that in the UK**

A Project Management Body of Knowledge (PMBoK) is widely used in the West. It is employed for individual certification programmes and/or as a framework for corporate standards in best practice.

The first attempt to describe the body of knowledge in project management was undertaken by the US based Project Management Institute (PMI) in 1976. This later became the baseline for the first certification programme for project managers. Following several revisions during the 1980s and 1990s, the basic framework had been put in place by 1996, when the 1996 edition was published.

In the early 1990s, the Association for Project Management (APM) in the UK launched its certification programme. It did not employ the PMI-PMBOK®. Instead, it created its own body of knowledge. The first version was published in 1992.

European and other countries followed the lead of project management associations in English-speaking countries. Several professional bodies joined the PMI as a chapter of the US-based association, and thus adopted the PMI-PMBOK®. Others used the APM model as a framework. Some, like the Netherlands, used it unchanged, but others, like Switzerland, France and Germany, modified the model to make it more appropriate to their culture and society.

Under the leadership of researchers from the UK, Germany and France, the International Project Management Association (IPMA) produced a common competency baseline in 1998. This was written in the three languages of the above-mentioned countries. These BoKs have been created through discussion and research based on practice (Morris, 1999b).

Thus, several different types of PMBoKs are used in various countries. If there were one generic body of project management knowledge, then all projects could be understood

and learnt using the same set of topics, i.e. the common language of the project professional. The existence of several different PMBoKs suggests that there is room for a common knowledge base to be developed. Empirical evidence is needed to enhance the validity of a PMBoK.

Although it has been more than 35 years since the PMI produced the first PMBoK in 1976, its PMBoK is still largely developed from a practical background. The first research on PMBoK was undertaken in the UK as a review of the APM's PMBoK in 1999.

Despite their importance in practice, there has been very little attention given to the academic aspects of PMBoKs. Robust theories and empirical research on PMBoKs are needed. PMBoKs were created from a practical demand to evaluate project managers (Wideman, 2000).

The first attempt to place PMBoKs on a theoretical footing was seen in the research to update the APM's fourth edition by Centre of Research for Management of Project (CRMP),UK (Morris, 1999b)

The research was the first to use empirical evidence in the covering of topics on the practical use of knowledge in project management.

To determine the topic coverage required for the Japanese PMBoK, the existing PMBoKs, - i.e. those of the PMI, the APM, and the IPMA will be compared. A straw-man of the APM's PMBoK, which was used for research on the revision of the APM's PMBoK in 1998, will be also considered. To identify potential important topics with regard to the Japanese PMBoK (and/or the straw-man of the Japanese PMBoK), literature on Japanese management will be reviewed. Japanese management theories will be documented briefly for each topic in the putative Japanese PMBoK.

To test the coverage of topics in the Japanese PMBoK, a questionnaire was compiled and circulated and interviews were undertaken. The results were then compared with the same survey conducted during the APM's revision in the UK in 1999.

This research is focused on the Japanese construction industry. It should provide a new field for PMBoK research. The Japanese construction industry has a long history and should have a unique type of management as compared with Western countries. The Japanese PMBoK will act as a guide for mutual understanding between the East and the West when undertaking international projects.

The Japanese did not have their own PMBoK back in 1999. What should constitute the Japanese PMBoK? Japanese management has had large impact on Western management in the past two decades. The Japanese have demonstrated high performance in their business practices, especially in the manufacturing industry. Their practices display approaches that are quite different to those of the West.

Japanese managers' identity is said to be a company's general manager rather than sense of professions as seen in the West (Oliver and Wilkinson, 1992). Groupism approach sustains good team work in Japanese organizations. Team work is a base of Quality Management that Japanese management style is referred to the Western management studies. On the other hand, Japanese organizations prefer to maintain long term relationships with their clients. This makes situation in Japanese business context that 'Contract means nothing in Japan' (Bennett, 1998).

If roles of individuals in Japanese organisations are not clear and idea of professionalism is relatively weak, 'how the Japanese explicit guides for professionals can be contrasted to the Western ones?' and 'what are meanings of PMBoKs for the Japanese?' This research addresses this issue.

Therefore one might expect a Japanese PMBoK to differ from a Western one. If so, then in the same way that the West has benefited from the study of Japanese management, so it might benefit from a discussion of the generic nature of projects.

Faced with new challenges, the Japanese construction industry will also have benefit from PMBoK research. Firstly, in Japan, the demand for construction projects has decreased to half that in the 1990s. Secondly, thanks to globalization, the Japanese construction industry now faces more international competition. The industry also needs to adapt to environmental change. It needs to shape the way that it manages projects. To

do so, an explicit guide to Japanese project management is essential. Thus, the Japanese can acquire project management knowledge from a more global point of view, recognising the nature of the current system and the reasons that it has been employed. An explicit guide to knowledge in project management will aid this process. Further, there need to be explained how much fit any theory of PMBoKs that the research can propose to the actual PMBoKs that were produced after 2001.

## **1.2 Management in Japanese construction sector**

In this section, the problem of management in Japanese construction sector is discussed as a background for research on the Japanese PMBoK in construction sector.

### **1.2.1 Criticisms of the Japanese construction industry**

A 2000 Mainichi Newspaper survey reported that 38% of Japanese citizens think that Japanese public construction projects are inefficient-, and 25% of Japanese citizens consider public construction projects unclear in decision-making.

1. Public construction projects are inefficient -38%,
2. Public construction projects have unclear decision-making -25%,
3. Corruption and collusive tender occur in public construction projects -20%,
4. Public construction projects increase government debt -17%.

(Mainichi Newspaper, 2000)

Japanese public construction projects were criticized because it is thought of as inefficient and unclear from Japanese citizens who are outside the industry. Such projects require accountability in project management.

Japanese general contractors received the same types of criticism as the Japanese public construction projects. According to the Nihon Doboku Kogyokai survey<sup>i</sup>, 31% of Japanese citizens considered general contractors unnecessary because

1. General contractors are dependent on subcontractors for performing construction works.
2. Those outside the industry cannot understand general contractors' activities.

(Nihon Doboku Kogyokai, 2000)

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<sup>i</sup> Nihon Doboku Kogyokai consists of 174 main construction companies. Data of the survey is from 825 individual questionnaires.

From the aforementioned data, it may be concluded that Japanese public construction projects and general contractors received criticism because Japanese society does not have a proper understanding of project management in public construction projects. For example, Yoshida and Teikoku Data Bank Ltd (1998) explained that Japanese general contractors do not perform their duty in building projects because 80% of construction works is outsourced to subcontractors. Because general contractors' activity is unclear to outsiders, people perceive general contractors as people who unfairly exploit their clients (Mainichi Newspaper, 2000).

Sekiya (1997), Saeki(1997), and Eguchi (1997), managers in the Japanese building sector, noted that the management fee is not regarded as an appropriate object of payment. In Japan, it is abnormal to pay for any service. 'Service' here means non-material deliverables benefiting the customers. In the Japanese language, 'service' is translated to be something such as 'free service for the customers'.

Another issue is that the consultants in the Japanese construction sector have relatively low status. Because non-physical service is usually not charged to the client, such activities as construction design are not regarded as ones that necessitate payments (Baba, 1996, Project management committee, 1999).

Thus, Japanese people do not regard management as a legitimate business (i.e. product). Therefore, management costs are generally hidden by already including them in the product price. Because general contractor management costs are relatively high, people believe that Japanese general contractors unfairly obtain profit.

Kunishima (1998), an academic studying the Japanese public construction industry stresses that the Japanese government must more clearly explain their public projects to overcome such criticisms from Japanese citizens.

Kanou (1997) noted that clearly explaining Japanese construction project management is difficult because organisations' and individuals' roles in Japan are not distinctly separated. He says, "The Japanese have a culture of attaining the goal without defining each person's role and responsibility. This way may work well when all people have

same cultural background with long-term relationships” (p.23). He insists that the current Japanese management system should be reformed in order to clarify individual managers’ roles in building projects.

These examples suggest a common need that the Japanese construction industry clarifies its management activities and their value. However, this goal might be challenging for most Japanese organisations, because the Japanese have not explicitly defined their management approaches. Their management ways are sometimes determined culturally rather than logically. In fact, Pascal and Athos (1981; p.22 cited by Gordon, 1988; p.156) say, “Managerial reality is not an absolute; rather it is socially and culturally determined....”.

In Japan, most construction project management practices have rarely been studied academically. ‘Partnering’ is the one of such examples. The feature of ‘partnering’ is typically seen in any Japanese inter-organisational relations. In the 1980s, their practices were studied by the West. ‘Partnering’ is described as being a strategic long-term alliance between Japanese organisations. However, this is not employed based on a theoretical route in Japan. Kunishima and Shoji explain this situation in one of the few Japanese ‘construction management’ textbooks as follows:

“(Partnering) is a new form of agreement or system, adopted within normal construction contracts or design-build contracts, in which the client and contractor together form a project team based on mutual confidence and then work together to manage the project to a successful conclusion, yielding a profit for both parties. ... The relationship between the two parties is called a partnership or alliance. ... Since the formation for certain types of partnership has been limited in the United States over the past few years, the effectiveness and problems of this new system will be revealed in future studies.”

(Kunishima and Shoji, 1995; p.258)

Considering that the Partnering has its root in Japanese management practice, the above understanding among Japanese practitioners may express Japanese at large do not recognise what they are doing in practice as an explicit manner. Thus, a clear guide for Japanese project management would enable them to explain their own practice.

### **1.2.2 The needs for a PMBoK for the Japanese construction industry**

As Bennett (1991) observed, although the Japanese have excellent management practices, they lack a logical approach. Further, Japanese management practice cannot be fairly evaluated without considering negative aspects such as excessive overtime ('Long working hours' has always been a serious problem of the Japanese construction industry).

Baba (1993) and Yashiro (1998) found that Western project management philosophy is different to the body of knowledge of Japanese construction projects, although they did not propose a Japanese PMBoK. Later, Crawford, et al. (2007) identified implications of different emphasis between project management standards in five countries including Japan and Western countries. They implied that the Japanese project management standard exhibited characteristics different to the other standards, although they could not specify the relationship between the differences in standards and the countries' backgrounds underpin the differences.

Having an explicit description of management practice would benefit for Japanese managers as well as those in other countries. From this purpose, the Japanese construction industry requires explicit description of its project management. If the Japanese construction industry has a remarkable production system, the industry might have a unique model of project management and it might thereby contribute to the development of the overall project management discipline.

To summarize, the Japanese see themselves as unique to the rest of the world. In civil construction industry, the Japanese public also has an interest in construction projects as taxpayers. In international project practices with Japanese firms, foreign countries must understand management practices in the Japanese construction industry. The Japanese firms also require an understanding of the differences between their own and other nation's project management.

In Japanese construction projects, engineers usually serve as project managers. However, their current management education is neither well structured nor standardized, and so engineers require the appropriate education and evaluation as project managers. Japanese construction industry therefore would seem to benefit from a more logical, explicit, and structured approaches in management education and assessment in project management.

All these factors indicate the needs for explicit management practices in the Japanese construction industry. More importantly, Japanese managers must clearly know what the project management practices are and why they have such practices. Further, other countries can benefit from detailed knowledge of the Japanese construction industry to utilize Japanese practice.

Construction's project management discipline should address its specific needs. It requires a Japanese PMBoK as explicit guide for the discipline. Project management communities should explore development of a project management model in the Japanese construction industry.

### **1.3 The structure of this thesis**

The remainder of this thesis comprises the following chapters:

#### **Chapter 2 Project management**

The aim of Chapter 2 is to describe the background to projects and project management.

#### **Chapter 3 Project Management Bodies of Knowledge (PMBoKs)**

Chapter 3 describes the professional associations in the field of project management, together with PMBoKs and their background. Literature regarding project management bodies of knowledge is reviewed. The functions of PMBoKs is analysed in terms of knowledge works of the project management.

#### **Chapter 4 Research methodology: a possible model for a Japanese construction PMBoK in 2000, a questionnaire and interviews**

Chapter 4 deals with the research methodology. The process of selecting topics for coverage by PMBoKs is discussed. It includes the design of a model of Japanese PMBoK. The model is used as a straw-man to test through interviews with Japanese managers and the questionnaire circulated to Japanese managers.



### **Chapter 5 Data analysis 1: the PMBoK within the Japanese construction industry**

Chapter 5 examines the results of the interviews and questionnaire regarding topics within the proposed Japanese PMBoK. Meaning of the proposed PMBoK for the respondents is analysed.

### **Chapter 6 Data analysis 2: an international comparison**

Chapter 6 discusses the nature of project management with regard to international comparisons. Firstly, data from Japanese working in various environments (in Japan and overseas) are compared. Secondly, data collected from Japanese managers are compared with those taken from English managers – the latter data being collected during research for the update of APM in the UK in the previous year. The differences are examined through comparisons with actual topics selections of existing PMBoKs during 2001 – 2013.

### **Chapter 7 Conclusions: research findings and further study**

Chapter 7 presents the research findings and proposes further research. weakness in stressing other social relationships with other various parties, especially contractors, compared to the English PMBoKs.

## **Chapter 2 Project management**

### **2.1 Introduction: what is a project?**

The aims of this chapter are as follows:

- to define the terms ‘ project’ and ‘project management’
- to review the evolution of the concepts of ‘project management’, and
- to state what it is about project management that differentiates it from other management approaches.

Question ‘What is a project?’ is the oldest and the most difficult question within the subject of project management. Despite a long history of investigation, a widely accepted definition for the term ‘project’ does not yet exist (Reiss, 1992/1995, p. 11), even among traditional engineering project industries (Turner, 1999, p.2).

Nevertheless, in order to manage a project, providing a definition is extremely important. If we want to manage something, then we should know the object that we are going to manage. Sun Tzu, an ancient Chinese General, said “If you know both yourself and your enemy, you can win numerous (literally, ‘a hundred’) battles without jeopardy” (Tzu, c.500 BC ).

When we want to manage a project, we have to know what it is. Therefore, to manage projects, it is preferable to know their tangible characteristics.

The following section gives the definitions of ‘a project’ supplied by many authors.

### **2.2 The definition of a project and project management**

Many authors have tried to describe the nature of a project. Some key words are typically used for an explanation. For instance, Kerzner points out that a project is seen as any series of activities and tasks that have a specific objective, start and end, and funding limits, and that consume resources (Kerzner, 1998; p.2).

Reiss's defines a project as "a human activity that achieves a clear objective against a time scale" by a team of people, no practice or rehearsal and change (Reiss, 1992/1995, p.12).

Wearne sees a project as "investment or resources for an objective that cause irreversible change" (Wearne, 1995, p. 3).

In ISO 8402, a project is defined as "a unique process, consisting of a set of co-ordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements including constraints of time, cost and resources" (ISO 8402, quoted by Lockyer and Gordon, 1996, p. 1).

The PMI guide to the Project management Body of Knowledge defines a project as "a temporary endeavour undertaken to create a unique product or service" (PMI, 1996, p.15).

Young sees projects as a means of generating change(s) with structured method(s). He also mentions 'start point and finish point' and results that satisfy 'needs' (Young, 1998, p. 16).

Maylor describes a project as goal oriented 'non-repetitive activity' activities, with set of constraints such as time and resource. A project causes some changes that are measurable (Maylor, 1996/1999, p.4).

Burke expresses the characteristics of a project as "a life cycle, a start and finish date, a budget, activities that are essentially unique and non-repetitive" as well as "co-ordinating, a single point of responsibility, that are subject to change and need to be developed, defined and established". He defines a project as "a group of activities that have to be performed in a logical sequence to meet preset objectives outlined by the client" (Burke, 1994; pp. 8–9).

Field and Keller (1998, p.3) use 'objective', 'resources', 'unique (venture)', 'budget', 'schedule', and organised work towards a pre-defined goal or objective as key words.

The ISO 10006 (quoted by Lockyer and Gordon, 1996, p. 1) notes that some key concepts and tools, such as organisation, objectives, and products are constructed during the course of the project. They also explain that project activities are interrelated and complex.

Lockyer and Gordon (Lockyer and Gordon, 1996, p. 3) states that uniqueness, having a start and finish, and having phases, are characteristics of a project.

Turner and Simister (2000, p. 66) define projects as “unique, novel and transient endeavours undertaken to deliver novel business development objectives”.

Lock (2000, p. 4) insists that a project’s characteristics are ‘novelty’ and ‘uncertainty’. A project is unique in terms of “one or more commercial, administrative or physical aspects”.

A project thus seems not to have a common definition. Many elements have been suggested as definitions of a project, by many authors. Those elements that were suggested by the above-mentioned authors as characteristics of a project are as follows:

A project:

(Goal-related definitions)

- is started, having some purposes, intentions, and/or constraints
- is an activity whose objectives may be defined and achieved progressively during the course of progress
- should have a definite goal to achieve
- has a specific objective to be completed within certain specifications

(Time-related definitions)

- is concerned with time
- has defined start and end dates

(Uncertainly<sup>ii</sup>-related definitions)

- is concerned with uncertainty
- is an activity that cannot be totally predicted in advance

(Planning- and change-related definitions)

- is an activity in which the plan should be changed in accordance with its progress

(Resource- and budget-related definitions)

- has funding limits (if applicable)
- consumes resources (i.e. money, people, equipment)
- is an investment of resources

(Human-related definitions)

- needs a single point of responsibility

(The other definitions)

- includes almost all activities.

The above definitions are indirect descriptions of project activities. They do not directly express ‘what a project is’. Instead, they directly express *how* people have perceived projects. In fact, almost all of the authors define project management as managing all (or some) of these elements. These elements are indirect factors for comprehending the meaning of ‘a project’.

So far, we do not have an answer to the question: ‘what is a project?’ Instead, we know that each project has certain characteristics – uniqueness, irreversibility, and changes by human beings. We also know that a project has a life-cycle. These definitions express project’s characteristics. Therefore, a manageable definition for a project is as follows:

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<sup>ii</sup> In Oxford dictionary, risk is defined as: [Exposure to] the possibility of loss, injury, or other adverse or unwelcome circumstance; a chance or situation involving such a possibility.  
“Frank Knight (1921) established the distinction between risk and uncertainty in his work “*Risk, Uncertainty, and Profit*”. Whereas risk is measurable provability of damages, uncertainty is the lack of complete certainty, that is, the existence of more than one possibility. With uncertainty the "true" outcome/state/result/value is not known (Wikipedia, 2011).

- **A project is unique, involves change by people and has a predetermined life-cycle.**

Morris (1994/1997) notes that whereas the life-cycle is the only characteristic that distinguishes projects from non-projects, all other management theories contained in project management do not differ from ‘general’ management, such as “planning, organizing, controlling, and so on” (Morris, 1994, p. 307).

It is questionable whether we can find the ‘right answer’ for the definition of ‘a project’. The above definition of ‘a project’ may be right for an appropriate case, but it may be wrong for other cases. In fact, no one has ever succeeded in providing a totally accepted definition of what a project is, so the question will not be answered properly. Instead, we could have an agreement on what ‘our project management’ is to be. Our question should be ‘what is our agreement on the definition of a project’.

‘Project management’ is simply the discipline of managing projects. The definition of project management is thus intimately bound up with the definition of a project. Further, in a definition of a project, we also see some ‘parameters’ – goal, time, uncertainty, team, quality, etc. – which are suggested by many authors to describe a project. Whatever we choose as parameters, we can and should have these parameters to manage projects. Therefore, project management is defined as follows:

- **Project management involves the management of unique changes throughout a predetermined project’s life-cycle.**
- **Projects are managed through the management of their parameters, e.g. goal, time, uncertainty, organisation, value, etc.**

The above two definitions of project management will be used in this thesis. Regarding the selection of parameters, it should also be very central issue to define project management. In fact, there have been debates in the project management community on the extent to which project managers should be knowledgeable in managing projects. For

instance, Morris (1999) critiqued that project management should focus not only on the traditional view, i.e. ‘on time, in budget, to scope’, but also the sponsor’s success. Ohara, *et al.* (2004) also stressed that the topics of project management should be extended to the very early stage of projects, when projects are created that ‘focus on management processes’ to deliver project outcomes towards ‘predetermined objectives’. The question: ‘What parameters should be selected for a guide on project management?’ is a main theme for project management. This research deals with this question, using a case of the Japanese construction sector.

The following sections show the development of project management along with the development of management theories. This approach is important, since the development of project management theories has a close relationship with the development of management theories.

### **2.3 The ‘task idea’ and routine operations**

The early twentieth century saw the rise of modern management. The ‘task idea’ (Taylor, 1911*b*, p. 39) was central to the evolution in management. The idea, focusing on the workflows and the efficiency of the work, enabled huge improvements in productivity and changed our society. Today, these theories are understood as ‘normal’ operation management. Normal operation management stems from the theories of Adam Smith (1776), Frederick Taylor (1911), Max Weber (1947), and Henri Fayol (1949).

Smith (1776) explains the relationships of increase in productivity and ‘division of labour’. He mentions the basic theory of mass production, using a pin-maker:

“the important business of making a pin is, in this manner, divided into about eighteen distinct operations, ... Each person, therefore, making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they could certainly not each of them have made twenty, perhaps not one pin in a day.”

(Smith, 1776, p. 110)

Taylor (1911b) established a scientific approach to management. His application of the scientific method to mass production brought huge improvements in productivity. Fayol's (1916) work in France coincided with that of Taylor in the US. Fayol describes basic organisation theories, such as the division of work; the discipline of the relationship between individuals and the organisation; and a united organisational control and command system. According to him, management responsibilities are as follows: planning, organising, command, coordination, and control (Sheldrake, 1996, pp.45–57, Burnes, 2000, pp.32-35).

Weber (1947) introduced the term 'bureaucracy' for the understanding of the mechanisms of big organisations. He explains how bureaucracy is controlled through laws that govern a system of abstract rules and the formal memberships of the organisation. In a bureaucracy, the roles of members are granted by the organisation. The organisational structure is described as hierarchically controlled. Tasks are defined as continuous, and based on regulations. These offices and/or roles that constitute an organisation are functionally divided (Sheldrake, 1996, pp. 61–63).

## **2.4 Routine operations and project management**

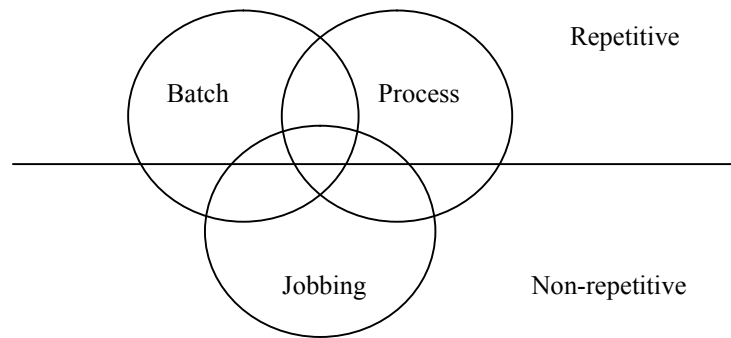
While traditional management theories such as bureaucracy and the task idea had been prevalent in management practice as a basic concept, these theories were increasingly recognised as being unsuitable for application to one-off activities (Bennett, 2000, Turner, 2000a). As our activities have become complex, large-scale, and/or urgent, the need for management of one-off activities has increased. The modern term 'project management', which is now widely used, first emerged in the 1930s to 1950s (Morris, 1994).

Project management is management of non-routine activity. Many researchers clearly differentiate between project management and routine operations (Burke, 1994, Lockyer and Gordon, 1996, PMI, 1996, Morris 1994/1997, Turner, 1999, Turner and Simister, 2000). For instance, Burke (1994) differentiates project management from "with two other common types of management", 'production<sup>iii</sup>', and 'process' (Burke, 1994, p.10). Project management involves non-repetitive activities. It deals with the coordination of subdivided work packages (Figure 2.1).

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<sup>iii</sup> Burke (1994, p.10) defines 'Process Management' as "the product flows along a process line, i.e. a chemical plant processing petrol from crude oil."





**Figure 2.1: Three different types of management. Source: Burke (1994), p. 10**

Apart from the fact that Burke’s categorisation is appropriate to discuss project management, the idea that project management always deals with non-routine operations is a major one. The PMI also differentiates routine operations from projects. They say “Operations and projects differ primarily in that operations are ongoing and repetitive while projects are temporary and unique” (PMI, 1996, p.5).

Turner explains the difference between routine operations and projects as “In the process, we recognise that rather than having either projects or routine operations, we have a spectrum of endeavours ranging from the routine to the unique, novel and transient. As we move along that spectrum we use management approaches designed for the routine or the unique, novel and transient, or something between” (Turner, 1999, p. 3).

Turner differentiates between ‘projects’ and ‘routine operations’ by way of our conceptual approach, not by focusing on the activity.

Whatever we choose as an approach and/or perception, routine operations and projects are thus distinguished. We have two different approaches to managing our activities – routine operations and non-routine operations. Non-routine operations are frequently used to describe projects’ activities.

## **2.5 Project management and routine work**

The finding of ‘task idea’ may characterise the most significant epoch in modern management. In fact, the idea is still strongly affecting today’s management (Hammer and Champy, 1993, Bennett, 2000, Turner, 2000a). There is no doubt that the task idea was developed into ‘routine operations’.

Because there is general agreement on that ‘projects’ can be clearly differentiated from ‘routine work’, it is good to start to examine how the idea of ‘a project’ has been distinguished from ‘routine work’. Then, this section examines ‘what is the opposite word to “routine work”?’ Therefore, this section examines the point at which the idea of ‘routine work’ was first separated from all our activities in modern management.

It was Taylor (1911) who first scientifically used the notion of differentiation between management and routine work. Introducing the term of ‘brain work’ to distinguish management and routine work, he developed the use of the concept of routine work in management.

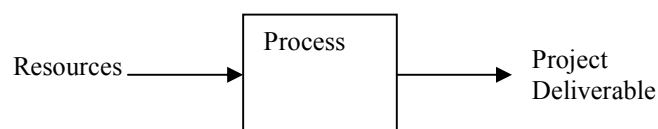
“All possible brain work should be removed from the shop and centred in the planning ... department ...”

(Taylor, 1911*a*, pp. 98–99, cited in Burns, 2000, p. 29)

“The work of every workman is fully planned out by management ... and each man receives in most cases complete written instructions, describing in detail the task which he is to accomplish ...”

(Taylor, 1911*b*, p. 39, cited in Burns, 2000, p. 29)

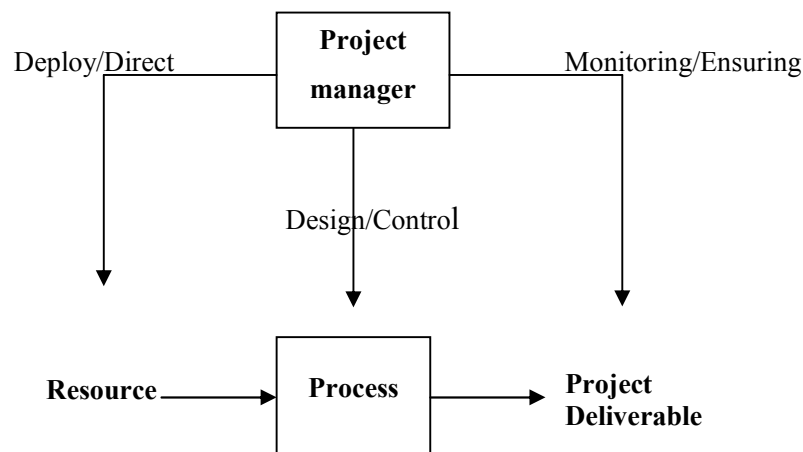
The concepts of routine work are shown in Figure 2.2: i.e. model, input and output. In the model, there is no brain work. Once this model is established, we should concentrate on the monitoring and/or control of input and output. This has long been used as the basic concept of a control system. Thus, when (the concept of) routine work was stated, the concept of brain work also gained ground.



**Figure 2.2: Basic model of a control system. Source: Maylor (1996/1999), p. 192**

Figure 2.2 shows a basic model of a control system. This idea is exactly the same as Taylor’s routine operations. So, where, and how, should we describe brain work?

Whichever approach we employ, *ad hoc* ‘management’ needs to perform the brain work. The basic view of project management is expressed in Figure 2.3. A project manager manages the input. He or she designs and controls the model. Project managers also monitor the output so that the output can meet expectations. What project managers do in projects is brain work. This is clearly different in nature to routine work.



**Figure 2.3: One view of project management. Based on Norris *et al* as quoted in Field and Keller (1998)**

## 2.6 Four approaches to project management

Although, it is widely accepted that routine operations differ from projects, project management is perceived in many different ways. For instance, Kezsbom *et al.* introduced their example in their project management workshop. Their audiences conceived project management as if it were a special method to manage their project. At their workshop, they found “many different perceptions there are of just what project management really is” (Kezsbom *et al.*, 1989, p. 3).

An adequate tangible discipline of project management has still not yet been found. It is still developing. Its tools, techniques, and even its conceptual base are evolving rapidly. Lock (2000) asserts that keeping up with the cutting edge of knowledge in project management is important for project managers (Lock, 2000).

Morris (1997) also tells us that “genuine generic practices and terminology” of project management has not been thoroughly explored (Morris, 1997, p.1 of the preface to the hard book edition).

Thus project management discipline is still growing. There are many different approaches and/or perceptions of project management. The following sections discuss different approaches to project management. Following a review of the literature on project management, this research classifies project management into four distinct approaches.

The first group of researchers emphasise the **control** of project-based activities. Another group of researchers consider project management as a **system** approach that is more advanced than the control approach. These two approaches are the so-called traditional project management views (APM, 2000). While these two approaches share the same idea, the system approach is more advanced and complicated than the control approach.

The third group of researchers sees project management as a **goal-oriented** process, which could be a cross-functional activity in a conventional organisation, or it could also be a change process within a conventional organisation. Because the approach considers project management as one of the functions in a conventional organisation, the approach is differentiated from the others.

The fourth group of researchers use a more recent approach. For convenience, this approach is called as the **human-centred** approach. This approach focuses on project managers' intelligent work, which, as we have seen, was distinguished from 'routine work' by Taylor in the early twentieth century.

These four groups are used as a framework in the following sections. The author does not intend to make a rigid classification of all the approaches using the framework. The purpose of the framework is to enhance the understanding of different perceptions of project management. The proposed framework will aid comprehension of the development of project management.

The overall trend in project management could be explained as the expansion of its scope, from the traditional management view to the human-centred approach.

### **2.6.1 The control approach**

The control approach is closely related to the traditional management approach. Where line operation is central to management, project management is regarded as a supplementary function. Taylor and Watling (1973, p.12) envisage this type of project “authority arises out of the project and its needs, it tends to emphasis planning and control more than a line operating department”.

Stallworthy and Kharabanda (1983) clearly state that their main concern is the control of costs in projects. O’Neil (1989, pp.3-4) distinguishes the general management approach from that of project management, according to the project’s temporality to be done for objectives. He sees project management as the control of resources.

The control of some dimensions is the initial step of project management. As Taylor picked out from all activities, its base is the management of routine work (Figure 2.3). It is indeed important as the first step. Compared with the other approaches, however, the control approach emphasises the importance only part of the whole works of project management. As we shall see in the next section, the control approach can be expanded to the system approach.

### **2.6.2 The system approach**

This approach has its roots in Operational Research (OR), which Stafford Beer championed, amongst others. This is an advanced control approach. The approach is sustained by the following three basic logics (Figure 2.4):

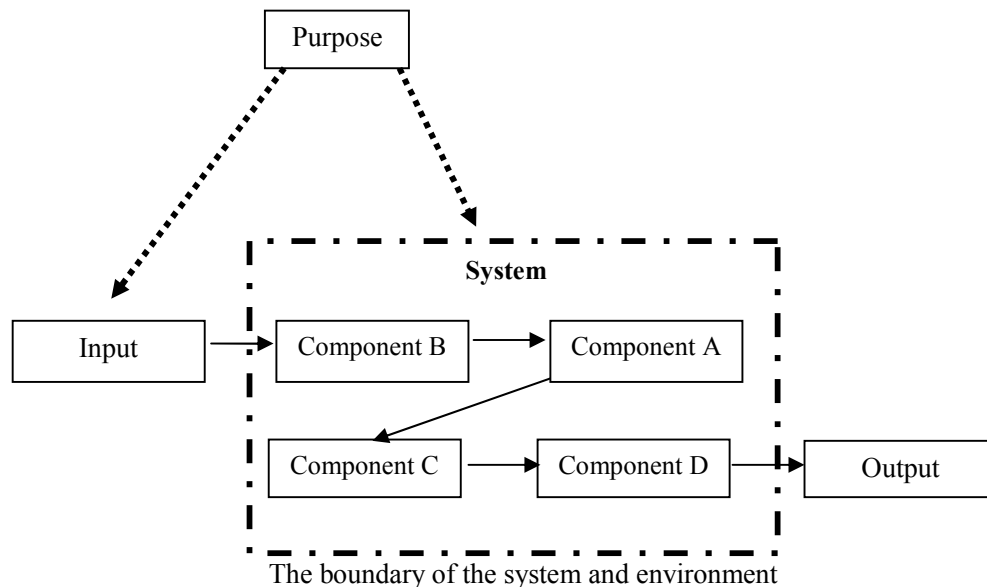
- “System is run by human beings in a purposeful manner
- System is defined against its ‘Environment’ and the system has its input and output toward the environment
- System consists of structured components”

(Meredith and Mantel, 2000, p. 88)

In the system approach, a boundary that implies the ontology of the inner and its environment is recognised. The input and the output are then monitored to obtain a yield

from the system. The components in the system are arranged so that the system can perform as intended. Accordingly, the boundary is maintained as the system is recognised.

Kerzner (1998, pp. 4–5) also has a view of the system approach. He sees project management as managing the company’s resources by using control systems as “having functional personnel (the vertical hierarchy) assigned to a specific project (the horizontal hierarchy).”

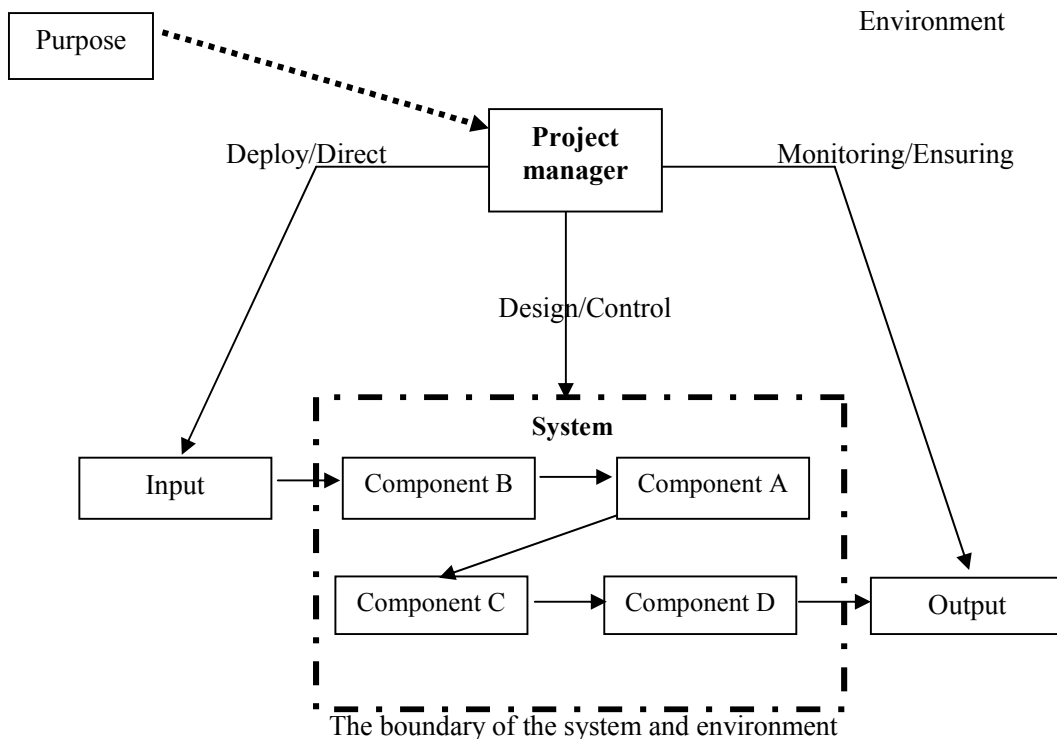


**Figure 2.4: The concept of the system approach, based on Meredith and Mantel (2000), p. 88**

Kezsbom *et al.* (1989) state that the aim of project management is to manage company resources using a systems approach that differentiates project management from a functionally assigned traditional approach.

Young (1998) defines project management as a control system for change with a specific purpose. He insists that our own perception to traditional management approaches should be withheld in order to make the changes that we need.

Figure 2.5 is a blend of Figures 2.3 and 2.4. Project managers manage and control the system, manage resources as input, and monitor project delivery as output.



**Figure 2.5: A combination of the concept of the system approach and the role of project managers (= Figures 2.3 and 2.4)**

### 2.6.3 The goal-oriented approach

Some authors see project management as a means of managing a change in an organisation, stressing the difficulty of realising a change in conventional organisations that are designed to execute relatively static tasks. A change brings confusion in such organisations. This is because a project is goal-oriented, while conventional organisations are task-oriented structures. Changes, which are normally effected by projects, break existing norms and rules in the organisation. Changing existing norms and rules requires planning and leadership. In the current rapidly changing business environment, organisations need to generate changes. Project management is conceived as the driving force of changes to meet a particular objective.

Turner, *et al.* (1984) proposed ‘Goal Directed Project Management’ as a method to implement changes that are more complex tasks than the company’s normal routine work (Turner, *et al.*, 1984, p. 26). They describe their approach to project management as directing “the project manager’s attention towards achieving results, and gives him methods and tools that increase the likelihood of his bringing the project to a successful conclusion” (Turner, *et al.*, 1984, p. 23).

Lockyer and Gordon are also among those who define project management as management of change in the normal business framework of a company. They say “The project organisation ... is set up to achieve a particular objective: project product” (Lockyer and Gordon, 1996, p. 1).

For project managers, propelling changes without assistance from an authority outside task-based management is difficult, because the rate of change caused by conventional organisations is usually slow. Therefore, Lockyer and Gordon (1996) introduce project centred organisations that is suitable to promote changes.

Change needs to be managed properly, because if it is not, then the people in the organisation may resist the changes. Changes may be resisted by functional managers because; resources required by projects are taken from normal operations, and functional managers' authority is seen as of threatened by the introduction of a project manager within context of conventional organisation. Project management must be sensitive to issues of human aspect (Lockyer and Gordon, 1996).

In their perception, project management is defined as objective-oriented management at large, as against task-oriented management that stems from a hierarchical administrative idea. It is stressed that project management is a breakthrough technique in overcoming rigid boundaries between sections. This perception is one of the important approaches to project management. However, it clearly has limited scope.

#### **2.6.4 The human-centred approach**

The human-centred approach includes the idea that intellectual work by humans is the central issue of project management. The human-centred approach does not emphasise particular tools and techniques. Introducing work and tools, instead it emphasises how project managers undertake brain work.

Lock expresses the fact that the human factor plays an important role in project management. He explains project management as a function of forecasting and planning for successful projects (Lock, 2000, p. 3).



Project managers are central to project management. Lientz and Rea (1998) assert that people have been empowered to manage changes and are expected to be knowledgeable in project management.

Morris stresses the importance of the role of people in project management as; “projects, ultimately, are managed by people. Not systems, not contracts – people” (Morris, 1994/1997, p. 303). Project managers produce everything – all the scenarios for achieving a goal that are required for managing projects. It is people who deploy resources and control everything required to manage projects. No definite system and no single rule can be applied in the management of changing objectives.

There are various factors that make a project a success or a failure (Lientz and Rea, 1998, Morris and Pinto, 2004). The things that we need from projects are not measured only by engineering dimensions. Hence, we have to give deeper consideration to broader topics than the scope of the former three approaches, that are control, system, and goal oriented. Lientz and Rea (1998) show example that a success may be turned out to be a failure later. Whether a success or not may be dependent on perspectives that differ in countries’ development. A successful project may cause other problems as side effects (Lientz and Rea, 1998). For instance, they explain “When nuclear power was first developed, it was viewed as a great success and saviour for energy, medicine, and a variety of social problems. Although it has had many benefits, the view today is mixed. In short, something that appears as a success in one year may be a failure two years later” (Lientz and Rea, 1998, p.15).

With this view, two questions were posed by Morris (1994/1997, p. 217): ‘What should the proper scope of the subject of managing projects be?’ and ‘What makes a project successful?’ Who is able to answer these questions, and who is responsible for answering them? It is project managers who do the essential work in managing one-off activities. The development of human ability should be a central issue to enhance the performance of projects. It implies that the development of project management practice also essentially owes a debt to experience in the profession of project management.

Regarding the definition of success, Cooke-Davies (2004, p.105) asserts that there are three levels of success criteria. These are: (1) project management success: ‘doing the

project correctly'. This is concerned with the execution of project; (2) project success: 'doing the right project'. To do so, the right projects need to be selected; and (3) consistent project success: doing the right project correctly, time after time. Considering that an organisation has to be run as a going concern, profit needs to be generated continually via project success.

More recently, Pryke and Smyth (2006) focus on relationships between people and organizations in project and project management. Importance of focusing on relationships in projects is based on a view that a project is a social endeavor. They clearly define that "Delivering a project is a social activity. People are at the centre of realizing the goals, completing the tasks. People add the value"(Pryke and Smyth, 2006, p13). What they insist is that project management is not merely functions to generate project deliverables but to create clients' satisfactions and processes to attain the satisfactions. They say that our perception to projects would be changed if project management focus on clients' value and relationship with the clients (Pryke and Smyth, 2006, p.9).

In terms of attention to the front-end issue, Ohara (2009) defines the owner as the central player, "who is completely responsible for the total lifecycle" (p.15) in project management. He defines relationships of owners and contractors as a team jointly involved in value creation, defining mission and seeking solutions to obtain the value. As a model of value creation by organizations, he introduces Kaikaku project management (KPM) that is defined as innovative reform of business strategy and capabilities of organizations. The KPM consists of '*kakushin* (innovation)', '*kaihatsu* (development)', and '*kaizen* (improvement)'. In the KPM, people are centered in value creation. '*Kakushin* (innovation)' treats radical breakthrough. '*Kaihatsu* (development)', new knowledge and information are developed through challenges. '*Kaizen* (improvement)' is efforts of continuous improvement at work-floor level. Though these three components treat different scope of changes in organizations, managers in every component are expected to act creatively to manage projects in radically changing business context.

With human-centered view, to be successful in a project, project managers need to be more intelligent than when using the other approaches explained in this chapter. Dealing with complex needs and demands, we have to manage our quality of life, not merely engineering detentions. Project managers not only need to meet given objectives, but also

to set the appropriate measurement of success. Management needs to satisfy the preset dimensions as well as satisfying the client. Managers need to create value as well as to analyze situations that need to deliver a project outcome. Morris and Pinto (2004) expect project managers to be ‘thinking managers of projects’ (Morris and Pinto, 2004, p. xiv). This is why this approach is termed human-centred. The project manager’s intelligent work has a significant influence on the success of a project. Learning of/in project management is an issue central to project management.

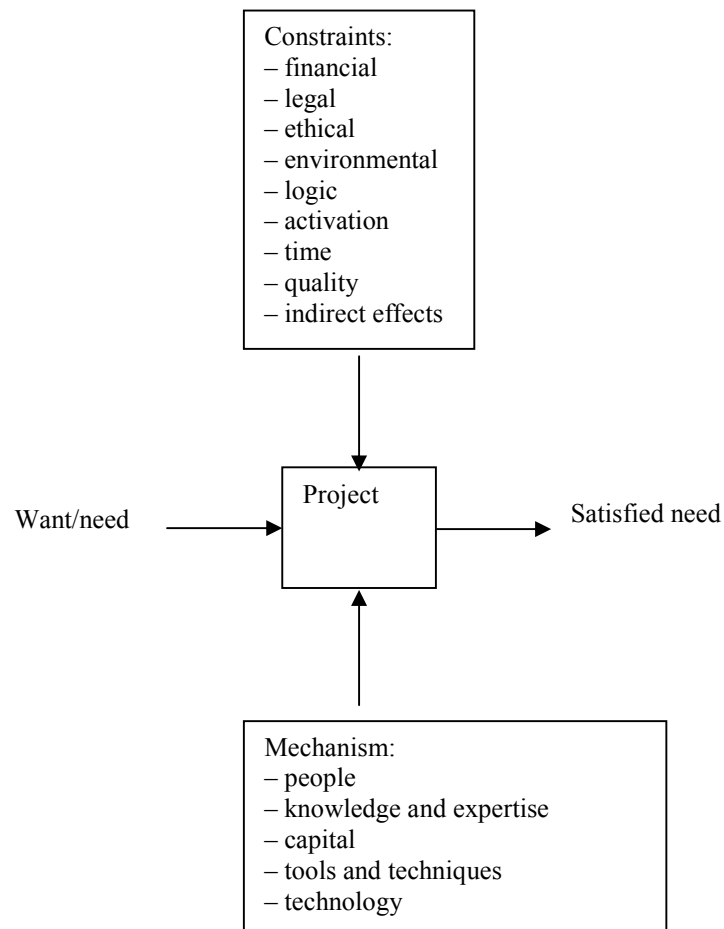
## **2.7 The conversion process model and the project management process**

The conversion process that is shown in Figure 2.6 is generally accepted by the APM (APM, 2000). The process is expressed as process that needs and wants are inputted and satisfied. The process is realised by the mechanisms as resources. The process is in the context on which some constraints are imposed (Maylor, 1996/1999, p4).

In this process, once needs are inputted, needs are processed. Finally, needs are satisfied. The human-centred approach emphasises that ‘project management is done by people’. This process cannot be done by only a predetermined system(s)/organisation(s). The want or need is converted into the satisfaction of the want or need.

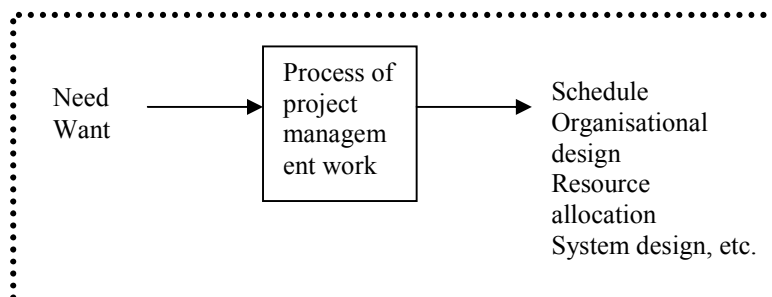
The process in Figure 2.6 is divided into various elements. If we subtract the model in Figure 2.5 from the model in Figure 2.6, then we can see the model in Figure 2.7. In project management, project managers turn *needs* into *project management plans*. In Figure 2.7, ‘needs’ means what we need to obtain as a consequence of our activities. This may be a ‘need to feed ourselves’, a ‘need to take transportation’, a ‘need to feel safe’. These examples are intangible and too obscure to deal with. We need to change these intangible things to more realistic things.

The phrase ‘project management plans’ means all plans that are required to achieve the needs that we inputted as needs. Plans include the schedule, organisation design, resource allocation, system design, contract strategy, risk-management strategy. These are tangible enough to be conceived. These are realistic procedures to obtain needs.



**Figure 2.6: The project as a conversion process (source: Maylor, 1996, p. 4)**

These plans are dealt with as the output of project management work. These outputs are used to deploy resources, to compose systems, and to monitor a project’s deliverables as the output of projects. Project management also needs to ensure that the projects’ deliverables meet the needs of the projects (see Figure 2.5). Thus, these two models are different parts of project management.



**Figure 2.7: Project management work, based on Figures 2.5 and 2.6**

Someone may think, for instance, that organisation design is part of a predetermined environment. When we are in an organisation, we will be given a role in the organisation.

Someone may report to a boss or bosses and/or might have subordinates. We may feel that we cannot decide to change our roles as a subordinate or as a boss. In our daily life, we may feel that the organisational structure is our environment.

But this is not strictly the truth. Managers' thinking (at all levels) creates organisational design. People design organisational structures. Organisational structure is not only the environment for people, but also a tool to organise ourselves. Organisational design is the product of our thinking. The fact that we have an organisational structure is a consequence of our action, which is based on our thinking.

Thus, project plans are products that are to be produced by project management.

## **2.8 Summary**

The aims of this chapter were as follows:

- (1) to define 'a project' and 'project management', and
- (2) to review some approaches to 'project management'.

Firstly, 'a project' and 'project management' were defined. Secondly, some approaches to project management were reviewed. Project management was begun as a control approach; then it was expanded to a system approach. One of the important aspects of project management, the goal-oriented approach, was explained. And finally, the human-centred approach was reviewed. Using the view of the human-centred approach, topics to learn project management for project managers is the main issue of this research.

It is managers at all levels who learn and experience project management. They have, or should be, empowered to think and act to make project management better serve the success of projects. Rapid learning by managers and good performance of project management teams are important. In such a situation, the methods of learning project management at all levels are a key issue. In other words, main question should be what and how people should learn and share project management practices.

The next chapter will describe some of the professional associations set up for project managers and their endeavours to define project management in order to share and develop knowledge and experience in project management.

# **Chapter 3 Project Management Bodies of Knowledge (PMBoKs)**

## **3.1 Introduction**

An important concern in project management is the enhancement of project managers' performance, and therefore their learning of project management knowledge (see chapter 2).

The professional associations in the field of project management have been playing a central role in enhancing public awareness of project management by establishing their own discipline. Such disciplines are reflected in their 'Project Management Bodies of Knowledge' (PM BoKs).

In this chapter the background of these project management associations and their PMBoKs are explained. Then, several PMBoKs are compared and rationales of the formation of PMBoKs are discussed. Finally, PMBoKs are analysed in terms of function of language.

This chapter aims to define concepts in the PMBoKs, since this is essential to the aim and theoretical basis of the following empirical survey. It is stressed that concepts in PMBoKs should indicate centrally 'what makes projects go well', rather than 'how project managers should be'.

## **3.2 Project managers and professional bodies in the field of project management**

The project manager used to be an informal position in an organisation. "Project manager's identity is often hidden behind some other organisational role" (Lock, 2007, p. 155). Project managers are given various names, particularly for in-house projects. This situation reflects the fact that project management is underestimated as a profession. Ruggles, et al. (1997) stress the need for recognition of the project manager as other professions such as medical doctors, architects, accountants and lawyers.

People working as project managers, or in similar types of position, need to know what is involved in project management. Organisations, on the other hand, need to select a suitable people to assign as project managers. Project management associations have played a significant role in meeting these demands.

The first attempt to form an association was initiated by a US-based association in 1969, followed by a UK-based association in the early 1970s. Many Western countries followed the lead of these two associations (Hodgson and Muzio, 2010).

Through the promotion of project management as a profession, these associations aim to promote the discipline across a wide range of different industrial sectors. The status and rewards of project management profession has been enhanced in recent years. As a profession, the job title has been more recognised (Lock, 2000).

We can comprehend that the rise of the discipline of project management has been parallel with the development of project management associations. The following sections will explain in more details the growth of these associations.

### **3.2.1 Project management associations around the world**

There are several project management associations worldwide (Crawford, 2004b). The following associations are the principal ones.

#### **International Project Management Association (IPMA)**

Started as INTERNET (which was the name of the organisation until 1994) in 1967, the International Project Management Association (IPMA) has 42 membership countries, including Germany and France<sup>i</sup>, representing over 40,000 individuals,

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#### **<sup>i</sup> German Project Management (GPM)**

GPM was founded in 1979. Some 1400 individuals and 100 organisations are participants in GPM, which was the second-largest national association of IPMA members in 2000.

#### **Association Francophone de Management de Project (AFITEP)**

AFITEP was founded in 1982 as an association for cost control, estimation and planning, mainly in the engineering, construction and manufacturing sectors. It had over 1000 individual members in March 2000. AFITEP promotes project management in all places where French is spoken.



mainly from Europe, Asia, and Africa. IPMA publishes the *International Journal of Project Management* and hold annual research conferences and seminars (IPMA, 2010).

### **Project Management Institute (PMI)**

This US-headquartered organisation was established in 1969 (ENAA, 2000, PMI, 2001a, 2001b). It has more than 250 chapters in 70 countries. PMI has more members than any other project management association. By 1990, PMI had 7500 members. In 1995, it had 17,000 members, and by the end of 1998 the membership had exploded to over 44,000. In September 2010, its membership and credential holders reached over 500,000. It publishes journals for its members (PMI, 2010).

### **Association for Project Management (APM)**

APM was established in 1972 (APM, 2010). It is a UK-based organisation. In July 2010, APM has 17,500 individual and 500 corporate members, including project managers, project management practitioners, students and academics. The APM-sponsored publications are *Project Magazine*, and some other guides for the project management profession.

### **Australian Institute of Project Management (AIPM)**

This organisation started as a project management forum in 1976, and was renamed (to AIPM) in 1989. AIPM had 4000 individual members in 2003. Since AIPM has been independent from both IPMA and PMI, it has been played active role in global cooperation among these two international organizations and other associations (Crawford, 2004b).

### **Project Management Association of Japan (PMAJ)**

Japan Project Management Forum (JPMF) was founded in 1998 as a division of the Engineering Advancement Association of Japan (ENAA) in order to promote project management in Japan. JPMF was merged with the Project Management Certification Centre (PMCC), forming the Project Management Association of Japan in 2005. PMAJ runs three levels of certification, one of which is the most popular in Japan, i.e. Project Management Specialist (PMS). As of 2009, PMAJ had certified 5,200 individuals (PMAJ, 2010).

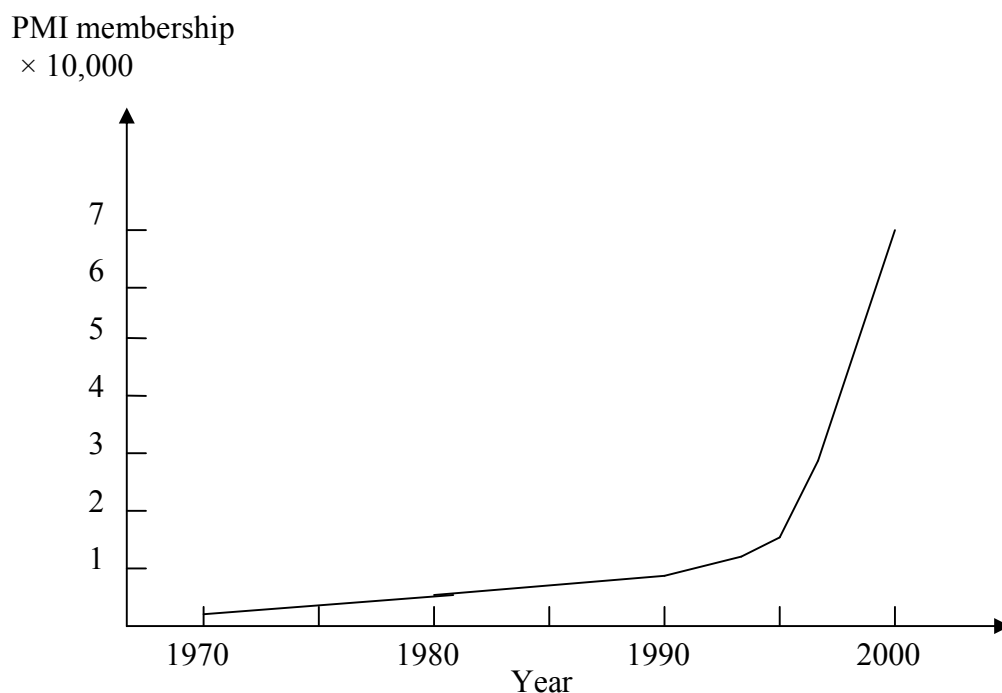
### 3.2.2 Professional association and certification program

#### Rapid growth of associations in the new economic environment

Project management associations have acquired a large number of participants in the last 15 years. Around 1995, the number of members really started to take off (see Figure 3.1). In 2010, the number of members and credential-holders reached 500,000 (PMI, 2010).

The explosion in numbers of members in the 1990s indicates that the application of project management as a discipline had spread to a broader area of activities. In terms of the rapid growth of membership, PMI is the driver of the promotion of both project management and professionalism in the field (Meredith and Mantel, 2000).

The business environment has been changing rapidly. This situation has stimulated the adoption of the discipline of project management to respond to the changes in a wide range of activities.



**Figure 3.1: History of the growth in membership of the Project Management Institute. Source: based on Meredith and Mantel (2000), p. 5.**

### **Membership and professional development**

The activities of project management associations first began as discussions on the professional discipline of project management, mainly via journals, conferences and seminars (Morris, 1999*b*). These discussions were the first step toward the establishment of project management as a profession. Communication between academics and practitioners was started in order to establish the discipline itself. For instance, PMI, the US based community, provides ‘the Project Management Journal’ and ‘PM Network magazines’ for exchanging of ideas and finding some solutions for a common problem (Meredith and Mantel, 2000, p. 5).

As a place of exchange of knowledge in project management, associations have contributed to the development of project managers. Integrating various aspects, project managers are expected to use knowledge appropriately to manage projects and for getting favourable results from the project activities (Meredith and Mantel, 2000).

The project management associations provide several levels of membership. This also encourages recognition of the project management profession. For project managers, membership helps develop their knowledge such as current awareness of modern techniques, practices, and computer systems (Lock, 2000).

### **Contribution of the certification programs to the professionalism of project management**

In large companies, it has become more common to have project managers as specialists. They are provided with training as project managers and will be rewarded with promotion. The project manager has increasingly been recognised as a career path in many organisations that conduct projects (Meredith and Mantel, 2000).

Certification programs are one of the ways for companies to select their project managers. Ruggles, et al. (1997), one of the founders and a board member of PMI, stress the impact of the certification program for establishing the project management profession (PMP). Certification is an effective mean to establish the profession increasing memberships as well as meeting the demand of the industries. These lead to enhancement of status, influence and revenue of the professional bodies (Hodgson and Muzio, 2010).

### **3.3 Project Management Bodies of Knowledge (PMBoKs)**

Those who manage projects are working in environments with an increasing rate of change. People are required to be more effective and efficient in learning from experience. For this type of learning, they need to be aware of what they need to know in project management practice, i.e. need to know discipline of project management.

Many professions have their own distinct domains that are defined as bodies of knowledge. Such bodies of knowledge help to establish public recognition of the profession (Crawford, 2004a). In the business context, project management as a profession is competing, or compared, with other disciplines such as change manager (Crowford and Nahmias 2010), or many other disciplines (Hodgson and Muzio, 2010).

Consequently, the demand has arisen for criteria to select and train project managers. Defining the area that project managers should be knowledgeable in is thus becoming of vital importance. To address this, project management associations have had lengthy discussions about defining the evaluation criteria for the selection and career development of project managers.

The Project Management Bodies of Knowledge (PMBoKs) were first conceived as a model of such a set of criteria (Wideman, 1995). From the mid-1980s, certification programs were started in order to promote the recognition of the profession of project management. Based on discussions on the discipline of project management, the associations provide various kinds of education and certification programs. PMBoKs are used as the basis of these curriculum and certification programs (Meredith and Mantel, 2000, APM BoK, fourth edition, 2000).

Wideman (1995) explains that knowledge in management is created by processes that differ from 'reductionism', i.e. the model which traditional scientific subjects such as physics or mathematics normally use.

He describes the process of evolution of project management discipline as the following six stages:

“Empirical observations through the collection of anecdotes,  
The generation of hypotheses based on these observations,  
Testing of the theses through theoretical projections and further  
observations,  
The generation of antitheses to account for contradictions,  
The adoption of a new level of theory,  
The gradual establishment of a mature discipline.”

(Wideman, 1995, p.72)

In the above processes, bodies of knowledge are created and they are validated on the course of establishment of professions (Gasik, 2011). Through creation and revisions of PMBoKs, project management associations define key topics in project management (Morris, 1999b). Thus, activities of defining PMBoKs are to construct philosophy of project management (Morris, 1999a, 1999b).

Paton, et al. (2010) observed project managers who are newly assigned in organizations. These project managers are in a tension between project management’s identity and other traditional professions, and are feeling need of more robust professional background as a project manager with a body of knowledge, which can be more recognized and respected by members of their companies. PMBoKs thus have an aspect to help people in project management practice as a social entity.

### **PMBoKs and the development of knowledge of PM**

Since education in project management at an academic level began relatively recently, most current project managers are trained in non-academic ways. This training is on-the-job. There are also seminars as well as workshops that last half a day to two weeks. Private consulting firms offer training courses for project management, as well as training course for PMP certification (Meredith and Mantel, 2000, p. 92).

Although scientific theories were used in traditional project management, project managers get knowledge through practices and not gained by reduction (Wideman, 1995). It is vital to have appropriate key topics to learn from experience. A project manager reflects in his practice. Using key concepts in practice is vital for better performance in practice as well as learning as practitioners as shön (1991) described

professionals as reflective practitioner. This means that a project manager can learn faster with an appropriate framework than when he/she does not have such a framework. While learning from error is a main source of learning, this approach is slow and inefficient in project management (Morris, 1999c).

The method of management using PMBoKs is not to increase the manager's activities but to increase the efficiency of learning from experience. With an appropriate framework, learning will be effective. PMBoKs make it easier to access existing theories and practices.

Further, PMBoKs act as cognitive frameworks. As explained in Chapter 2, a project can be managed through the management of key sub-concepts. Hence, sub-concepts for managing projects express the existence of project management showing “the purpose and provide the set of words, relationships and definitions of project management” (Morris, 1999b, p.2). Consequently, defining such language as bodies of knowledge enables the transfer and sharing of project management knowledge at the global level as well as individual (or micro-) level's and team/organizational level's learning (Gasik, 2011). Knowledge is thus socially created (Berger and Luckman, 1967).

In fact, whatever they are, we need to select and use some key parameters to manage projects. A project would not be managed explicitly without some sub-concepts, e.g. goals, uncertainty, time, cost, contract, etc. Such sub-concepts constitute the language to recognise project management practices and theories. PMBoKs are not a specific method or theory – they are the very thing that shows us the ontology of project management.

“Project management is social construct” (Morris, 2010, p15). A discipline of project management exists in a sense of that people working on the discipline and literature on its subject, as well as existence of professional associations and their bodies of knowledge (Morris, 2002, pp.17-18). Aspect of projects can be used to study activities of organizations as well as for better understanding of even social life (Söderlund, 2004). Bodies of knowledge are thus the hearts of interpretation and the development of knowledge for managing projects.

### **3.4 Existing PMBoKs**

There are between three and five models of PMBoKs in the world. PMBoKs are used as the bases of these certification programs for the project management profession.

Project Management Institute (PMI) and Australian Institute of Project Management (AIPM) use the PMI Guide to Project Management Body of Knowledge (PMI-PMBOK®).

APM has its own 'Guide to PM BoK (APMBoK)'. In the late 1980s and the 1990s, GPM (Germany) and AFITEP (France), as well as other European countries including Austria, Switzerland and Netherlands, followed the UK's model. They adopted and modified the PMBoK model as their own knowledge/competency baselines (Morris, 1999b).

Stimulated by the Western PMBoKs and certification systems, ENAA; a Japanese project management association, and the PMCC; a non-profit organisation which provides project management certification programs, created their own guide to project management in 2002. The guide is called 'Project and Program Management' (P2M).

To respond to the industry that needs to select a PM standard among existing different version of PMBoKs, various efforts has been made to create a global PMBoK (Crawford, 2004b). Among them, the most explicit output was produced from Global Alliance for Project Performance Standards (GAPPS); an international working group, which has no body organization and sponsor. Their standard was published in 2007 as 'A Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers' (GAPPS, 2007).

The following sections describe several types of PMBoKs.

#### **3.4.1 PMI-PMBOK® and other guides by PMI**

The PMI-PMBOK® (PMI, 1996, 2000, 2005, 2008, 2013) was produced as the first Project Management BoK in 1983. PMI revised this and published it as the 'Project

Management Body of Knowledge' in 1987 (Crawford, 2004a). After further revisions, the fifth edition was published in 2013. Two million copies are in circulation in North America and other parts of the world, as both hard copy and free electronic files.

PMI (2005) has published other two guides: *The Standard for Program Management* and *The Standard for Portfolio Management*.

The PMI-PMBOK® and the other two standards are described as the following.

### **Project Management Body of Knowledge**

The PMI-PMBOK® (2005/2008) has nine knowledge areas (Figure 3.2.2 and 3.2.5). The nine knowledge areas consist of Integration, Scope, Time, Cost, Quality, Resources, Communication, Risk and Procurement. These knowledge areas are defined as knowledge that is seen only in project management. The fifth edition (2013) added Project Stakeholder Management as tenth knowledge area. The fifth edition defines stakeholders as project team, as a principle one, as well as sponsor, portfolio manager, program manager, customers/ users, sellers/ business partners, and other stakeholders (Figure 3.2.7).

Its structure (Figure 3.2.1- 3.2.6) has been very slightly changed during the above revisions. Knowledge areas in the PMI-PMBOK® are 'generally accepted project management practices'. They differentiate the environment of projects as being external to the core knowledge areas of project management (see Figure 3.2.3). Relations between project management knowledge area and other related knowledge areas used in managing projects are described in Figure 3.2.4. General management knowledge and practice and Application area knowledge and practice are differentiated from project management area although these three areas are overlapped with each other.

In the fourth edition (PMI, 2008), the structure of the PMI-PMBOK® consists of three Sections. Section III has nine knowledge areas (Figure 3.2.5). In the fifth edition, the section of the process groups is introduced basic thinking as a preceding section of the Project Management Knowledge Areas (Figure 3.2.6). The chapter of 'Organizational influences and project life cycle' is explained as constraints and



environment of a project, while PMI still defines only ‘the Knowledge Areas’ as a professional field for project management, (PMI, 2013, in 3.9 Role of the Knowledge Areas). However, the structure that differentiates between the core Knowledge Areas and environment issues of project management was removed. The above differentiation seems to have been moderated.

**Figure 3.2.1: The PMI-PMBOK® (Structure)**

- |   |
|---|
| <p>The PMBoK Guide</p> <ol style="list-style-type: none"><li>1. Project life-cycle definition</li><li>2. Project management processes for a project</li><li>3. Project management: nine knowledge areas</li></ol> |
|---|

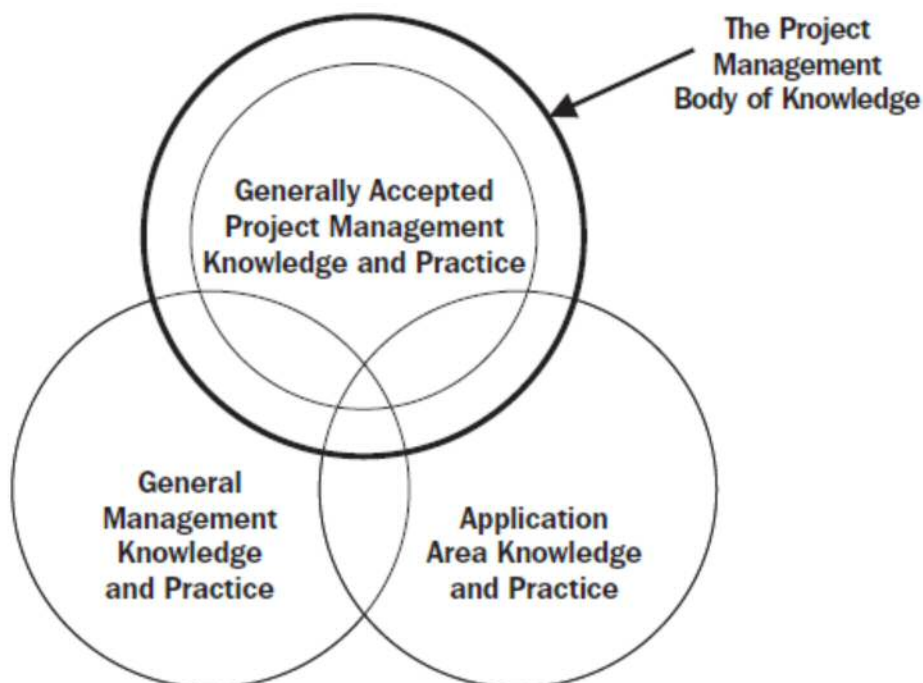
**Figure 3.2.2: PMI-PMBOK®, third edition, Project management knowledge areas**

- |   |  |
|---|--|
| <p><b>Project Integration Management</b></p> <ul style="list-style-type: none"><li>– Develop Project Charter</li><li>– Develop Preliminary Project Scope Statement</li><li>– Develop Project Management Plan</li><li>– Direct and Manage Project Execution</li><li>– Monitor and Control</li><li>– Integrated Change Control</li><li>– Close Project</li></ul> <p><b>Project Cost Management</b></p> <ul style="list-style-type: none"><li>– Cost Estimating</li><li>– Cost Budgeting</li><li>– Cost Control</li></ul> <p><b>Project Communications Management</b></p> <ul style="list-style-type: none"><li>– Communications Planning</li><li>– Information Distribution</li><li>– Performance Reporting</li><li>– Manage Stakeholders</li></ul> <p><b>Project Scope Management</b></p> <ul style="list-style-type: none"><li>– Scope Planning</li><li>– Scope Definition</li><li>– Scope WBS</li><li>– Scope Verification</li><li>– Scope Control</li></ul> <p><b>Project Quality Management</b></p> <ul style="list-style-type: none"><li>– Quality Planning</li><li>– Perform Quality Assurance</li><li>– Perform Quality Control</li></ul> | <p><b>Project Risk Management</b></p> <ul style="list-style-type: none"><li>– Risk Management Planning</li><li>– Risk Identification</li><li>– Qualitative Risk Analysis</li><li>– Quantitative Risk Analysis</li><li>– Risk Response Planning</li><li>– Risk Monitoring and Control</li></ul> <p><b>Project Time Management</b></p> <ul style="list-style-type: none"><li>– Activity Definition</li><li>– Activity Sequencing</li><li>– Activity Resource Estimation</li><li>– Activity Duration Estimation</li><li>– Schedule Development</li><li>– Schedule Control</li></ul> <p><b>Project Human Resource Management</b></p> <ul style="list-style-type: none"><li>– Human Resource Planning</li><li>– Acquire Project Team</li><li>– Development Project Team</li><li>– Manage Project Team</li></ul> <p><b>Project Procurement Management</b></p> <ul style="list-style-type: none"><li>– Plan Purchase and Acquisition</li><li>– Plan Contracting</li><li>– Request Seller Response</li><li>– Select Sellers</li><li>– Contract Administration</li><li>– Contract Closure</li></ul> |
|---|--|

**Figure 3.2.3: PMI-PMBOK®, third edition, Environment of projects**

- Environment of projects
- Application Area Knowledge, Standards and Regulations
  - Understanding the Project Environment
  - General Management Knowledge and Skills
- Financial Management and Accounting
- Purchasing and Procurement
  - Sales and Marketing
  - Contracts and Commercial Law
  - Manufacturing and Distribution
  - Logistics and Supply Chain
- Strategic Planning, Tactical Planning, and Operational Planning
- Organisational Structures, Organisational Behaviour, Personnel Administration
- Compensation, Benefits, and Career Paths
- Health and Safety Practice
- Information Technology
- Interpersonal Skills
  - Project Management Context
- Programs and Program Management
- Portfolios and Portfolio Management
- Subprojects
  - Project Management Office

**Figure 3.2.4: Relationship of project management to other management disciplines, according to PMI (2000)**



This figure is a conceptual view of these relationships. The overlaps shown are not proportional.

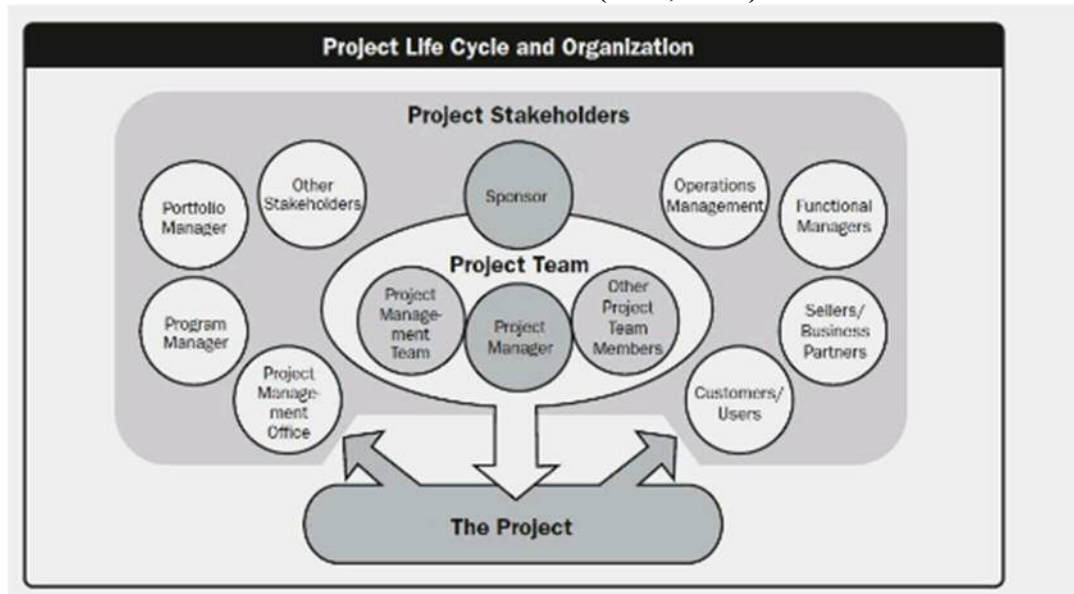
**Figure 3.2.5: The PMI-PMBOK® Guide Forth edition  
Structure and project management knowledge areas**

Section I The project management framework
1. Introduction
2. Project Life Cycle and Organization
Section II The standard for project management of a project
3. Project Management Processes
Section III The project management knowledge areas
4. Project Integration Management
5. Project Scope Management
6. Project Time Management
7. Project Cost Management
8. Project Quality Management
9. Project Human Resource Management
10. Project Communications Management
11. Project Risk Management
12. Project Procurement Management

**Figure 3.2.6: The PMI-PMBOK® Guide Fifth edition  
Structure and project management knowledge areas**

1. Introduction
2. Organizational influences and project life cycle
2.1 Organizational influence
2.2 Project Stakeholders and Governance
2.3 Project Team
2.4 Project Life-Cycle
3. Project Management Processes
4. Project Integration Management
5. Project Scope Management
6. Project Time Management
7. Project Cost Management
8. Project Quality Management
9. Project Human Resource Management
10. Project Communications Management
11. Project Risk Management
12. Project Procurement Management
13. Project Stakeholder Management

**Figure 3.2.7: The relationship between stakeholder and the project in The PMI-PMBOK® Guide Fifth edition (PMI, 2013)**



### **The Standard for Program Management**

*The Standard for Program Management* is defined as “to describe generally recognized good practices and place program management in the context of portfolio and project management” (PMI, 2006, p. 3). In addition to the nine knowledge areas in the PMI-PMBOK®, Benefits Management, Programme Stakeholder Management and Programme Governance are introduced, which are strategic-level topics that are not covered by the PMI-PMBOK®.

### **The Standard for Portfolio Management**

*The Standard for Portfolio Management* focuses on a higher management level than the other PMI guides. PMI says that “Whilst project management and program management have traditionally focused on ‘doing work right’, portfolio management is concerned with ‘doing the right work’” (PMI, 2005, p. 1). For this purpose, PMI includes the management of the link between Portfolio Management and corporate operational management, which includes: Finance, Marketing, Corporate Communications, and Human Resource Management. As for role of the Portfolio Management, it is defined as Benefits Realization, Program and Project Management Methods and Techniques, Process Development and Continuous Improvement, and General Management Skills.

In the guide of Portfolio Management, knowledge domain of Portfolio Management is defined. Knowledge defined as a portfolio management refers to a higher management-level topic than PMI-PMBOK® and Program Management. PMI describes the link between Portfolio Management and corporate-level management (Figure 3.2.8). Portfolio Management topics includes Strategy, Corporate Governance, and Operations; the corporate-level management include Finance, Marketing, Corporate Communications, and Human Resource Management. “Each project is defined by its contribution to the portfolio’s strategic intent, and can then be managed according to the principles in the PMI-PMBOK® *Guide*—Third Edition, and other principles as appropriate” (PMI, 2005, p5).

In essence, PMI separates the roles of Program Management and Portfolio Management from Project Management.



**Figure 3.2.8: The organisational context of Portfolio Management.**  
**Source: PMI (2005).**

Program Management and Portfolio Management introduce front-end knowledge such as Benefit Management and Program Stakeholder Management, and are connected with operation management such as Finance and Marketing, whereas PMI-PMBOK® deals with project execution. PMI published their first BoK in 1983, so over 20 years

had passed before project context issues were dealt with as core knowledge areas in official standards. From those two standards that are the Portfolio Management and the Program Management, PMI enlarged the coverage of topics for project management from the execution level to the higher management level.

### **Construction Extension to A Guide to the Project Management Body of Knowledge (Construction Extension)**

Construction Extension was published in 2003 as the second application area extension to the PMI-PMBOK® (PMI, 2007). In addition to the nine knowledge areas in the PMI-PMBOK®, the following four knowledge areas are added:

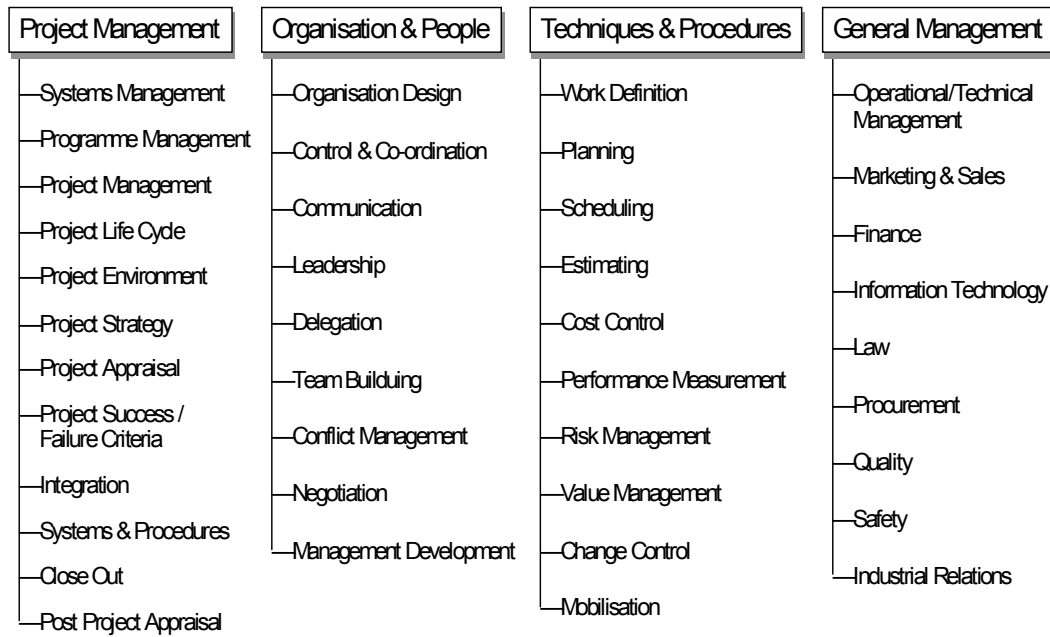
- Safety Management
- Environmental Management
- Financial Management
- Claims Management

Idea of the extension is same as that of previous two standards. Although above four topics may be used in construction sector, there is no explanation why only four topics are added.

#### **3.4.2 APMBoK**

The APMBoK was first published in April 1992. Since its first publication, there have been four revisions (APM, 1995, 2000, 2006, 2012).

The structure of the third edition of the APMBoK consists of four ‘key competencies’: project management, organisation and people, processes and procedures, and general management (Figure 3.3.1). Each component includes six to thirteen topics. Each topic has a definition and references.



**Figure 3.3.1: The structure of the APMBoK third edition, cited by Morris, Patel, and Wearne (2000)**

Between 1998 and 2000, APM, with the collaboration of six leading companies, executed a program to revise the APMBoK (Morris, Patel, and Wearne, 2000, Morris, 2001). The revision was done based on research by the Centre of Research for Project Management (CRMP) at UMIST, from 1998 to 1999. The research was the first attempt to obtain empirical evidence that the APMBoK is considered to be a useful guide for organisations in project management, not only what committees, academics or practitioners think is appropriate.

The objectives of the research were:

- to test coverage of topics in use across industries and organisations, as well as practitioners, academics, and other experts in project management,
- to provide documents that describe the topics most appropriately in terms of both generic meaning and practical usage,
- to update the references within the topics.

Based on the results of the research, APM reviewed and published the APM fourth edition in 2000. The framework of the fourth edition is shown in Figure 3.3.2. The



following elements were changed in the fourth edition as compared with the third edition:

(1) Value Management was divided into Value Management and Value Engineering (while VM includes front-end strategy, VE is a more technical term used at the design and execution stages).

(2) Several new topics about technical elements were added: Design, Production and Hand-over, Requirements Management, Technology Management, Modelling and Testing.

(3) Topics in Life-Cycle Design and Management were enlarged.

(4) The following topics were deleted, merged with and/or changed to another topic:

- System Management
- Integration Management
- Project Monitoring and Controlling
- System and Procedure
- Industrial Relations were changed to Organisational Role

**Figure 3.3.2: The APM Body of Knowledge, fourth edition (APM, 2000, cited from Morris, et al. 2000)**

General 1.0 Project Management 2.0 Programme Management					3.0 Project Context				
Strategic 4.0 Project Success Criteria 5.0 Strategy/Project Management Plan 6.0 Value Management					7.0 Risk Management 8.0 Quality Management 9.0 Safety, Health & Environment				
Control 10.0 Work Content & Scope Management 11.0 Time Scheduling/Phasing 12.0 Resource Management 13.0 Budgeting & Cost Management 14.0 Change Control 15.0 Earned Value Management 16.0 Information Management		Technical 17.0 Design, Production & Handover Management 18.0 Estimating 19.0 Requirements Management 20.0 Technology Management 21.0 Value Engineering 23.0 Modelling & Testing 24.0 Configuration Management		Commercial 23.0 Business Case 24.0 Marketing & Sales 25.0 Financial Management 26.0 Procurement 27.0 Legal Awareness		Organisational 28.0 Life Cycle Design & Management 28.1 Opportunity 28.2 Design & Development 28.3 Production 28.4 Hand-over 28.5 (Post)-Project Evaluation Review [O&M/ILS] 29.0 Organisation Structure 30.0 Organisational Role		People 31.0 Communication 32.0 Teamwork 33.0 Leadership 34.0 Conflict Management 35.0 Negotiation 36.0 Personnel Management	
Opportunity Identification Concept/Marketing		Design & Development Feasibility/Bid Design, Modelling & Procurement		Production Make, Build & Test		Hand-over Test, Commission, Start-up		Post-Project Evaluation Operation & Maintenance/ Integrated Logistics; Project Reviews/Learning from Experience	

In 2006, the BoK was revised to the fifth edition. The revision was made through 18 months research project. The fifth edition has 52 knowledge areas under seven categories, which are presented in Figure 3.3.3. The main changes from the previous edition were as follows:

- Programme Management and Portfolio Management were promoted to distinct disciplines. The link to business purpose was emphasised. Portfolio Management, Project Sponsorship, Project Office, Benefit Management, and Governance of Project Management, were added.
- Topics dealing with the project's environment, i.e. Stakeholder Management and Issue Management, were added.
- The project development cycle and its application in the context that projects are managed were emphasised.
- With regard to technical management issues, Requirement Management is referred to first, followed by the Development 'Vee model' (Forsberg, et al., 2000 as is in Morris, et al., 2006b).
- Issues regarding people were enhanced by adding three new topics: Behavioural Characteristics, Learning and Development, and Professionalism and Ethics (Morris, et al., 2006b; APM, 2006)

(Morris, et al., 2006b)

Other than the above changes, there were some terms and new structures that were proposed by the research team but not reflected in the revision. Because the BoK was used as APM's certification program and curriculum, there were constraints on radically changing the BoK's topics and structure. Consequently, some proposals by the research team were considered as radical changes by APM committee (Morris, et al., 2006b). This episode implies that there is certain relationship between the selection of the topics of the BoK, its structure and its nature as a social institution.

**Figure 3.3.3: APM The Body of Knowledge (APMBoK), fifth edition (APM, 2006)**

<ul style="list-style-type: none"><li><b>1. Project Management in Context</b><ul style="list-style-type: none"><li>1.1 Project Management</li><li>1.2 Programme Management</li><li>1.3 Portfolio Management</li><li>1.4 Project Context</li><li>1.5 Project Sponsorship</li><li>1.6 Project Office</li></ul></li><li><b>2. Planning the Strategy</b><ul style="list-style-type: none"><li>2.1 Project Success and Benefits Management</li><li>2.2 Stakeholder Management</li><li>2.3 Value Management</li><li>2.4 Project Management Plan</li><li>2.5 Project Risk Management</li><li>2.6 Project Quality Management</li><li>2.7 Health, Safety and Environmental Management</li></ul></li><li><b>3. Executing the Strategy</b><ul style="list-style-type: none"><li>3.1 Scope Management</li><li>3.2 Scheduling</li><li>3.3 Resource Management</li><li>3.4 Budgeting and Cost Management</li><li>3.5 Change Control</li><li>3.6 Earned Value Management</li><li>3.7 Information Management and Reporting</li><li>3.8 Issue Management</li></ul></li><li><b>4. Techniques</b><ul style="list-style-type: none"><li>4.1 Requirement Management</li><li>4.2 Development</li><li>4.3 Estimating</li><li>4.4 Technology Management</li><li>4.5 Value Engineering</li><li>4.6 Modelling and Testing</li><li>4.7 Configuration Management</li></ul></li></ul>	<ul style="list-style-type: none"><li><b>5. Business and Commercial</b><ul style="list-style-type: none"><li>5.1 Business Case</li><li>5.2 Marketing and Sales</li><li>5.3 Project Financing and Funding</li><li>5.4 Procurement</li><li>5.5 Legal Awareness</li></ul></li><li><b>6. Organisation and Governance</b><ul style="list-style-type: none"><li>6.1 Project Life-Cycles</li><li>6.2 Concept</li><li>6.3 Definition</li><li>6.4 Implementation</li><li>6.5 Handover and Close-out</li><li>6.6 Project Reviews</li><li>6.7 Organisational Structure</li><li>6.8 Organisational Roles</li><li>6.9 Methods and Procedures</li><li>6.10 Governance of Project Management</li></ul></li><li><b>7. People and the Profession</b><ul style="list-style-type: none"><li>7.1 Communication</li><li>7.2 Teamwork</li><li>7.3 Leadership</li><li>7.4 Conflict Management</li><li>7.5 Negotiation</li><li>7.6 Human Resource Management</li><li>7.7 Behavioural Characteristics</li><li>7.8 Learning and Development</li><li>7.9 Professionalism and Ethics</li></ul></li></ul>
--	--

In 2012, the sixth edition was published. The sixth edition has 53 knowledge areas under four categories, which are presented in Figure 3.3.4. The main changes from the previous edition are as follows:

- Strong emphasis on the integration of Project Management, Programme Management, and Portfolio Management (P3Management)
  - ‘Context’ is an integrative structure that consists of Governance and Setting. Governance defines the base of control and management of project, program and portfolio (APM 2012, p.8). Setting deals with issues of relationships between P3Management and host organisation (APM 2012, p.40).
  - Each topic is given descriptions from each point of view of Project Management, Program Management, and Portfolio Management.
  
- Description of distinctive management roles and/or other professionals
  - Interfaces introduce coordination between other five distinctive disciplines. (Accounting, Health and Safety, Human Resource Management, Law, Security, Sustainability are placed under the ‘Interfaces with other disciplines’.)
  - Particular management roles are added. Those topics are: Change Management<sup>ii</sup> and Operations Management<sup>iii</sup>
  
- Two human related topics become independent from existing topics. Influencing, and Ethics Frameworks are added.
  
- Newer management terms are selected.
  - Success Factors and Maturity<sup>iv</sup>: Maturity idea is introduced through combining with Success Factors.
  
  - Knowledge Management, Communities of Practice<sup>v</sup>, and Competence<sup>vi</sup>.

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<sup>ii</sup> Change Management is distinguished from Change Control and Configuration Management. Change Management deals with organisational changes in line with business strategy (APM, 2012, p.136).

<sup>iii</sup> “Operation Management relates to the management of those activities that create the core services or products provided by an organisation” (APM, 2012, p44).

<sup>iv</sup> Success factors and maturity is defined as “management practices that, when implemented, will increase the likelihood of success of a project, programme or portfolio. The degree to which these practices are established and imbedded within an organisation indicates its level of maturity (APM, 2012, p. 32).

Reflecting the development in the subject of Knowledge and Learning during 2000s, the above three topics are added:

- The following topics are renamed to emphasise their more sophisticated approaches to realising clients' needs. The needs of abstraction of these topics' names probably come from the need to generalise description of concepts that are used in the three levels: Project, Program, and Portfolio
  - Value Management is changed to Solutions Development
  - Total Quality Management is developed and renamed as P3 Assurance<sup>vii</sup> and Reviews<sup>viii</sup>
  - Benefits Management is independent
  - Provider Selection and Management<sup>ix</sup> is independent from Procurement with coverage of long-term relationships with the providers at portfolio level
  - Project Life-Cycles topics are grouped into one topic whereas Mobilisation is reselected
  
- The following existing topics are revised to more sophisticated methods.
  - Schedule Management is divided into Resource Scheduling and Time Scheduling
  - Risk management are divided into Risk Context and Risk techniques

Regarding to the structure, section 3 Delivery employs similar structure to the nine knowledge areas of the PMI-PMBOK® fourth edition (Figure 3.2.5). The Delivery consists of seven groups as the followings:

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<sup>v</sup> “Communities of practice are groups of people who share a concern or passion for an aspect of P3Management and develop expertise through regular interaction” (APM, 2012, p.82).

<sup>vi</sup> “Competence is the combined knowledge, skill and behaviour that a person needs to perform properly in a job or work role” (APM, 2012, p. 84).

<sup>vii</sup> P3 assurance is the process of providing confidence to stakeholders that projects, programmes and portfolios will achieve their scope, time, cost and quality objectives, and realise their benefits” (APM, 2012, p. 192).

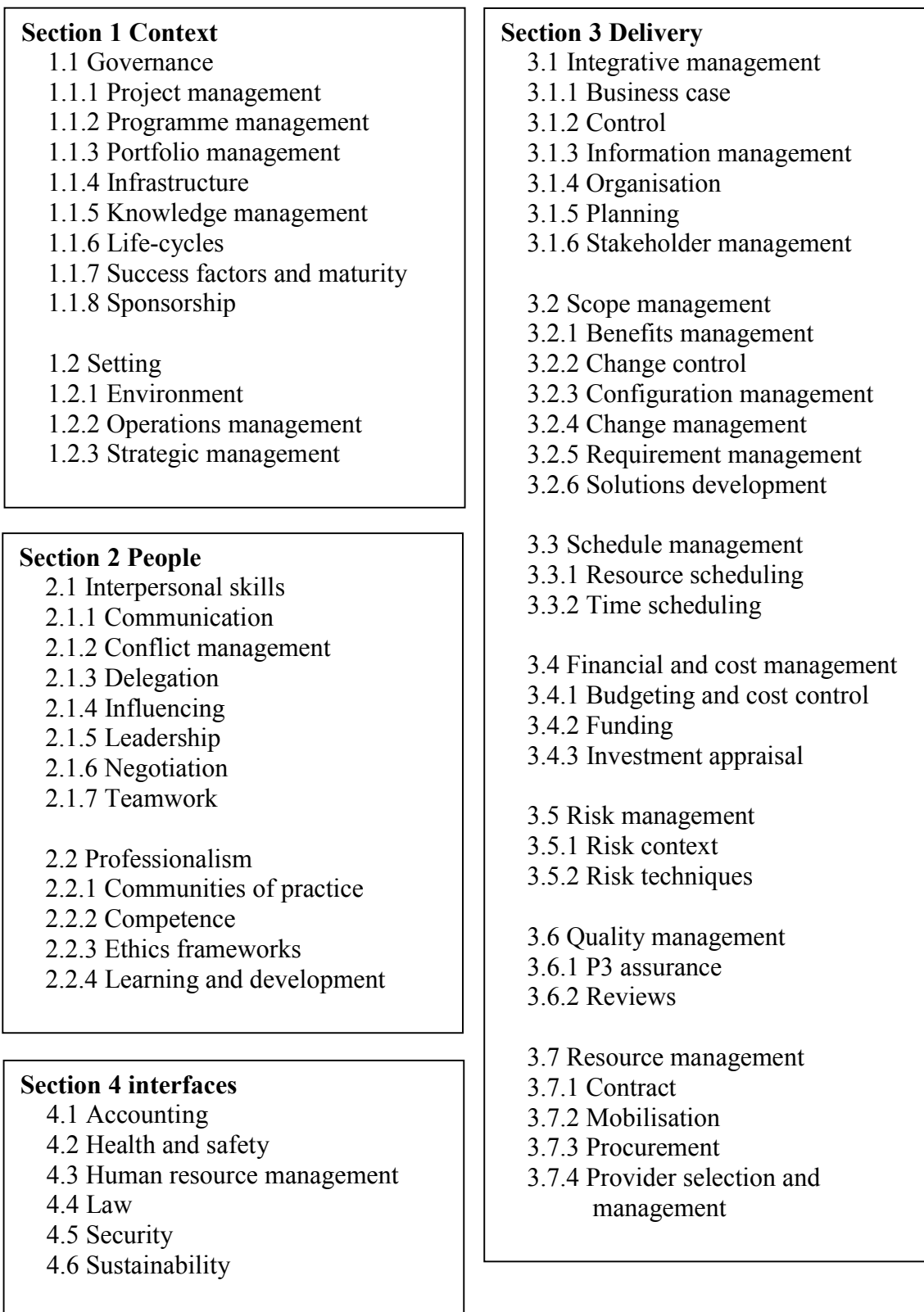
<sup>viii</sup> “A review is a critical evaluation of a deliverable, business case or P3Management process (APM, 2012, p.196).

<sup>ix</sup> “Provider selection and management is the process of identifying, selecting, appointing and supervising providers through the P3 life cycle” (APM, 2012, p.214).

- 3.1 Integrative management
- 3.2 Scope management
- 3.3 Schedule management
- 3.4 Financial and cost management
- 3.5 Risk management
- 3.6 Quality management
- 3.7 Resource management

Other than Communication Management and Procurement Management, project management knowledge areas of section III of the PMI-PMBOK® fourth edition are covered by this section, though APMBOK's scope is broader in terms of that each topic is described from three levels of views; i.e. P3Management (project, program, and portfolio management). In this sense, the APMBOK sixth edition has been made easier to compare with the PMI-PMBOK®.

**Figure 3.3.4: APM Body of Knowledge (APMBoK), sixth edition (APM, 2012)**





### **3.4.3 European BoKs and the International Competency Baseline (ICB)**

With the creation of certification programs, some European countries constructed their own BoKs. The APMBoK is the model for all of them. The Swiss Project Management Association (SPM) and the German Project Management Association (GPM) translated and modified the APM model. The basic structure and topics are the same as in the original BoK. The French society (AFITEP) also translated an abbreviated version of the BoK.

In 1998, International Project Management Association (IPMA), in which many associations from Europe and other parts of the world participated, published the international standard (IPMA, 1989). The standard is known as the International Competency Baseline (ICB). It is written in three languages: English, French and German. The ICB contains 28 core topics and 14 selective topics.

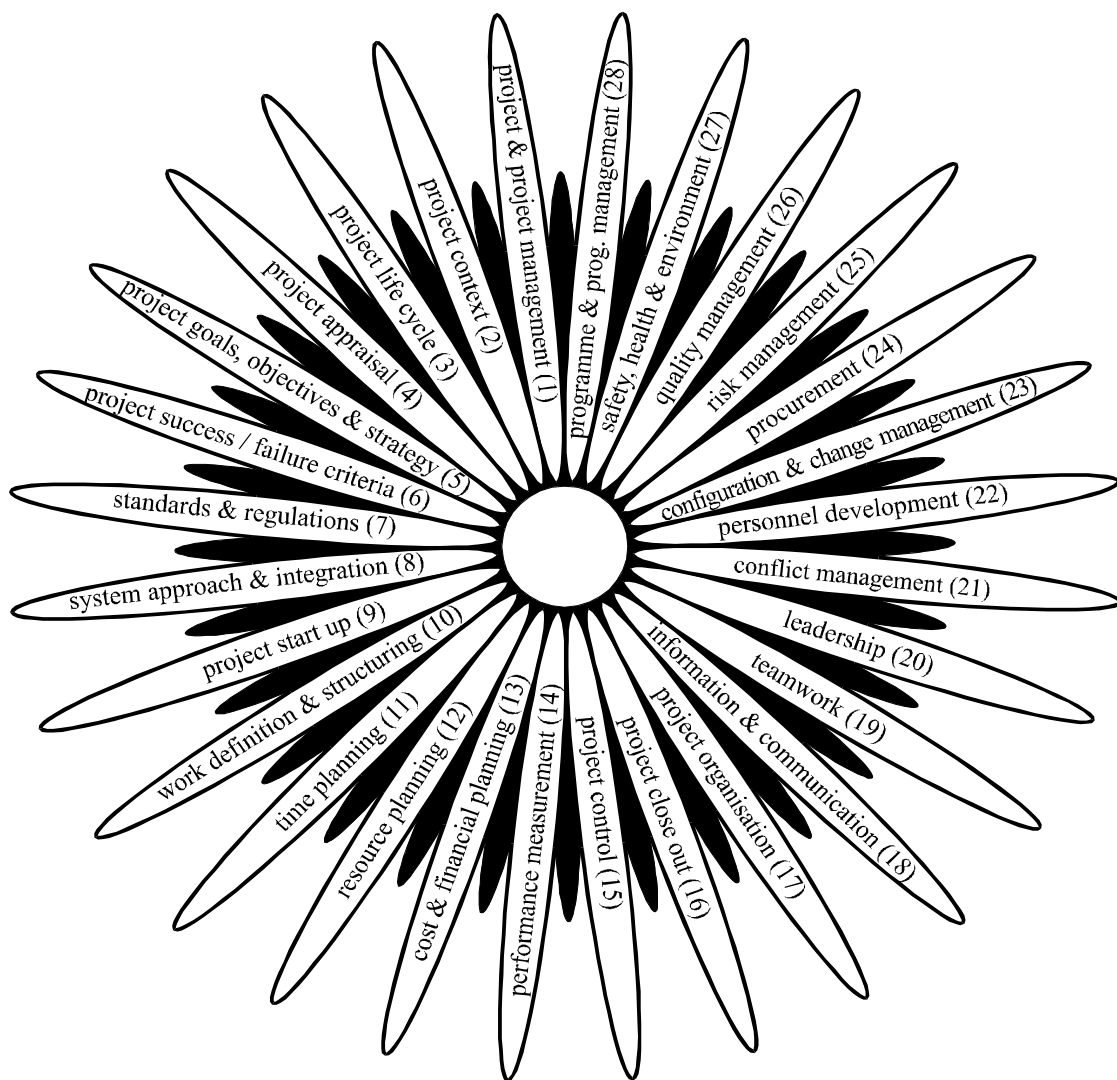
IPMA employed a sunflower structure (see Figure 3.4.1) in which the topics in the BoK act as its petals, forming a flower. Therefore, topics are displayed in no particular order, surrounding the centre of the flower. By using the sunflower structure, IPMA tried to avoid emphasising the order of the topics, and tried not to imply relationships between topics. The sunflower model reflects the reality that people from different national associations have difficulty agreeing on a single structure in which to add topics to the standard.

Those participant associations that do not have a standard can create their own. They are required to use 28 core topics. The participants can also use 14 selective topics. Up to eight topics can be added to or reduced from 14 selective topics, as the need arises. Some associations, like the Egyptian one, have created their own standard using this method (IPMA, 1999, Pannenbacker, 2000).

The ICB version 2.0b was published in 2001. The ICB was given three categories within its structure: General Impression, Personal Attitude, and Knowledge and Experience (Figure 3.4.1). The ICB version 2.0b was revised to version 3.0 in 2006 (Caupin, et al., 2006). In the revision, the three categories were changed to the following three groups: Contextual Competency, Technical Competences, and Behavioural Competences (Figure 3.4.2). In version 3, the sunflower motif was

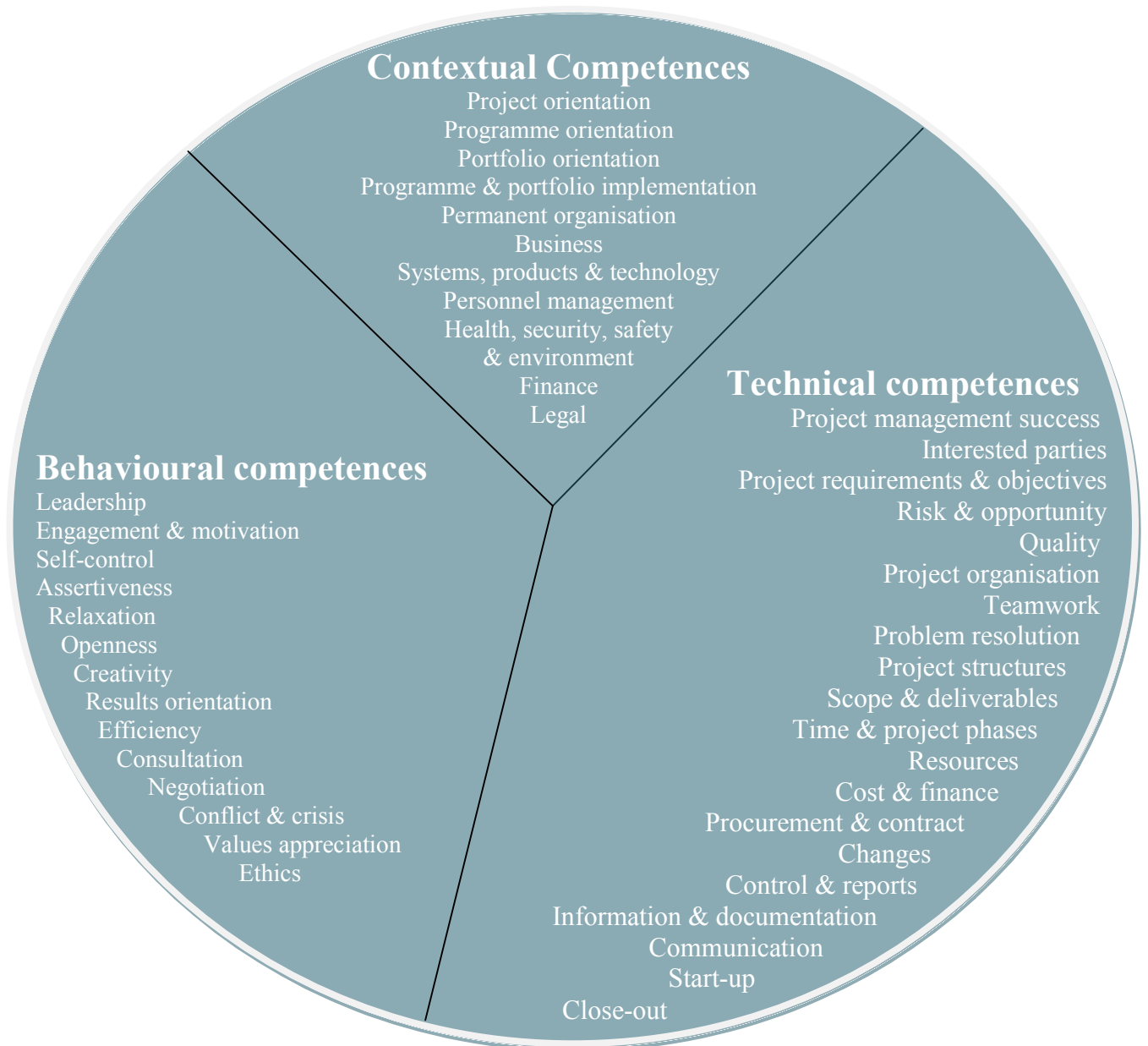
replaced by an ‘eye’ structure (the eye of competence). The structure represents ‘all elements of project management as seen through the eyes of the project managers’ (Caupin, et al., 2006, p. 13). The structure has no order in which to express topics, which is the same concept as the sunflower structure, and is more relevant to the human beings who are providing the major competency factors in project management (Caupin, et al., 2006, p 160). The number of topics in the ICB version 3 was expanded to 46 (see Figure 3.4.2).

**Figure 3.4.1: IPMA International Competency Baseline version 1 – the sunflower structure (cited from Morris, 2003, p19)**



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**Figure 3.4.2: IPMA International Competency Baseline version 3 – the eye structure (Caupin, et al., 2006, pII)**



### **3.4.4 Project and program management for enterprise innovation (P2M)**

In 1999, in order to promote the Japanese manufacturing industry, the Ministry of International Trade and Industry (MITI; the name has now changed to METI) ordered the Engineering National Advance Association (ENAA) to develop a certification program and a BoK for project management. The BoK was developed from a two-and-a-half-year research project by ENAA's Committee for Innovative Project Management Development. The Body of Knowledge was developed under the following policy:

- The new BoK should be mixture of both American and European project management BoKs, as well as Japanese management practice.
- Moving beyond existing thought, it should adopt new trends in the economy and society.

In 2002, Project Management Certification Center (PMCC), now changed to Project Management Association Japan (PMAJ), published their first BoK. The BoK was given the name 'Project and Program Management for Enterprise Innovation' (P2M).

The top part of Figure 3.5 shows the framework of the P2M. The P2M employs a 'tower' structure. The tower has three main levels: Project Management, Program Management, and Segment Management. Segment Management consists of 11 topics that represent knowledge areas necessary for project and program management practices.

The P2M was designed "as a knowledge infrastructure that is the system to help thinking about how corporate management should be" (Kinoshita, 2005, p.37). Traditionally, middle managers in Japanese firms coordinate between top management issues and bottom lines' affaires (Taketomi, 2009, p.37). Therefore, it is thought of as a key to utilize middle managers to define and shape the corporate strategy linking to projects they manage. To deal with corporate-wide issues, it was inevitable that the P2M deals with top management issues and traditional project management topics, though this is as if middle managers or engineers intrude 'the holly ground' for business management subject (Kinoshita, 2005, p.43). Although the

PMI-PMBOK® had been regarded as of representing western project management, it was considered as of reflecting neither Japanese management style nor business context in Japan. Therefore, Japanese community selected to create totally different standard (Kinoshita, 2005).

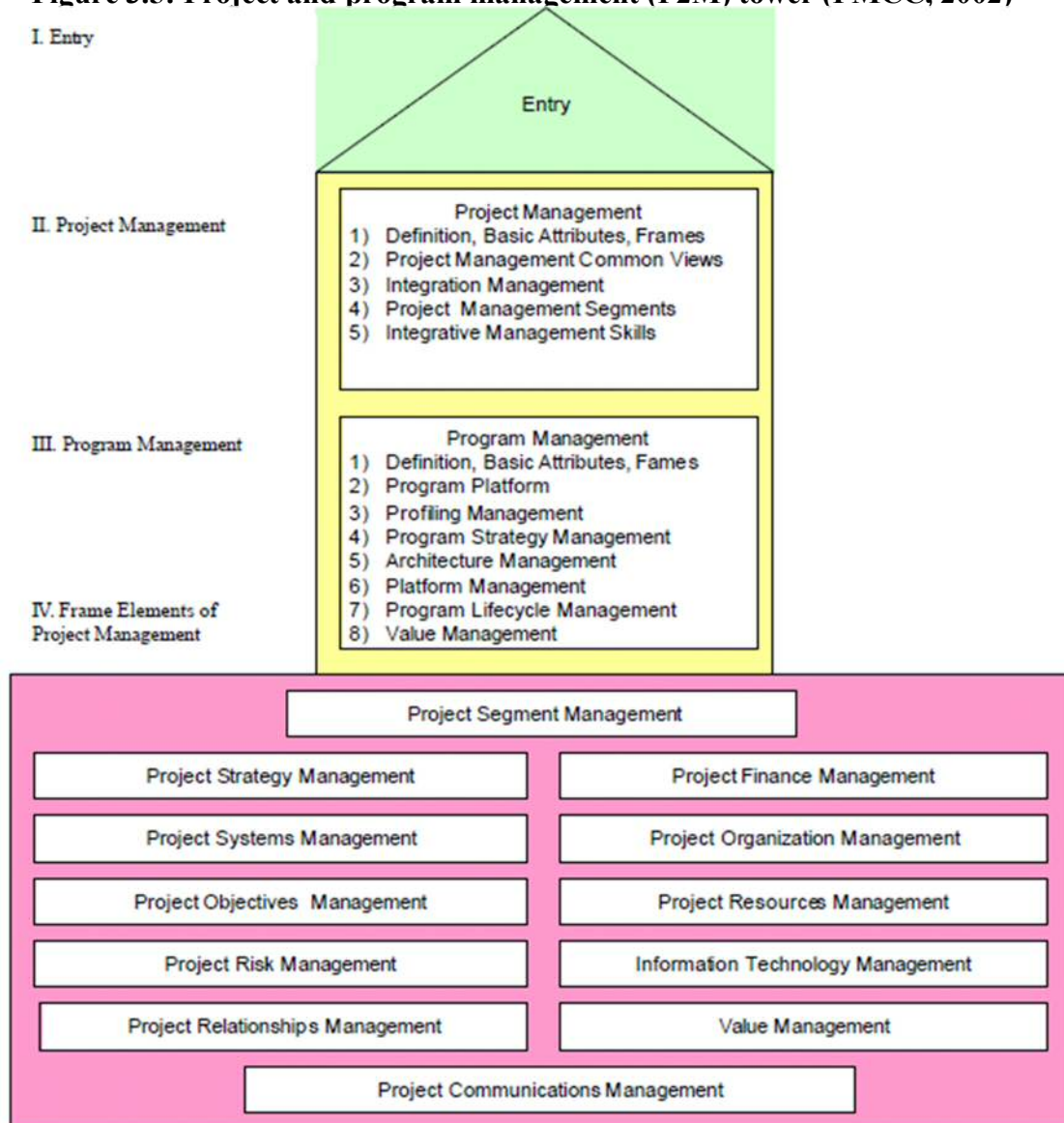
The main points of the design of the P2M are explained by Ohara (2009), who took leadership on the development of the P2M as the followings:

First, the P2M is designed to represent contemporary Japanese project management that is owner centered rather than contractors centered such as the PMI-PMBOK®. Works associated to project strategies are done through collaboration between owners and contractors.

Second, to overcome complex problems in business, innovative projects are necessary. For innovations at the organizational level, he insists, two different systems, which are business and technical, should be integrated. He concludes that “The only solution is to put plural projects together in an open environment” (pp.14-15).

Third, he poses a fundamental question to view projects, that is: “What is the value gained by managing project?” The P2M is designed for value creation projects (Ohara, 2009, p.15). These essences are reflected to its name as “project and program management for enterprise innovation” (PMAJ, 2005). Consequently the P2M is evaluated internationally as the first PMBoK that “genuine integration and acceptance of the role of project and program management at the enterprise level” (Crawford, 2009, p.397).

**Figure 3.5: Project and program management (P2M) tower (PMCC, 2002)**



### 3.4.5 A Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers (GAPPS)

During international conferences held by some project management associations such as IPMA, interested people started to discuss global communication toward globally recognized body of knowledge. *Global Alliance for Project Performance Standards* (GAPPS) originally started their activities as Global Performance Standards for Project Management Personnel Initiative in 2002. Currently nearly 30 organizations including academic institutions, professional associations, to project related industries, support their activities. Their efforts are to:

- “Respond directly to the expressed needs of industry.
- Enhance the profile and effectiveness of project management throughout the project management community, both globally and locally.
- Increase support for project management as a field of practice and as an emerging profession.
- Enhance the value and recognition of the performance based standards approach.”

(GAPPS, 2007)

Primary focus is on their competency standards for project managers that are supposed to complement existing PMBoKs and to provide explanations of relevance between existing project management qualifications (Crawford, 2004a, GAPPS, 2011).

At this stage, philosophy of considering potential topics is ‘all inclusive’. This thinking enables to include all topics that are covered by all project management standards and to show correspondence between individual standards and Global Performance Based Standards.

Existing BoKs and standards were examined. Consequently 48 topics were identified (see Figure F.1 in Appendix F)

Knowledge guides selected for review for GAPPS were:

- APM Body of Knowledge 2000 edition
- ICB: IPMA Competency Baseline: 1999 edition
- P2M: A Guidebook to Project and Program Management for Enterprise Innovation, 2001 (PMCC, Japan)
- PMBoK Guide, 2000 Edition, PMI

Performance based competency standards reviewed were:

- NCSPM: National Competency Standards for Project Management (Revised Draft Version 1.1, February 2003 - BSTA (now IBSA) (Australia)
- ECITB: National Occupational Standards for Project management (Pre-launch Version September 2002) (UK)

- PMSG/SAQA: National Certificate in Generic Project Management (Project Administration and Coordination) at NQF Level 4 - South Africa
- PMI PMCDF: Project Manager Competency Development Framework (2002) – PMI

In the work shop the 48 topics were firstly grouped into 14 categories. Other four categories were separated from main 14 categories, because these topics were considered as ‘applicable only to some Project Managers in some contexts’ (Crawford, 2004a, p.1190; see Figure F.2 in Appendix F). Topics were then arranged into nine groups at the next session. Finally six units (Stakeholder Relationships, Development of the Plan for the Project, Project Progress, Product Acceptance, Project Transitions, and Evaluate and Improve Project Performance) were selected as a framework of the standard as shown in the figure 3.6.1. Each unit has three to five topics. Each topic is described using one verb as an action for project managers and has a management task.

In general, professionals and/or occupations are defined as a specific set of tasks for individuals. GAPPS explains topics as “functions of a Project Manager” (GAPPS, 2007, p40 in Appendix C).

According to GAPPS, among two major approaches to assess competency, which are attribute based and performance based, GAPPS employed performance based approach. The approach focuses on work outcomes and performance levels (GAPPS, 2007, p.2).

GAPPS identifies two levels of competency: Units level and Elements level. Units of Competency define the areas where practitioners need to perform as an occupation. Elements of competency describe what actions are taken by practitioners (GAPPS, 2007, p.2). The Units of Competency is selected as “a broad area of professional or occupational performance that is meaningful to practitioners and which is demonstrated by individuals in the workplace” (GAPPS, 2007, p2). Rationale in the selection of GAPPS’s Units of competency is works that are performed in workplace



by individuals. As the premise, topics are defined as tasks or functions of a Project Manager.

**Figure 3.6.1: Structure and topics of GAPPS; ‘Summary of Units, Element, and Performance Criteria’ (GAPPS, 2007)**

<p><b>1. Manage Stakeholder Relationships</b></p> <ul style="list-style-type: none"> <li>1.1 Ensure that stakeholder interests are identified and addressed</li> <li>1.2 Promote effective individual and team performance</li> <li>1.3 Manage stakeholder communications</li> <li>1.4 Facilitate external stakeholder participation</li> </ul>
<p><b>2. Manage Development of the Plan for the Project</b></p> <ul style="list-style-type: none"> <li>2.1 Define the work of the project</li> <li>2.2 Ensure the plan for the project reflects relevant legal requirements</li> <li>2.3 Document risks and risk responses for the project</li> <li>2.4 Confirm project success criteria</li> <li>2.5 Develop and integrate project baselines</li> </ul>
<p><b>3. Manage Project Progress</b></p> <ul style="list-style-type: none"> <li>3.1 Monitor, evaluate, and control project performance</li> <li>3.2 Monitor risks to the project</li> <li>3.3 Reflect on practice</li> </ul>
<p><b>4. Manage Product Acceptance</b></p> <ul style="list-style-type: none"> <li>4.1 Ensure that the product of the project is defined</li> <li>4.2 Ensure that changes to the product of the project are monitored and controlled</li> <li>4.3 Secure acceptance of the product of the project</li> </ul>
<p><b>5. Manage Project Transitions</b></p> <ul style="list-style-type: none"> <li>5.1 Manage project start-up</li> <li>5.2 Manage transition between project phases</li> <li>5.3 Manage project closure</li> </ul>
<p><b>6. Evaluate and Improve Project Performance</b></p> <ul style="list-style-type: none"> <li>6.1 Develop a plan for project evaluation</li> <li>6.2 Evaluate the project in accordance with plan</li> <li>6.3 Capture and apply learning</li> </ul>

When they selected the topics, GAPPS’s community considered the frequency of use in project management practice. Further, sine GAPPS’s decision to select topics to access ‘performance in the workplace’, selected topics are thought of as reflecting the subjectivity of individual managers’. These decisions resulted in that some front-end topics, such as program management and/or portfolio management, are clearly separated from project managers’ main tasks. Such tasks are defined as ‘others’ roles’ such as “program personnel”, which are “involved with projects and programs” (GAPPS, 2007, Foreword, p.i). Standard for the program personnel was published as ‘A Framework for Performance Based Competency for Program Managers’ (GAPPS,

2011). Five Core Units and three Additional Units are defined as program managers' role as shown in Figure 3.6.2. Roles of Program Managers are described as clearly separated from the role of the Project Managers.

**Figure 3.6.2: Topics of 'A Framework for Performance Based Competency for Program Managers' (GAPPS, 2011)**

<p>Core Units</p> <ul style="list-style-type: none"> <li>Provide Leadership for the Program</li> <li>Facilitate Stakeholder Engagement</li> <li>Craft the Program</li> <li>Orchestrate the Attainment of Benefits</li> <li>Sustain Program Progress</li> </ul>
<p>Additional Units</p> <ul style="list-style-type: none"> <li>Manage Organizational Change</li> <li>Direct the Management of Contracts</li> <li>Engage in Collaborative Alliances</li> </ul>

Figure 3.6.3 shows 'Mapping of Original 48 Concepts and Topics' (GAPPS, 2007). The map indicates GAAPS's rationale to select topics. Program Management and Goals, Objectives, and Strategies are most related to Relationship Management. It clearly indicates that GAPPS standard does not cover issues of managing front-end of projects.

### **Mapping of Global Certifications and Qualifications**

GAPPS has published a map comparing their framework with other principle BOKs, which are P2M, PMI-PMBOK®, and IPMA ICB version 3, as well as other relevant standards, which are: Australian National Competency Standards for Project Management - Diploma of Project Management 2008 (ANCSPM), PRINCE2 2009, SAQA NQF Level 5 58309, and AIPM 2008 (Figure 3.6.4). Using the GAPPS framework, the map is made to help fostering user's understanding of various standards in the world (GAPPS, website).

**Figure 3.6.3: GAPPS’s units of competency and 48 topics**

These 48 items also reflect the underpinning knowledge and supporting the skills needed to produce the results measured by the Performance Criteria.

Unit No.	Unit Title	48 Concepts/Topics	
PM01	Manage Stakeholder Relationships	Benefits Management Conflict Management Goals, Objectives, and Strategies Information/Communication Management Leadership Marketing Negotiation Personnel/Human Resource Management	Procurement Program Management Project Context/ Environment Reporting Stakeholder/Relationship Management Strategic Alignment Success Team Building / Development / Teamwork
PM02	Manage Development of the Plan for the Project	Benefits Management Business Case Cost Management Estimating Financial Management Goals, Objectives, and Strategies Integration Legal Issues Procurement Project Life-cycle / Project Phases	Project Planning Project Organisation Regulations Risk Management Safety, Health, and Environment Time Management / Scheduling / Phasing Work Content and Scope Management
PM03	Manage Project Progress	Change Control Conflict Management Configuration Management Cost Management Document Management Information/Communication Management Leadership	Performance Measurement Problem solving Project Monitoring and Control Reporting Resource Management Risk Management Safety, Health, and Environment
PM04	Manage Product Acceptance	Benefits Management Business Case Design Management Leadership Marketing Quality Management Regulations	Requirements Management Success Testing, Commissioning, and Handover Technology Management Value Management
PM05	Manage Project Transitions	Integration Management Organisational Learning/ Lessons Learned Project Appraisal Project Closeout/Finalisation	Project Initiation/ Start-up Project Life-cycle / Project Phases Testing, Commissioning, and Handover
PM06	Evaluate and Improve Project Performance	Leadership Organisational Learning / Lessons Learned	(Post-) Project Evaluation Review

Source: GAPPS website

In the map, neither the APMBok nor the aforementioned 48 concepts are used in comparison of PMBoKs. Topics that were included together under the ‘units’ in the Figure 3.6.3, such as Program Management and Strategy, don’t appear in the ‘unit and element’ level’s list of the mapping (Figure 3.6.4).

**Figure 3.6.4: GAPPS: Map of BoKs (Manage Stakeholder Relationships Unit)**

GAPPS Framework for Project Managers Nov 2006 (Unit and Element Level)	STANDARDS						
	AIPM 2008	ANCSPM 2008	ICB3	P2M	PMBok 2008	PRINCE2 2009	SAQA NQF Level 5
<b>1 Manage Stakeholder Relationships</b>							
<i>1.1 Ensure that stakeholder interests are identified and addressed.</i>							
1.1.1 Relevant stakeholders are determined.							
1.1.2 Stakeholder interests are investigated and documented.							
1.1.3 Stakeholder interests are considered when making project decisions.							
1.1.4 Actions to address differing interests are implemented.							
<i>1.2 Promote effective individual and team performance.</i>							
1.2.1 Interpersonal skills are applied to encourage individuals and teams to perform effectively.							
1.2.2 Individual project roles are defined, documented, communicated, assigned, and agreed to.							
1.2.3 Individual and team behavioural expectations are established.							
1.2.4 Individual and team performance is monitored and feedback provided.							
1.2.5 Individual development needs and opportunities are recognised and addressed.							
<i>1.3 Manage stakeholder communications.</i>							
1.3.1 Communication needs of stakeholders are identified and documented.							
1.3.2 Communication method, content, and timing is agreed to by relevant stakeholders.							
1.3.3 Information is communicated as planned, and							
<i>1.4 Facilitate external stakeholder participation.</i>							
1.4.1 External stakeholder participation is planned, documented, and communicated.							
1.4.2 External stakeholder participation is supported as planned, and variances are addressed.							

	NO Mapping
	Partial/Some Mapping
	Full Mapping

Source: GAPPS website

In the comparison between GAPPS and the ICB, nearly two hundreds of sub topics are explained why each topic is not selected. Three reasons are explained as why each topic was not selected for GAPPS’s topics (Figure 3.6.5). Two groups of the topics are not selected because these topics are used at ‘organizational level of analysis’ and ‘organizational systems’. This means that topics relating with front-end of projects are not selected because they are managed at the organisational level. Another group of topics was not selected because these topics are related with people’s behaviours that

are considered as detail elements to be treated under the eight units of the GAPPS' framework.

**Figure 3.6.5: Reasons that each topic is extending beyond that of the GAAPS framework in comparison with ICB3 (IPMA)<sup>x</sup>**

These items relate to behaviours which are intentionally not explicitly covered in the GAPPS Project Manager standards or are at a level of detail not covered in the GAPPS standards.
This refers to an organisational level of analysis that is not included in the GAPPS Project Manager standards
This refers to organisational systems which are not covered in the GAPPS Project Manager standards.

Source: GAPPS website

### 3.4.7 Characteristics of PMBoKs

#### **PMI-PMBOK®**

Most of the topics concentrate on Control and System Issues. Little attention is paid to the Project Lifecycle (front-end matters), Environmental Issues, and Technical Issues. In other words, the PMI-PMBOK® is primary concerned with the execution of projects. It is not paying attention to other areas, particularly front-end issues. In addition, it is notable that generally accepted 'processes' are mainly described to show the importance of each topic throughout the document.

#### **APMBoK**

The APMBoK has a larger (in fact, the largest) area of topics among other PMBoKs. It is designed to emphasise a project's goal/objective, technical issues, and the processes of the project's life-cycle. Human resource issues and industrial issues are also included. Instead of having detailed descriptions, it has a longer list of literature in its guide.

#### **ICB**

The ICB is similar to the APMBoK with regard to both the concept of basic design and the selection of topics. The ICB, however, places relatively greater value on project managers' competency rather than knowledge. Therefore, the ICB contain

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<sup>x</sup> Note: Reasons of not selecting topics for GAPPS are found only in the comparison between GAPPS and the ICB.

more human skill issues. The selection might be affected by the objectives of the documentation that is running the managers' certification and/or training program.

### **P2M**

The P2M has the characteristics of both the PMI-PMBOK® and the ICB (or APM) model. The text is written with a process base, which is the characteristic of the PMI-PMBOK®. The coverage of front-end knowledge areas is similar to that of the ICBs' (or APM's) topics. Another characteristic of the Japanese BoK is that it focuses more on thinking on innovation in organisations. It is pointed out that content of the P2M is relatively complex to be understood by various stakeholders (Crawford, 2009).

### **GAPPS**

After all potential 48 topics were examined, 8 units are finally selected. Some topics such as Program Management, Technology Management, and Financial Management were separated from the main categories, because such topics are used only for some project managers in some contexts. Selected topics simply indicate subjective views of the project manager that is based on the definition of 'what performance individual project manager is needed in the workplace'.

## **3.5 Rationale to select the topics for the PMBoKs; literature review in PMBoKs**

### **3.5.1 Difference between PMI-PMBOK® and other principle PMBoKs**

There are certain needs of an integration of the aforementioned standards, partly because of epistemological aspect, i.e. for the better understanding the practice (Gao, Feng, and Wang, 2007). Other needs to have an integrated PMBoK are from industries that conduct global operations that need to select a project management standard (Crawford, 2004b, p.1188). For those people who insist that there should be only one PMBoK, project management associations are assumed to be “lag behind the cutting edge of both research and practice” (Crawford, 2004b, p.1193).

Every association insists that their PMBoK is widely accepted among industries. For instance, PMI-PMBOK® defines their knowledge areas as ‘that there is widespread consensus about their value and usefulness’ (PMI, 2008).

However, Delisle and Olson (2003) question the assumption that there is general consensus between practitioners. They asserted that there was only little attempt to establish common language use in the practice of project management. They assert that the assumptions that generally accepted knowledge need to be revised due to lack of overall consensus on a large part of terminology in project management practice. Various definitions of project management terms tend to be used and such different definitions lead to communication problems in practices.

Gao, et. al (2007) explain PMI-PMBOK® as procedures, while other PMBoKs treat knowledge in business context. Thus, PMI-PMBOK® and other principle PMBoKs are significantly different in the coverage of knowledge. The following section shows the discussions regarding difference between these PMBoKs.

### **3.5.2 The generic core processes of PMI-PMBOK®**

The PMI-PMBOK® focuses on project management activity processes that are codified explicit knowledge. The core processes are defined as generic knowledge, which are to be applicable to ‘most projects most of the time’. Other project management topics are excluded from the ‘core topics’ (PMI, 2008).

Snider and Nissen (2003) criticize such a Body of knowledge is taxonomic and static. Although the idea of knowledge has changed since PMBoKs were produced during late 80s' and 90s', many of PMBoKs need to be reconsidered in regards with treatment of knowledge and learning (Snider and Nissen, 2003). They found two knowledge flows, one is tacit knowledge, which is formed and gained through practice, and the other is explicit knowledge. They pointed out that tacit knowledge was out of the scope of PMI-PMBOK®.

Reich and Siew (2006) find the difficulty of adding learning concepts into the PMI-PMBOK®, because (1) the BOK's structure and format do not match to these additional concepts and (2) concepts of learning from practice is not congruent with the basic premise of the BOK. They also point out the need of adding a rationale section to PMI-PMBOK®, which is a section for explanation of why each project management processes in PMI-PMBOK® is important for new project managers.

Besner and Hobbes (2008) examined the applications of different tools and techniques in different contexts and project types. They found common patterns on use of the tools and technique within project management community, while some significant differences in use of specific tools and techniques were identified. Some tools were used more on specific project cases. For instance, 'cost/benefit analysis' is more used for practices for internal clients and business and service products. In this sense, such core processes are only applicable to limited application area in the limited context (Stretton, 2006).

The question 'what is generic project management knowledge?' leads to discussions of the matter whether projects fundamentally have similarity or uniqueness. Crawford and Pollack (2007) explain general PM guides are based on a view that projects are fundamentally similar and such a perspective is implicit and strong. On the contrary, the other view sees project management as unique when it is applied to different application areas and/or different countries. As a result of the latter view, variations of project management appear. However this leads to the difficulty of defining professional areas performing something as regular works, which makes professionals competent. In terms of this dilemma, they pay attention to the link between



measurement of competence and knowledge of project management. The linkage of the two factors, they imply, is a key to the answer to ‘the tension between uniqueness and similarity’ of project management practices and knowledge (Crawford and Pollack, 2007).

Crawford, Pollack, and England (2007) found implications of different emphasis between five different countries which comprise USA, UK, Japan, Australia, and South Africa. Although detail cultural influences on the differences between the standards are not proved, they imply that project management cannot be properly done by using only normative processes such as in the PMI-PMBOK®. Rather, knowledge required to project management varies by the context that project management is done. Therefore, predetermined normative ‘project management processes’ in the PMI-PMBOK® can hardly be ‘generic’ project management processes.

### **3.5.3 Relations between the core process idea and the selection of topics of the PMI-PMBOK®**

In the light of selection of topics, the PMI-PMBOK® excludes topics that are irrelevant to its core project management processes. This rationale is led to radical exclusion of many topics from the PMI-PMBOK®. Such radical exclusion of topics cannot be seen in the APMBok, the ICB, or the P2M.

Rationale of selecting topics in the APMBok is all exclusive: that is knowledge necessary for managing projects throughout all project phases should be selected (Morris, et al., 2000, p162).

In this regard, other European PMBoKs are similar to the APMBok. The P2M also deliberately describes the management of the early phases of a project. It also places priority on the creation of value through projects, rather than the management process itself. Consequently, the area of knowledge covered by the PMI-PMBOK® is rather narrower than that covered by the other three BoKs.

PMI has the largest membership community and copies of the PMI-PMBOK® in circulation. Morris, et al. (2006a) infer that this is result of that the PMI-PMBOK® is

tightly defined in scope and it is epistemologically understandable for many readers. Since the PMI-PMBOK® heavily relies on codified templates that are presented as “clearly defined beginning and end using a largely linear sequence of tasks”, project management education is considered “narrow and shallow” (Crawford, et al., 2006, p.724).

Core project management processes in the PMI-PMBOK® and project management methodologies such as PRINCE2 are too simplistic and hence, results in ‘commodification of the discipline’ (Morris 2010, p.31). Merely spreading words does not contribute to enhancement of professional status, although the above famous standards have contributed to getting recognition toward project management language and/or concepts (Crawford, 2009, Morris, 2010, and Hodgson and Muzio, 2010).

When project management communities treat such knowledge areas as that the PMI-PMBOK® excludes from ‘the core processes’, much of which are difficult to get agreement on a level of generality to describe practices (Morris, 2004). If a definition of a practice is too generalized, it would not be useful in actual practices. When a practice is described as merely context specific and then such knowledge cannot be expressed in a form of normative rules.

Morris (2004) explains that there are at least two difficulties regarding to getting agreement on the level of generalization of many of project management such knowledge areas as that is excluded from core project management processes in the PMI-PMBOK®. One problem is critical realism that our knowledge is incomplete. What we know is dependent on the degree we observe among the whole we can recognize, which still cannot cover a reality what actually exists.

The other issue is that the APMBok, the ICB, or the P2M treat broader areas than the PMI-PMBOK®, which treat various types of knowledge areas such as leadership and strategy. Such knowledge areas are more difficult to explain relations between general rules and actual outcomes. He concludes that even process knowledge has some degrees of how each process is set in a specific context of which knowledge is actually consumed. Certainly, in Morris’s word, there is “stratification” (Morris, 2004,

p.1143) of the degree of professional knowledge becomes “concrete or generally agreed-to definitions project management to be useful” (Morris, 2004, p.1142). The stratifications range from concepts to interpret ‘what are projects?’ and ‘how are they managed?’ to more concrete processes as descriptions of the works for the project manager within a specific context.

#### **3.5.4 Use of different levels of PM knowledge in PMBoKs**

As seen in the aforementioned PMBoKs, there are some different levels of usage of knowledge from abstract concepts to concrete processes. The followings aspects or levels regarding useful knowledge are thought of as some of representative ones used and discussed as the project management practice.

##### **Concepts level**

At the concept level, we have to recognise, for instance, time, quality, cost, risk, environment, organisational design, and/or contract. We should be aware of these elements to manage projects. If we fail to recognise the importance of some of these elements, then we will fail to manage them. For instance, if we are not aware of time, then we may fail to complete our activities on schedule. For PMBoKs, central questions should be what topics constitute PMBoKs and how those topics are selected? (Morris, et al., 2000/2005, Shepherd and Atkinson, 2010).

##### **Methodological level**

At the method level, based on our interruptions, we have to deploy the method(s) in the context. We need to be careful to select suitable tools because “once we start to use the tool, we get committed to it” (Lientz and Rea, 1995/1998, p.40). We have a wealth of project management books providing us with many tools to use in practice; most PMBoKs recommend some references to the literature. Thus, we can have better access to past professional experience. We may modify existing tools or create a new tool, store and re-use the tools using a framework. This feedback process cannot happen unless we have the basics; that are PMBoKs.

##### **Execution level**

In the execution level, we can execute the methodology. For instance, when we select PBS/OBS/WBS, we execute knowledge work using these tools. We can obtain a resource-allocation strategy far more conveniently than without them. These tools are

templates to help us to do project management. In fact, they minimise the time for the thinking. Hence, we can concentrate on more creative and complex issues; and/or we can make project management a less time-consuming process. The plans that are produced at this stage are knowledge products, i.e. strategy, schedule, resource allocation, which are necessary, and are consumed, for our actions.

### **Monitoring and controlling level**

At this level, we use the knowledge products that were created at the previous level. Based on the plans we created, we deploy resources as the inputs and monitor the outputs, rather than manage the work itself (Turner, 2000b). Based on the products of knowledge work, project managers control the model of systems and organisation(s). At this level the plans that were created from project management are consumed to execute more concrete processes; that are routine operations.

### **Knowledge as professional language**

Wenger (1997, p105) defines “the products of reification” as language for various participants who have different roles. PMBoKs were originally developed as certification programs for project managers. As language, project management concepts should serve to describe project management so that all projects’ stakeholders can understand it.

All levels of knowledge that are treated in PMBoKs are important to describe project management professional knowledge since knowledge of project management should be understood by practitioners, many of whose needs are to practice it at a concrete level, as well as various stakeholders, some of whose needs are to grasp project management at an abstract concepts level.

## **3.6 Summary**

The aims of this chapter were:

- (1) to describe the background of project management associations and development of their PMBoKs
- (2) to review literature regarding rationale of PMBoKs
- (3) to analyse PMBoKs in terms of function in knowledge work (project management).

Project management associations, together with their BoKs, have played significant roles in the establishment of project management as a profession. PMBoKs were first created as the bases of certification programs. They are also used as training programs for project managers.

Functional analysis of PMBoKs has showed us another important role that they perform. The importance of being aware of key concepts in project management was explained. The function of concepts in PMBoKs is like that of language for cultures/communities. The PMBoKs are a subset of such concepts; i.e. words in use in project management. Under this subset of words, tools and/or experience are accumulated so that professional knowledge is used and stored effectively in project management. PMBoKs act in project management as useful frameworks.

There are several types of PMBoKs. There are some differences in selecting topics between them. Consequently, the following two points should be examined when examining a Japanese PMBoK:

- What topics are used in current Japanese projects?
- What are differences between several PMBoKs, especially between Japanese one and English ones? What can we say from the differences?

These questions are explored in the followings chapters.

## **Chapter 4 Research methodology: a possible model for a Japanese construction PMBoK in 2000, a questionnaire and interviews**

### **4.1 Introduction**

The aim of this chapter is to explain the research question and the research methodology to address to the question. A model of a Japanese construction PMBoK is developed here as a 'straw man' (hypothetic model) that will be tested in order to obtain empirical data at a later stage.

### **4.2 Research questions**

As explained earlier, several different types of PMBoKs are used in various countries. If there were one generic body of project management knowledge, then all projects could be understood and learnt using the same set of topics, i.e. the common language of the project professional. The Japanese did not have their own PMBoK back in 2000. This research will show a snapshot of topics that were agreed by Japanese managers in construction sector. The data is analysed in terms of two ways: how Japanese managers would agree on each topic, and what are differences in two sets of data obtained from two different groups; Japanese managers and English managers. Then, through these analyses, meaning of having PMBoK for Japanese should be examined. Then, more precisely, the following three questions are to be addressed.

#### **(1) What should constitute topics of the Japanese PMBoK (in the Japanese construction industry)?**

Japanese management in construction sector is said to be unclear. How does it described as a PMBoK? What should constitute topics of the Japanese PMBoK in the context that professional boundaries are not clear?

It should be noted that because only data from construction sector was available within time resource of the research (from October 1999 to June 2001), data collection was done from only construction sectors that are civil, building, and process engineering.

**(2) What are differences of selection of topics in PMBoKs for Japanese managers and English managers? How the differences could be explained?**

In the study of management, Japanese management is recognised as different to Western management (Bennet, 1991, Baba, 1993, Nonka and Takeuchi, 1995, Kunishima and Shoji, 1998, and Yashiro, 1998). Then, is there any difference in selection of topics of PMBoKs between Japanese managers and English managers? If there is any difference, how these differences are explained? What influential factors for selections of topics of PMBoKs can be introduced from the above differences?

**(3) What are roles of PMBoKs for Japanese managers? What are impacts of the findings on the understanding to professionalization of project management in the West?**

As described in the previous section,

- 1) Roles of the Japanese individual managers are not clearly defined.
- 2) Japanese management (in construction sector) is not explicitly understood.

In the above situations, having and using PMBoKs could be given different meanings compared to the one in the West, where defining profession(s) of project management is primary concern. Then, what are meanings of having and using PMBoKs for Japanese managers?

Inquiring on the above question might be beneficial for the better understanding of professionalization in non-Anglo-Saxon economy (Hodgson and Muzio, 2010), where there is little effect from Puritan memes (Whitty and Schulz, 2007) in the selection of project management language. Therefore, from the findings in the study regarding Japanese PMBoKs, there may be some points that have influence on the understanding to professionalization of project management in the West. What are influential factors on the formation of the western PMBoKs?

### **4.3. Research process and research timeline**

#### **4.3.1 Processes to tackle to the research questions**

Processes to tackle to the research questions are as the followings.

### **(1) Making a strawman as a potential Japanese PMBoK**

Firstly, the theory of behind PMBoKs is reviewed. Secondly, two approaches used to create a framework for the straw-man model are introduced. Thirdly, using these two approaches, a framework is formulated and the topics of the existing PMBoKs are selected. Fourthly, some new topics that are thought of as necessary for the straw man are added.

The existing representative PMBoKs in 2000- i.e. those of the PMI, the APM, and the IPMA are compared. A straw-man of the APMBOK, which was used in the research for the revision of APMBOK third edition in 1998, will be also considered. Japanese literature regarding project management or construction management is examined to find potential new topics.

It is noted that the straw man was produced in 2000. The straw man was then tested on Japanese managers at that time. Therefore, the approaches and referenced models and topics are all that were available in 2000. The models that were published after that time, including the P2M, APMBOK fifth edition and ICB 3.0 version, were neither reflected in the straw man, nor thereafter in the questionnaire.

### **(2) Data collection to test the coverage of topics of the strawman and reactions to the PMBoKs' approach.**

A questionnaire was compiled and circulated. At the same time, interviews to some Japanese managers were undertaken. Through the questionnaire and interviews, Japanese managers' reactions to the strawman are obtained. Through the analysis of the reactions, meaning of having and using PMBoKs for Japanese managers to learn project management is examined.

### **(3) Comparison between Japanese managers and English managers regarding selection of topics of PMBoKs**

In the first half of Chapter 6, the data from Japanese managers gathered in 2000 were compared with the similar survey conducted during the APM's revision in the UK in 1998-1999. The two sets of data are compared and analysed in terms of overall differences in managers' thinking of project management in different groups.



#### **(4) Analysis of differences from actual selection of PMBoKs' topics during 2001 – 2013**

Then, in the last half of Chapter 6, the above overall differences are examined further by comparing with the selections of topics in actual PMBoKs. PMBoKs that are examined as post 2001 models are P2M that represents Japanese PMBoK, the APMBOK, Construction Extension to the PMI-PMBOK®, and GAPPS, all representing English PMBoKs. The results of the comparisons are examined considering data from Japanese managers gathered in 2000 and further from interviews with the authors of P2M.

The timeline of the above research process is as in the next section.

#### **4.3.2 Research timeline**

The timeline of the research is explained as the following three phases:

##### **Phase 1: 1999 – 2001: A proposal of a Japanese construction PMBoK and analysis of differences between Japanese managers and English managers**

A strawman model was made and data was collected by the questionnaire for Japanese managers in construction industry. To do so the concepts used in project management among Japanese managers at that time (around 2000) was examined and tested through the questionnaire and interviews to Japanese managers. The questionnaire was distributed to the authors of P2M. Data was analysed by comparing between Japanese managers and English managers. The result is modelled as a framework for further analysis.

##### **Phase2: 2001 – 2013: New PMBoKs were published.**

Principal PMBoKs, including the first Japanese PMBoK, were published and revised during this period.

##### **Phase 3: 2008 – 2013: Further analysis by comparing between new PMBoKs during 2001 – 2013.**

Though this comparison study, the research finding in 2000 is verified, and developed. For this analysis, PMBoKs published after 2001 and relevant literature is referenced.

**Table 4.1: Timeline of the research**

2000: <u>Proposal of the Strawman of JC-PMBoK and data collection (Chapter 4)</u>
2001: <u>Data analysis regarding difference between Japanese managers and English managers (Chapter 5 and the first half of chapter 6)</u>
2002: <i>P2M first edition (ENAA/PMCC)</i>
2003: <i>Construction extension to PMI-PMBOK® 2000 edition (PMI)</i>
2002-2004: <u>Interviews with the authors of P2M</u>
2005: <i>PMI-PMBOK® third edition (PMI)</i>
2006: <i>The Standard for Program Management, The Standard for Portfolio Management (PMI)</i>
<i>APMBoK fifth edition (APM)</i>
2007: <i>Construction extension to PMI-PMBOK® third edition (PMI)</i>
<i>P2M new edition (PMAJ)</i>
<i>A Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers (GAPPS)</i>
2008: <i>PMI-PMBOK® fourth edition (PMI)</i>
2012: <i>APMBoK sixth edition (APM)</i>
2013: <i>PMI-PMBOK® fifth edition (PMI)</i>
2008-2013: <u>Analysis of selection of topics in PMBoKs during 2001 – 2013 regarding the research findings (the last half of chapter 6)</u>

The table 4.1 shows summary of research timeline. Research activities are underlined. Italic characters shows publication of principal PMBoKs. Relevant chapters are putted after each research activity.

## **4.4 The structure of the PMBoKs**

### **4.4.1 The basic structure of the PMBoKs**

As explained in Chapter 3, the PMBoK consists of the following elements:

- (1) a framework;
- (2) topics with descriptions; and
- (3) tools.

The scope of this research involves points (1) and (2).

### **4.4.2 Consideration of two kinds of process as potential topics**

There are some types of processes that are used in project management such as the followings:

- the project life-cycle

- the work process

The above two kinds of process are considered as potential topic of a PMBoK.

### **(1) The project life-cycle**

The project life-cycle is a common generic sequence of processes that is seen in all projects. The project life-cycle distinguishes projects from routine operations. It follows a number of phases: Opportunity, Design and Development, Implementation, Hand-over, and Post-Project Evaluation, although terminology and/or number of phases may differ according to industry and organisation (e.g. APM, 2000, 2006, PMI, 2004). Because it is thought of as key concept to understand project management, the project life-cycle is retained as a key topic on the above-mentioned list.

### **(2) The work process**

The work process is what we normally treat as steps in which work is executed. As shown in Chapter 2, this process is the one that Adam Smith (1776) described using the example of pin-makers. This is what is normally understood as a process, for instance, in a factory, on a construction site, or in daily routine works. The work process is not selected in the topic list because the work process itself is outcome of the project management work, although it can be included in some topics.

## **4.5 Consultancy with Japanese academics and practitioners in the Japanese construction sector**

The first draft of the Japanese construction PMBoK was developed through consulting with Professor Masahiko Kunishima (Construction Management, Tokyo University). The explanation of each topic in the draft was reviewed.

Furthermore, the set of questions and explanations of meaning of the first draft of the Japanese construction PMBoK was developed by consulting with the following academics and practitioners in the Japanese construction sector:

- Professor Shigeru Ohara (professor of Project management, University of Chiba Institute of Technology)

- Project Management Subcommittee (the Architecture Research Association, led by Assistant Professor Furusaka of Kyoto University)
- Mr Koji Ota (Project Director, Euro Kajima)
- Mr Kamino (Project Manager, Obayashi UK)
- Mr Fujii (Project Manager, former Nikki and World Bank)

A draft of the questionnaire was reviewed by the above academics and practitioners, who represent Japanese construction sectors.

## **4.6 The basic concepts for creating a straw-man proposal**

The rationale of making ‘a framework’ and ‘topics with descriptions’ are as follows:

- Issues that relate to the managers’ skills and/or roles are not selected as an individual topic.
- The basic framework should consist of five to nine groups.
- The appropriate number of topics in the straw man is around 40 – 55.
- Except for the project life-cycle, topics that describe ‘processes’ or ‘procedure’ should not be included.

These are explained below.

### **4.6.1 The manager’s roles and skills**

The role of project managers varies considerably in different countries. To focus on comparable knowledge framework between the two countries, the PMBoKs should not focus on the skills and the roles of a particular type of management. Therefore, those topics that express managers’ skills and roles were not selected as topics in the straw man.

### **4.6.2 The number of categories in the framework**

Miller (1957), a psychologist, found that most people respond best to a numerical structuring scheme of seven, plus or minus two (cited in Morris, 1999). It is essential that people can easily understand and comprehend topics. Hence, it is preferable that a framework should be designed to consist of up to around seven groups.

### **4.6.3 The number of topics**

Miller's theory above could be applied to determining the number of topics in each category. As a final product of a Japanese PMBoK, seven plus or minus two topics could be relatively appropriate under each category. This naturally leads to the number of all topics being around 50; i.e. seven topics under each of seven categories equals 49. As a potential model, preferable number of topics is up to around 50.

### **4.6.4 Except for the project life-cycle, topics that describe 'process' and 'procedure' should be avoided as much as possible**

In order to compare the different attitudes of Japanese and Western cultures toward the selection of topics for project management, it is preferable to deal with a simple issue, i.e. just concepts. For these reasons, elements regarding process and procedure are avoided as much as possible in the straw-man list.

## **4.7 A framework**

The first milestone in making the straw man is to choose or create a framework. A framework is not the central issue in the discussion of the discipline of project management. However, a framework may help people understand and comprehend topics (Morris, 1999). In fact, some comparison studies of PMBoKs use their own frameworks – either original ones by themselves or existing models such as the APM model. For instance, Turner introduces his own PMBoK, which is known as the 'IJPM' model (Turner, 2000). It is inevitable that a framework is used for better understanding of conceptual issues.

Because the framework should as much as possible reflect Japanese perceptions, past research results with regard to PMBoKs in Japan were used (Hinaji, 1987, cited in Kunishima and Shoji, 1995; Yashiro, 1999). Inevitably, the author's own general sense as a Japanese may have affected the structure of the framework.

### **4.7.1 Two approaches for creating the straw man**

Two methods were used as approaches to consider the topics. The first was topics-based. Topics were culled from PMBoKs and were then examined. Some were discarded based on the rules cited above. Similar topics were then merged with each other. The second

method is a framework-based concept. The potential basic frameworks were examined. The frameworks of all existing PMBoKs and past Japanese models – as well as the author’s understanding – were examined.

These two methods are described as the ‘top-down’ and the ‘bottom-up’ approach.

#### **4.7.2 Top-down approach: framework-based**

The top-down approach focuses on categories of framework. Appropriate categories may differ between people. For instance, in the experts’ workshop on a global PMBoK by NASA, the main headlines of groupings were indicated out of 1000 words as follows:

- Type of Project
- Context
- Client
- Requirements Management
- Strategy
- Project Management Integration
- Planning
- Life-Cycle
- Risk
- People
- Procurement
- Control
- Organisation
- Vocabulary

(Source: Morris, 1999b, p.12)

These headlines, as a framework, directly reflect experts’ views toward project management. This is important, in that people can easily conceive whole elements. Therefore, the top-down approach is necessary to make a PMBoK for particular group, for instance for the Japanese managers.

**Table 4.2: Topics that were grouped into seven clusters in the discussion at NASA in 1999**

Cluster No.	Major project management terms	
Cluster 1	General Management Legal Aspects Environment General Terms Context	Project Success Organisation Taxonomy Program Management
Cluster 2	Start-Up Procurement	Implementation Completion
Cluster 3	Structuring Scope Timing and Schedule Estimating	Quality Modelling Cost Risk
Cluster 4	Operations	Productions/Operations/ Manufacturing
Cluster 5	Forecast Project Control	Life-Cycle Monitoring Tracking
Cluster 6	Human Aspects Leadership Conflict Management	Learning Teams
Cluster 7	Technique Technology	Documentation Application Area

**Source: Morris (1999b, p.13)**

#### **4.7.3 Bottom-up approach: grouping topics**

Many topics can be picked up from existing PMBoKs, or from some other sources. The topics were grouped into some categories. There are many ways to categorise topics. For instance, in the discussion of the creation of the global PMBoK by NASA (Morris, 1999*b*), the topics were divided into some clusters, as shown in Table 4.2.

A number of topics are put into one cluster, considering the topics' linkage and/or affinity. Each cluster represents a headline of topics, comprising an element of the framework. Thus, the grouping of topics, i.e. the bottom-up approach, is one major path.

#### **4.7.4 The interdependency of both approaches**

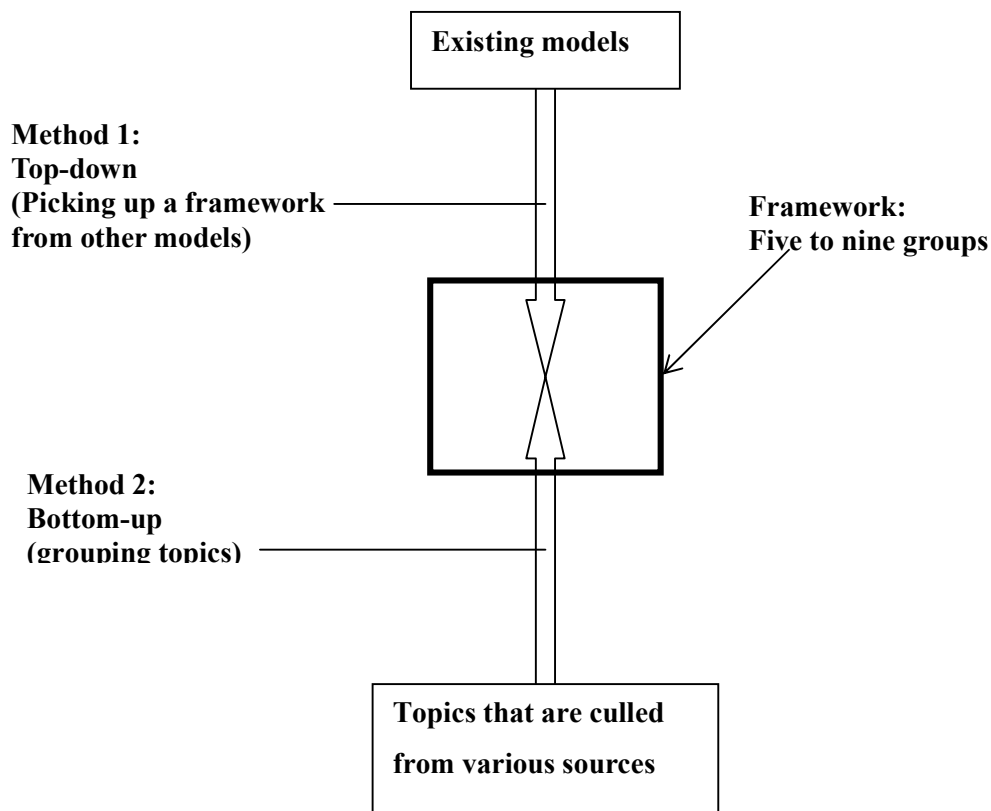
Both approaches are mutually dependent. While a topic can be a framework in one PMBoK, it may be an element under a larger topic framework in another PMBoK. As Morris (1999*b*) says that "...people have in rationalising a valid basis for one structure (model/map) over another", i.e. unlike mathematics, there seems to be no 'right answer'.

#### **4.7.5 The process to continuously improvement the framework**

Methods 1 and 2 were combined, as shown in Figure 4.1. The processes were repeated more than three times. The main process of the development of each method is shown in the following sections.



**Figure 4.1: Two methods of making a framework**



## **4.8 Method 1: top-down approach (picking a framework from other models)**

### **4.8.1 Existing frameworks**

In the top-down approach, in order to find the appropriate categories, the existing frameworks were examined. The APM model has the largest knowledge area among all of the existing PMBoKs. Therefore, the APM model (2000) is used as the basis of a framework. In addition, the IPMA ICB (IPMA, 1998) and the other two studies in the Japanese construction sector, i.e. Yashiro's model (Yashiro, 1999), and Hinaji's model (Hinaji, 1987 cited in Kunishima and Shoji, 1995) are also referred to.

The PMI model, which has the largest number of copies in circulation worldwide, was discarded at this stage. As explained in Chapter 3, the PMI model is narrower in scope than the APM model. It is obvious that a larger framework is preferable, as it has a larger area of elements. The PMI model has a project management knowledge area that is too

small – at least to make the straw man into a Japanese model. While the PMI model is still a possible candidate for a final model of the straw man, it was not used at this stage.

### **(1) The APMBok fourth edition**

The fourth edition of the APM model contains the following seven categories. For convenience, these categories were numbered from A1 to A7.

#### **<The APMBok fourth edition>**

A1 – General

A2 – Strategic

A3 – Control

A4 – Technical

A5 – Commercial

A6 – Organisational

A7 – People

To examine ways of adding to the APM model, the following three models were reviewed:

### **(2) IPMA ICB**

The IPMA model has a ‘sunflower’ structure. The reason why IPMA employed this structure was to prevent misunderstandings between people from various different cultures and countries. As explained earlier, it is not designed to aid the comprehension of the elements. Therefore, while the sunflower structure was still kept as a potential candidate for a final model of the straw man, it was put aside at this stage.

### **(3) The Yashiro model**

Yashiro (1999) studied Japanese research topics using the ISO 10006 model. Yashiro studied the ‘systematic structure’ of construction management research. He says:

“To accumulate knowledge obtained by each activity in the field of construction management research, it is seriously desirable to create a systematic structure and infrastructure to integrate achievements of researches. ... It is proved that most of the key words can find the appropriate address in the framework of process categories tailored from the ISO 10006 generic model.”

(Yashiro, 1999, p.58)

In the study, past research titles in construction management research journals were arranged based on the structure of ISO 10006, which has 10 categories, i.e. from Y1 to Y10 in the list shown below. He tried to allocate all key words to 10 categories of the ISO 10006. Examined key words were all topics from the following four research communities

- Topics and key words for research conferences for construction management issues by Civil Engineering Research Committee.
- key words in call for paper to symposium of Architecture production of Japan Association for Architecture.
- Title of Workshops and Task groups in CIB (Counceil International du Baliment)
- Title and key words of Construction Management and Economics, issues from 1995 (vol.13 no.1) to 1998 (vol.16 no.3)

Yashiro found that some topics cannot come under any of the 10 categories in ISO 10006. These topics were categorised into the following four topics;

- Economic environment and constraints related to the construction market
- Construction industry and institutions
- Technique and planning methods
- Research methodology

He added the above four categories to ISO1006 headline. Consequently, Yashiro proposed following 14 topics as his project management model:

#### **<Yashiro's model>**

- Y1. Strategic process
- Y2. Interdependency management processes
- Y3. Scope-related
- Y4. Time-related
- Y5. Cost-related
- Y6. Resource-related
- Y7. Personnel-related
- Y8. Communication-related
- Y9. Risk-related processes
- Y10. Purchasing-related processes
- Y11. Economic environment and constraints related to the construction market
- Y12. Construction industry and institutions
- Y13. Technique and planning methods
- Y14. Research methodology

**Note:** From Y1 to Y10 are from ISO 10006. From Y11 to Y14 were added to categorise keywords that cannot come under 10 categories of ISO 10006.

#### **(4) The JSCE model**

In 1987, the construction management system was studied in the Japan Society of Civil Engineering (JSCE). According to the research, construction work was classified into the following seven categories, with sub-groups. These are numbered J1–J7 for convenience.

#### **<The JSCE model>**

- J1. Project formulation
- J2. Functionality of the structure and environmental changes
- J3. Evaluation of the project
- J4. Construction of structural work (life-cycle of the structure)
- J5. Organisation and operation
- J6. Ethics and education
- J7. Development and use of technology elements and information processing.

#### **4.8.2 Comparison of the frameworks of the three models**

Table 4.3 shows comparison of the above three models: the APM model, the Yashiro model, and the JSCE model.

##### **Group 1. A1 – General and J1 – project formulation – general topics**

The JSCE model places more emphasis on the ‘1 – General’ category. People do projects. People have reasons to do projects. People start projects by considering the reason why they need to do something. These are generally called front-end topics. Front-end topics should be put in this category. Hence, the category of project front-end related topics was selected.

##### **Group2. Y11 and J2 – ‘Environment’ related topics**

‘Environmental issues’ here means economic, legal, financial, political and social matters. Environmental issues are mentioned in the APMBok fourth edition as the topics: ‘Project Context’ and ‘Safety, Health, and Environment’.

Both the Yashiro model and the JSCE model emphasise environmental issues as being fundamental to the framework. Environmental change is a very serious issue for construction projects in Japan. Therefore the category ‘environment’ should be considered as a framework.

Consequently, based on the APM model, the following changes were made.

Group 1: A1 – General was changed to ‘Project Life’, which expresses the formation of the projects.

Group 2: The environment-related category was added as ‘Project Environment’.

Therefore, upon original six groups of APM model, which are Strategic, Control, Technical, Commercial, Organisational, and People, two additional groups, which are Project life and Project Environment are added. Thus, hypothetical Japanese PMBoK model consists of the following eight groups. They are used as a basic framework for the selection of elements for a model of the straw man.

**<The straw man model>**

- 1 – Project Life
- 2 – Project Environment
- 3 – Strategic
- 4 – Control
- 5 – Technical
- 6 – Commercial
- 7 – Organisational
- 8 – People

These should be revised during the selection of the elements.

**Table 4.3: Comparison of the frameworks of the three existing models**

Group No.	The APM model	Yashiro's model	JSCE model
1	A1 – General		J1 – Project formulation
2		Y11 – Economic environment and constraints related to the construction market	J2 – Functionality of the structure and environmental changes
3	A2 – Strategic	Y1. Strategic process	J1 – Project formulation
4	A3 – Control	Y2. Interdependency management processes Y3. Scope-related Y4. Time-related Y5. Cost-related Y6. Resource-related Y9. Risk-related processes	J5 – Organisation and operation J3 – Evaluation of the project
5	A4 – Technical	Y13 – Technique and planning methods Y14 – Research methodology	J7 – Development and use of technology elements and information-processing
6	A5 – Commercial	Y10. Purchasing -related processes Y12 – Construction industry and institutions	J5 – Organisation and operation
7	A6 – Organisational		J5 – Organisation and operation J3 – Evaluation of the project J4 – Construction of structural work (life-cycle of the structure)
8	A7 – People	Y7. Personnel-related Y8. Communication -related	J6 – Ethics and education

## **4.9 Method 2: bottom-up approach (grouping the topics)**

### **4.9.1 Elements in PMBoKs and Japanese literature**

The following existing PMBoKs and literature are examined to select the appropriate topics:

- (1) the APM BoK third edition (APM, 1992)
- (2) the CRMP PMBoK (Morris and Patel, 1999)
- (3) the CRMP straw man (Morris and Patel, 1999)
- (4) the IPMA ICB (IPMA, 1998)
- (5) the PMI-PMBOK® (PMI, 1996)

The following books are represented in Japanese construction management<sup>1</sup>:

- (6) *The principles of construction management* (Kunishima and Syoji, 1995)
- (7) *Kensetsu manejimento* (Construction Management) (Baba, 1996)

### **4.9.2 APMBOK fourth edition's topics that were not selected for the straw man**

- Opportunity, Design and Development, Implementation, Hand-Over, (Post-) Project Evaluation Review

'Project life-cycle' is the central concept of project management. These may be appropriate for describing typical project events. All phases should be described clearly. In the research, however, these are too specific for the examination of people's perception of topics. Opportunity, Design and Development, Implementation, Hand-Over and (Post-) Project Evaluation Review were merged with Project Life-Cycle Management.

- Organisational roles – Project Sponsor, Programme Manager, Project Manager, Project Support Office, etc.

The APMBOK fourth edition explains organisational roles in project management. The following roles are explained as examples. The Project Sponsor, a Programme Manager,

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<sup>1</sup> In March 2000, three books entitled 'Construction Management' were published, including these two books. Source: NACSIS search (integrated Japanese universities' library search engine). The other one deals with ISO9000 and 14000, which are about only Quality and Environment Management.



the Project Manager, and the Project Support Office. In addition to these, some other roles that appear frequently in practice are mentioned.

In the various practices, it is preferable to understand each role – as both an individual and an organisation – in project management. It is also important that terminology is clear between organisations. However, the roles of organisations differ according to the situation. For instance, a Japanese contractor's role varies according to the situation of each client. Even the same organisation in the same industry will change its role depending on its clients' conditions. Hence, these are not generic for project management. Rather, it is the people who manage the projects who determine these roles appropriately. Therefore, organisational roles were taken out of the list for the straw man.

Following the above mentioned thinking, all topics were placed in a framework. The bottom-up approach showed that organisation/system, and control category could be made into one group. Then these were merged and seven groups remained as the framework.

Table 4.4 shows selected potential topics within a framework that consists of seven groups.

**Table 4.4: Project Management Body of Knowledge topics selection (1 of 2)**

		Const mgt	The PRI of CM	CRMP BoK	CRMP Straw -man	APM BoK	IPMA BoK	PMI BoK	
1. Project life	1	Programs and Project		1.2,1,3	o	10,11			
	2	Goals. Objective		1.6	o	20	o		
	3	Business Need and Case	o	o		50			
	-2	Success/Failure		1.8	o	20	o		
	4	Project Life Cycle	o	o	1.4		60	o	
5	Project Management Plan/Strategy			3.2	o	21		o	
2. Project environment	6	Financing	o		4.3	o	52		
	7	Law	o	o	4.5		54	o	
	-	Procedure	o		o				
	8	Marketing and Sales	o		4.2	o	51		
	9	Resource Management	o			o	32		o
	10	Environmental/Energy/Waste Disposal Issue	o	o	1.5	o	12	o	
	11	Economic Environment/Impact	o	o	1.5		12		
	12	Stakeholder/ Political Environment	o	o	1.5	o	12		
-	Labours moral control	o							
3. Execution Strategy	13	Safety/Health	o	o	4.8	o	25	o	
	14	Quality	o	o	4.7	o	24	o	o
	15	Cost Control	o	o	3.5	o	33	o	o
	16	Time	o	o	3.3	o	31	o	o
	-	Earned Value Management			o		35	o	o
	17	Value Management			3.8	o	22		
	18	Risk/Peril		o	3.7	o	23	o	o
	19	Risk/Uncertainty	o		3.7	o	23	o	o
4. Technical	20	Research and Technology Management	o		4.1		43		
	21	Modelling and Testing					45		
	22	Design Management	o			o	40		
	23	Configuration Management and Change Control			3.9	o	34,46	o	o
	24	Phasing					31		o
	25	Estimation	o		3.4		42		o
	26	Value Engineering	o				44		

(1) ‘o’ and numbers express that each BoK covers the topic.

(2) Const mgt = Baba (1996); The PRI of CM = Kunishima and Shoji (1995); CRMP BoK = Morris and Patel (1999); CRMP straw man = Morris and Patel (1999); APM BoK = APM (1992); IPMA BoK = IPMA (1998); PMI BoK = PMI (2000).

**Table 4.4: Project Management Body of Knowledge topics selection (2 of 2)**

		Const mgt	The PRI of CM	CRMP BoK	CRMP Straw -man	APM BoK	IPMA BoK	PMI BoK
5. Industrial/Commercial	27	Industrial Relation	○	○	4.9	○	67	
	28	Contract Management	○	○	4.6	○	53	○
	29	Bidding			4.6		53	
	30	Partnering Management						
	-	Supply Chain Management			4.6	○	53	
	31	Re-engineering						
6. Project system/control	32	Procurement	○	○		○	53	○
	33	Integration			1.9	○		○
	34	Systems Management	○		1.1			
	35	Project Context/Requirement Management			3.1	○	30,41	○
	36	Scope (WBS etc)	○		3.1		30	○
	-	Work Management			○	○		
	-	Management Development			2.9			
	37	Performance Measurement			3.6		35	○
	-	Project Monitoring and Controlling	○		2.2			○
	38	Project Organization	○	○	2.1	○	66	○
	-	Delegation	○		2.5			○
	39	Information management	○		4.4		36	○
	40	Communication	○		2.3		70	○
7. Human issues	41	Ethics	○	○				
	42	Human Resource	○					
	43	Leadership	○		2.4	○	72	○
	44	Team Building	○		2.6	○	71	○
	45	Decision Making						
	46	Conflict			2.7	○	73	○
	47	Negotiation and Influence			2.8		74	○
	48	Stress Management				○		
	49	Personnel Management				○	75	○
	50	Coaching						

(1) '○' and numbers express that each BoK covers the topic.

(2) Const mgt = Baba (1996); The PRI of CM = Kunishima and Shoji (1995); CRMP BoK = Morris and Patel (1999); CRMP straw man = Morris and Patel (1999); APM BoK = APM (1992); IPMA BoK = IPMA (1998); PMI BoK = PMI (2000).

#### **4.10 Potential new topics for the straw-man proposal**

New potential topics for the straw man are given in the following section. Some topics are derived from existing topics, but are deemed to be separated. Some other topics are those that Japanese practitioners may care about.

##### **10 – Environmental/Sustainable Development**

Construction activities have a large impact on the environment. They consume huge amounts of energy. Therefore environmental issues should be considered with regard to construction activities. Preserving wildlife, and issues with regard to energy sources and the disposal of waste, are pertinent to Sustainable Development.

##### **11 – Economic environment/impact**

Economic activities affect project activities, whereas project activities affect the economic environment. Projects can be started for economic needs.

##### **12 – Stakeholder/political environment**

There are many kinds of stakeholders, including residents, industry and politicians. Stakeholders can have a considerable effect on the success of a project. Understanding their input to projects is very important. Obtaining a consensus from all stakeholders is not always possible. Projects sometimes fail due to disagreements with stakeholders. At any level of project management, stakeholder management is a central issue. It is necessary to communicate with stakeholders in the appropriate way, with the right timing and frequency. Obtaining agreement from all stakeholders, thereby facilitating the smooth progress of a project, is a central skill in project management. It is important to include all possible stakeholders.

##### **Risk**

According to the OED (2000), the word ‘risk’ carries connotations of both of peril and uncertainty. Peril is represented as natural disaster, such as earthquakes in Japan. It is certain to happen at some point, and we always need to prepare for it. As for uncertainty, different cultures tend to have different attitudes toward it, as shown by a research (Hofstede, 1980). Japanese culture tends to avoid uncertainty, whereas other cultures, like the British one, have tendency of less ‘uncertainty-avoidance’.

To know how Japanese managers think about each element, risk was divided into ‘18 – peril’ and ‘19 – uncertainty’, as in the following section. It is said that the Japanese management is weak in treating uncertainty but stronger at coping with expected danger, i.e. peril. Peril and uncertainty are therefore examined in the straw man, in order to observe the meta-thinking of Japanese managers.

### **18 – Risk/Peril**

Peril (risk) comes unexpectedly. Peril (risk) management should prepare for undesirable events. It tends to be ignored, owing to its unexpected nature. However, it is important to consider the damage that might be caused should it occur. The flexible response of staff to unexpected events should be something that is trained and educated for, rather than having to refer to manuals or systems. A plan is required to cope with extraordinary events.

### **19 – Risk/Uncertainty**

Uncertainty management is the management of uncertain things. Sometimes it brings us good things, and at other times bad things. Proper management of uncertainty brings huge benefits to a project. While uncertainty is inevitable to any project, ignoring uncertainty may lead to accepting bad luck.

### **20 – Research and Technology Management**

Management of R & D was an important issue in the success of a Japanese manufacturing firm (Morita, 1988). Management of research and development issues is listed as a key factor by Yashiro’s model (1998) and the JSCE model (1987). Therefore, research management is added to technology management.

### **24 – Phasing**

Phasing, which may be subject to scheduling, should be emphasised, since Japanese organisations usually perform phasing in management practice, whereas the subject is not well recognised at the theoretical level by Japanese managers.

### **27 – Industrial relations**

In the UK, ‘industrial relations’ basically deals with the management of the work-force (APM, third edition). In the straw man, above the original concept, issues with inter-

company relationships are added, because the social context based on company networking is more influential than union issues in Japan.

### **30 – Partnering management**

As Bennett (1995) observed, partnering is seen as involving typical long-term relationships between Japanese organisations. According to him, partnering had been making the production system of the Japanese construction projects more effective and efficient. On the other hand, in Japan, the long-term relationships between Japanese companies were thought of as being relatively negative, i.e. as a socially unfair custom. Partnering, therefore, should be more explicitly recognised by Japanese managers as being a good practice of Japanese management.

### **31 – Re-engineering**

‘Re-engineering’ means to change the entire process of the supply chain, using new concepts and/or technology (Hammer and Champy, 1993). Today’s projects are relatively concerned with managing the changes in existing processes. Project management, therefore, is deeply concerned with the management of change. This topic is considered to be important.

### **33 – Integration**

Integration is included in the existing PMBoKs. However the meaning of ‘integration’ for a Japanese version would be different to its Anglo-Saxon meaning. In Japan, ‘sectionalism’ is worse than in Anglo-Saxon countries. Sectionalism means that each different section has a different culture. Hence, those sections can barely communicate and cooperate with each other. The following are typical examples that should be integrated:

1. engineers and non-engineers
2. the private and public sectors
3. civil engineers and architects

### **41 – Ethics**

Project managers need to be careful to ensure that the goal of a project, its means of execution, and the effect of the project on society are socially beneficial. Furthermore,

ethics should be thoroughly pursued by the team members. A manager of construction projects in Japan usually has an engineering background, so an awareness of ethics in the appropriate use of technology is absolutely necessary. Technology has a large impact on society. Therefore technology must be used so that society can benefit from it (Kunishima and Shoji, 1994, Harris, Pritchard, and Rabins, 2000).

#### **45 – Decision-making**

It is important to have an understanding of decision-making. Understanding of the decision-making process is important for proper management. Collective decision-making in an organisation should also be recognised, as well as decisions by individuals.

#### **49 – Behaviour and influence**

As a leader, it is important to ensure one's influence on team members. In addition, the leader's behaviour, i.e. actions and attitudes, affects the behaviour of others. The higher the management level, the more people are influenced.

#### **50 – Coaching**

Coaching is a technique, which is application of training methods for sports teams to management, is to teach one's knowledge/experience to someone else. To teach the fruits of one's experience is different to learning from experience. Learning in an organisation is a central means for an individual to develop their knowledge. Less-experienced people need help from more-experienced people. To make the most of organisational knowledge/experience, coaching skills are required for everybody working in project management (Enomoto, 1999)

The structure and topics of a potential Japanese PMBoK are shown in Table 4.5.

**Table 4.5: A potential Japanese PMBoK**

<p style="text-align: center;"><b>Project Life</b></p> <p>1. Goals. Objective/Success, Failure                  2. Programs and Project Management                  3. Business Needs and Case                  4. Project Life-cycle                  5. Project Management Plan</p>	<p style="text-align: center;"><b>Industrial Issues</b></p> <p>27. Industrial Relations                  28. Contract Management                  29. Bidding                  30. Partnering Management                  31. Re-engineering                  32. Procurement</p>
<p style="text-align: center;"><b>Project Environment</b></p> <p>6. Financing                  7. Legal Awareness                  8. Marketing and Sales                  9. Resource Management                  10. Environmental/Sustainable                  11. Economical Environment/Impact                  12. Stakeholder/Political Environment</p>	<p style="text-align: center;"><b>Control/Organisation/System</b></p> <p>33. Integration                  34. Systems Management                  35. Requirement Management                  36. Project context/Scope Management                  37. Performance Measurement                  38. Project Organisation                  39. Information Management                  40. Communication</p>
<p style="text-align: center;"><b>Project Execution Strategy</b></p> <p>13. Safety/Health                  14. Quality                  15. Cost Control                  16. Schedule                  17. Value Management                  18. Risk/Peril                  19. Risk/Uncertainty</p>	<p style="text-align: center;"><b>Human Issues</b></p> <p>41. Ethics                  42. Personnel Management                  43. Leadership                  44. Team-Building                  45. Decision-Making                  46. Conflict                  47. Negotiation                  48. Stress Management                  49. Behaviour and Influence                  50. Coaching</p>
<p style="text-align: center;"><b>Technology</b></p> <p>20. Research and Technology                  21. Modeling and Testing                  22. Design Management                  23. Change Control                  24. Phasing                  25. Estimating                  26. Value Engineering</p>	



## **4.11 The design of the questionnaire**

### **4.11.1 The development of the questionnaire**

The questionnaire is designed to obtain data from people in practice. The questions are grouped as follows.

#### **1. Questions 1 and 2: identification of a ‘project(s)’**

The terms ‘project management’ and ‘profession of project managers’ are not well recognised in Japan. Or, at least, people are supposed to have different understanding of projects. In addition, the roles and responsibilities are not explicitly defined between workers and between the management and the rest of the work-force (Wakabayashi, 1997, p. 202, Nakazawa and Akaike, 2000, pp. 80–82). In order to answer the questionnaire, the respondents need to identify what we mean by ‘projects’.

When a respondent is asked about a project, it is important what preconceptions he/she holds when thinking about a project. There is a big difference in the perception of projects between clients and contractors. Clients are stakeholders of projects. Clients have a clear perception of the project’s needs. Contractors, on the other hand, have traditionally been involved in projects with the aim of generating profits for the parent companies. Some respondents are not involved in any construction projects. Such people need to define the projects that they are actually involved in, such as research projects or projects involving organisational change.

Question 1 is provided to identify the respondent’s point of view toward projects, with a view to: (1) clients, (2) contractors, and (3) others (e.g. projects involving organisational change, research projects, etc.).

Using this question, the position of respondents in terms of the contract is mainly identified. For instance, those who answer ‘(1) client’ are expected to represent client’s organisation. Those who devoted to in-house projects are supposed to answer ‘(3) the other’.

Prior to distribution of questionnaire, some interviews with Japanese managers were conducted to test how the questionnaire works. During the interviews with Japanese

managers, some senior managers asked the author whether they should answer from owners' or contractors' point of view. From the author's experience in Japan, many engineers, especially at higher management level, tend to have both of clients' and contractors' views working with clients as a contractor. Roles of clients' and contractors' are determined within their relationships during the projects.

Therefore, it is likely that there are some people who cannot clearly answer this question, without determining his/her point of view. Therefore, to avoid inconsistency or hesitation for such respondents, if the respondent's view is not clearly that of a client or a contractor, then the questionnaire will recommend respondents to answer '(1) clients'.

Question 2 asks the respondents to specify the types of projects that they have experienced in the past. This will help the respondents to clarify what the projects mean to them by answering the questions, and this will help me by ensuring that each respondent has an appreciation of what is meant by projects.

These questions are important, especially in Japan, where neither the term 'project' nor the role of management is explicitly defined.

Q1. Please specify your point of view in the definition of your project.

1. Client, supporter of a client, or someone who manages a project(s) on behalf of a client
2. Someone who manages part of a project(s) as a contractor
3. Other (please specify: e.g. projects involving organisational change, research projects)

<If you can answer yes to both 1 and 2, please just answer 1.>

Q2. Please describe your current construction project, or use an imaginary project to answer this questionnaire. Please give the size, type, terms, location, etc. (e.g. rapid railway construction project, art-gallery construction project, LNG-plant construction project).

## **2. Questions 3 and 4: testing the topics in the straw-man list**

Question 3 was designed to test the agreement on 50 topics in the straw-man list of Japanese managers in practice. Question 4 is designed to elicit suggestions from managers on potential topics in the management of construction projects that are missing from the straw-man list.

Q3. Do you think that each of the following elements is essential knowledge for the management of your construction project/programme?

Choose from <1. Important, 2. Not so important, 3. I cannot tell/I do not know>

Q4. Are there any missing topics for success for your project from the list of answers to

### **3. Question 5: an open question**

Q5 is an open question, and is asked to test the definition of topics, aiming at;

- (1) testing the definitions of topics
- (2) asking about attempts to define key topics for a Japanese construction project as an explicit guide for project management.

Q5. See the definitions attached to the questionnaire. Please point out if you disagree with any of them.

Q5.1 Please make any other comments on this questionnaire.

### **4. Question 6: identification of the role in the project**

The role of the respondent in the project is identified by question 6. Questions for this purpose are (1) organisation, (2) age (3) name, (4) position, and (5) sector/industry

Q6. Could you tell me about your responsibility in your construction project/ programme

1. Organisation
2. Age: 20s, 30s, 40s, 50s, 60s
3. Name
4. Position
5. Sector/Industry; Engineering/Building/Civil/Other

#### 4.11.2 Interviews

In the course of developing the questionnaire, interviews were conducted with nine Japanese managers in the UK. The interviews were conducted based on an early version of the questionnaire. The Japanese managers listed in Table 4.6 were interviewed.

**Table 4.6: Details of the Japanese manager interviewees**

Name	Organisation	Role in the organisation	Position	Age
Mr Sugiyama	Nishimatsu Construction	Contractor	Director	50s
Mr Kondo	JR (Japan Railway) Tokai	Client	General manager	40s
Mr Shoji	Ministry of Construction	Client	Assistant Manager	30s
Mr Saito	Ministry of Construction	Client	Assistant Manager	30s
Mr Ishibashi	Ministry of Transportation	Client	Assistant Manager	30s
Mr Maruo	Japan Highway Public Corporation	Client	Engineer	30s
Mr Kamino	Obayashi Construction	Contractor	General manager	40s
Mr Nagai	Former Mitsubishi estate	Contractor	Project manager	50s
Mr Tanaka	MID	Client	Project manager	40s

#### 4.11.3 The questionnaire form

Through the consultancy and the interviews, the following suggestions were obtained. The questionnaire was revised based on these suggestions.

1. Fourteen pages of definitions of topics are too much. Practitioners are too busy to read such a long text. Furthermore, people are fed up with similar questionnaires. The description of topics should be minimised.

2. The text should be written in plain Japanese as much as possible.
3. Personal details should not be requested at the beginning of the questionnaire, in order to get more responses from respondents.
4. The questionnaire should be sent from individual to individual. The normal route of enquiry in Japan: from organisation to organisation, e.g. from the government or university to institutions, is not good in terms of the quality of data. Otherwise, data is not reliable in terms of valid individual experience.
5. The 50 elements in question 3 that are listed without categories are difficult to understand. These should be structured so that respondents can answer the questions without difficulty.

The final version of the questionnaire is shown in Appendix A. Definition of each topic is shown in Appendix H.

#### **4.12 Data collection**

To collect data from managers in the Japanese construction industry, it is required that all construction sectors and various types of organisations should be covered. The questionnaire was distributed using all accessible channels, using permitted methods and in the allocated time. E-mail was used as the main method to communicate to Japanese managers.

The questionnaires were sent to Japanese managers in the Japanese construction sectors, through the following channels:

1. ENAA research conference in June 2000 (200 hard copies)
2. ENAA project management certification committee (20 copies by e-mail)
3. Civil-engineering academic society at the UK branch (20 copies by e-mail)
4. Civil-engineering academic-society construction-management committee (100 copies by e-mail)

5. Architect academic-society project-management subcommittee (35 copies by e-mail)
6. Design offices searched through Yahoo Japan (20 companies by e-mail)
7. Advertisement on mailing lists; (1) Nikkei mailing list (CAL S ML, SITE ML, DESIGN ML, JIMU ML), (2) free mailing list (Kenchikukouzou ML, Construction Management ML)
8. Three state-owned companies (JH, HEX, MEX), Ministry of Construction (MoC), Tokyo regional government, and Tohoku construction bureau of MoC

Some 138 individuals (from 77 organisations) returned the questionnaire.

#### 4.13 Backgrounds of the respondents: Q1, Q2 and Q6

*Q1: Please specify your point of view in the definition of your project.*

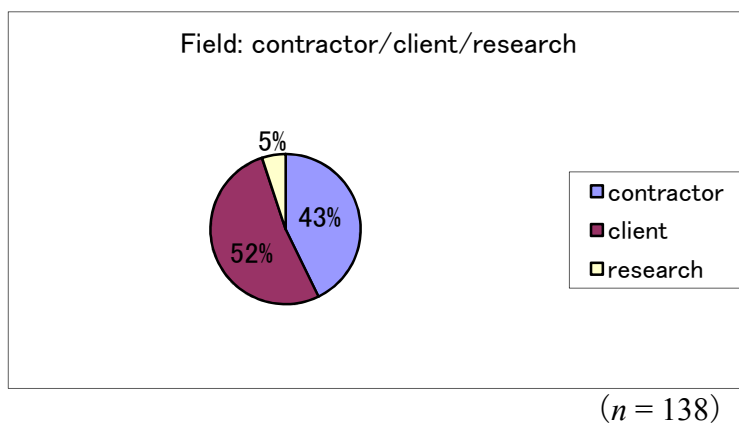
*(1) Client, supporter of a client, or those who manage projects on behalf of a client*

*(2) Those who manage part of project(s) as a contractor*

*(3) Other (please specify: e.g. projects involving organisational change, research projects)*

*<If you cannot answer clearly, then please select 1>*

**Figure 4.2: Professional fields of the respondents**



The respondents' professional fields were: clients 52%, contractors 43%, and others 5% (Figure 4.2).

*Q2. Please describe your current construction project, or describe an imaginary project in order to answer this questionnaire. Please give the size, type, terms, location, etc. (e.g. rapid railway construction project, art-gallery construction project, LNG-plant construction project.)*

Civil projects: 70%; building projects: 20%; and engineering projects: 10%

(*n* = 138)

*Q6. Could you please indicate your responsibility in your construction project/programme?*

There were respondents from the following 77 organisations (Table 4.7). It must be noted that respondents' answers are not representative of their organisations, although each answer is thought of as reflecting organisational thinking and culture.

**Table 4.7. Backgrounds of the respondents: names of organisations and sectors**

<b>Civil engineering</b>	
Aoki Kensetsu	Mitsui Fudosan Kensetsu
Dokon	Ministry of Construction (inc) Tohoku Regional Construction Bureau
Fujita	Ministry of Transportation
Goyo Kensetsu	Nihon Koei
Hazama	Nihon University
Hanshin Kosokudoro Kodan	Nishimatsu
Highway Center (former) World Bank	NIT
Hokkaido Kaihatsu Consultants	NKK
Fudo Kensetsu	Obayashi
ISS	Ooba
Ito Assist	Oriental Consultants
JH	Oriental Research Institute
JR East	Pacific Consultants   International
JR Tokai	Sato Kogyo
Kagoshimaken Kawauchishi	Seibukensetsu
Kajima	Shimizu
Kensetsu Gijutsu Kenkyujo	Shinnittetsu
Kokudo kotsu Syo Tohoku Chiken	Shiraishi Kensetsu
Kumagai Gumi	Taisei
Kusatsu Shiyakusyo	Teikoku Kensetsu Consultants
Maeda Kensetsukogyo	TEPCO
Metropolitan Expressway Public Co. (Former) Mitsubishi Estate	Tokyo Metropolitan Government Yachiyo Engineering
<b>Building/Architecture</b>	
Daiou Kensetsu	Mitsubishi Syoji
Daiwa House	Mitsui Kensetsu
Kajima	Ministry of Post and Telecommunications
KL Monorail	Nihon Sekkei
Konoike	Nikken Sekkei
Maeda	Takenaka Koumuten
Metro Sekkei	Tokyo Metropolitan Government
MID	Waseda University
<b>Engineering</b>	
Chiyodakakou Kensetsu	(Former) Modec (Mitsui Kaiyo Kaihatsu)
Daiishi Giken	Nikki
Ishikawajimahirima	NKK
Kajima	Okasanribikku
Kawaju Techno Services	Pacific Consultants International
Mitsubishi Juko	Toyo Engineering
Mitsui Bussan	(Former) World Bank
Yokogawa Denki	

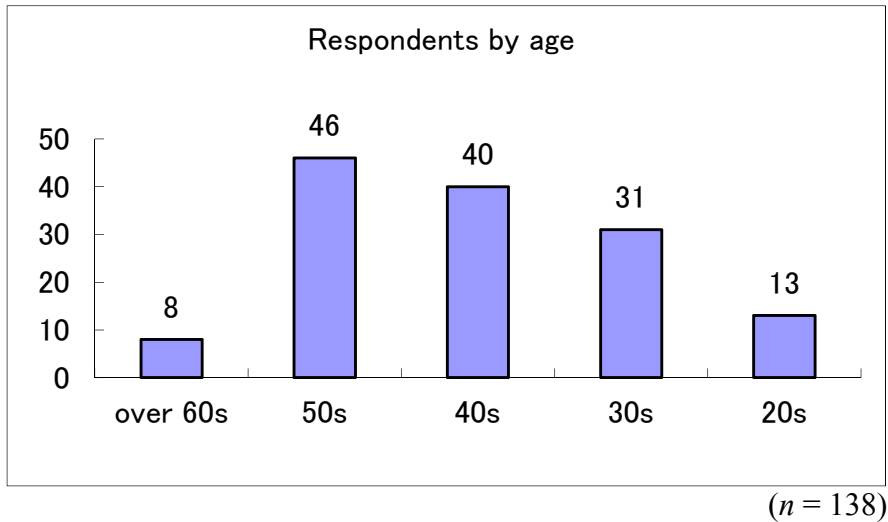
Note: Many organisations, especially those in the civil and building sectors, belong to more than two sectors.



1. Respondent's ages

Respondents' ages were: 20s 9%; 30s 22%; 40s 29%; 50s 33%; and 60s 6% (Figure 4.3).

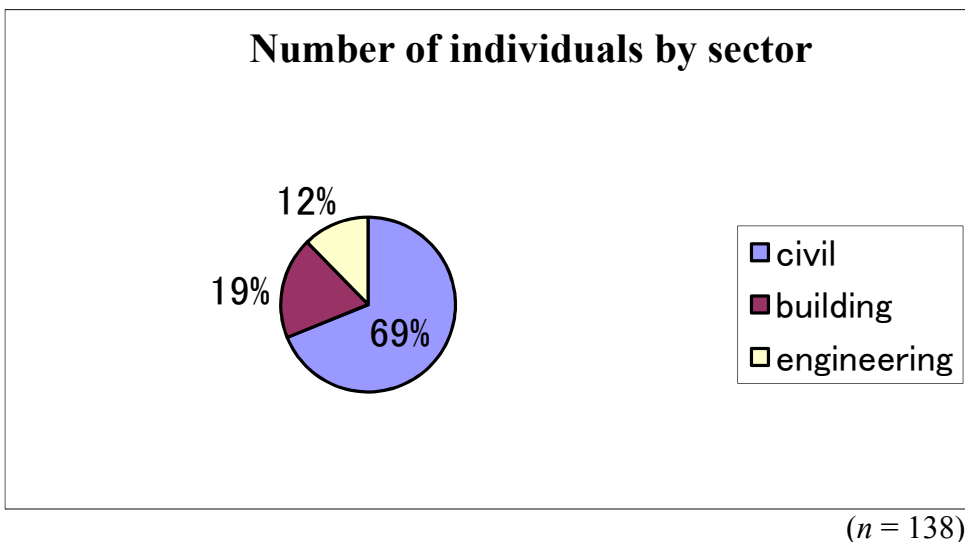
**Figure 4.3: Respondents' ages**



5. Industry sector of the respondents: engineering/building/civil/other

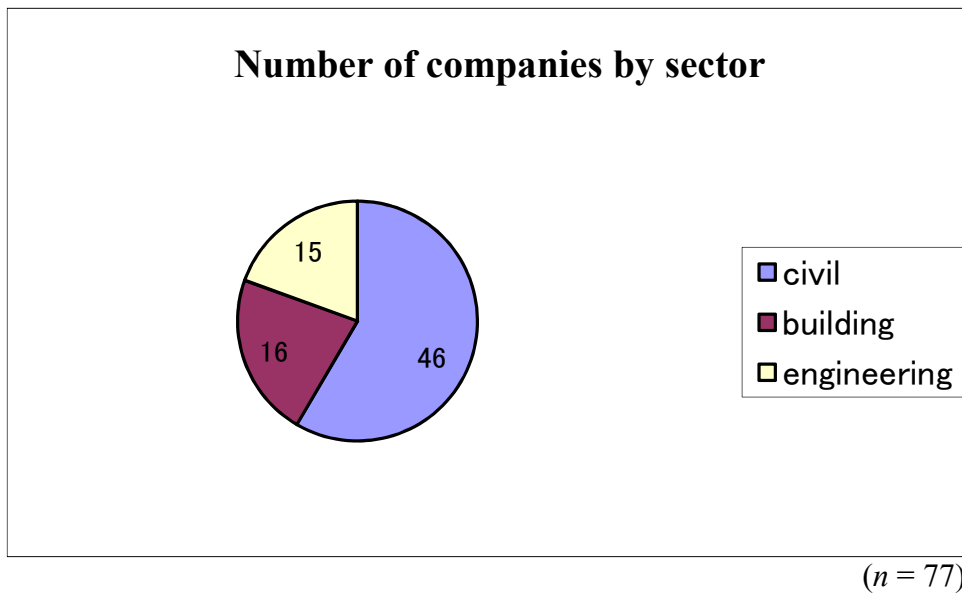
The numbers of individuals by sector were: engineering 12%, building 19%, and civil 69% (Figure 4.4).

**Figure 4.4: Number of individuals by sector**



The number of companies that respondents belong were Engineering 15, Building 16, and Civil 46 (Figure 4.5).

**Figure 4.5: Number of companies by sector**



#### **4.14 Summary**

In this chapter, the research questions are posed. Then, a potential Japanese version of the straw man was proposed. Among existing PMBoKs, the APM model was selected as the base of the structure. Further, topics were selected from four existing PMBoKs, the straw man by CRMP, and researches and books about the Japanese construction sector. Questionnaire design and methods for data collection are also explained.

# **Chapter 5 Data analysis 1: the Project Management Body of Knowledge within Japanese construction industry**

## **5.1 Introduction**

In this chapter, the data from question 3 to questions 6 of the questionnaire are analysed. Each topic is analysed in the light of empirical data, and is considered as a possible topic for inclusion in a Japanese PMBoK.

## **5.2 Data analysis for question 3: agreement of topics**

The following sections of this chapter detail the analysis of the data given by responses to question 3:

- Q3. Do you think that each of the following elements is an essential knowledge (experience) topic for the management of your construction project/programme?  
Choose from <1. Important; 2. Not so important; 3. I cannot tell/I do not know>

This analysis is done using the percentage of people that agree that knowledge of a particular topic is important in the management of construction projects. It is noted that definition of each topic is shown in Appendix H.

### **5.2.1 Project-life category**

#### **(1) Programmes and Project Management (88%)**

Overall, every sector is familiar with these two terms. However, many respondents said that they do not know about project management and that they are keen to learn more about it. The relatively high score in the engineering sector reflects the fact that many respondents were the members of project management certification committees. The term

‘project management’ is also more common in the engineering sector, since it is more common in work overseas (see Table 5.1).

## **(2) Goals, Objective/Success Criteria (89%)**

All sectors scored over 80%. This topic is fundamentally important for managers in all sectors, at all levels. Goals are highly valued in Japanese construction projects.

**Table 5.1: Scores of the topics in the project-life category**

Project-life category	Programmes and project management	Goals: Objective/Success criteria	Business Need and Case	Project Life-Cycle	Project Plan
	1	2	3	4	5
Average ( <i>n</i> = 138)	88%	89%	72%	73%	90%
Civil ( <i>n</i> = 95)	87%	89%	78%	73%	93%
Building ( <i>n</i> = 26)	88%	81%	58%	77%	77%
Engineering ( <i>n</i> = 17)	94%	100%	65%	71%	94%

## **(3) Business Need and Case (Project Evaluation) (72%)**

All sectors scored under 80%. Engineers may not concern themselves with business issues, because commercial issues may be thought of as the company’s and/or nation’s concern. The building sector in particular scored low. The highest score, by the civil sector (78%), indicates the rising awareness of the need for a project to be financially successful.

## **(4) Project Life-cycle (73%)**

Compared with Programmes and Project Management, awareness of the project life-cycle scored lower. There was little difference by sector.

Not many people are involved in all phases of projects. Rather than having clear awareness of the project life-cycle, many organisations just take part in certain phases of construction projects. For instance, in civil engineering, all participants have a clear role in construction projects. While the government develops the project concept, its subsidiaries, including construction divisions in ministries and state-owned companies, execute detailed planning and design. Contractors are involved in the execution stage. These roles have not changed for decades. The role is decided socially rather than intentionally. In this sense, each engineer does not necessarily have to have a clear awareness of the overall project life-cycle.

#### **(5) Project Plan (90%)**

‘Project plan’ scored over 85%. Planning is highly appreciated in Japan. In fact, Japanese management tends to deploy the most competent employees for planning work.

Development of planning tools is a major subject in Japanese academic research activities.

In fact, Yashiro’s study, which examined papers on major journals, shows that a large proportion of research was done on planning tools (Yashiro, 1999).

### **5.2.2 Project environment category**

#### **(6) Financing (72%)**

Traditionally, financing has not been a serious matter in Japanese society. Financial conditions have been so stable and rigid, especially for engineers, that engineers have rarely concerned themselves with the financing of projects. However, due to the reform of Japanese financial sector, growing attention was being paid to financing. It is for this reason that this score is not low. Rather, it shows a rising appreciation of the issue.

Although the building sector gave it a relatively high score, the difference was not particularly significant (see Table 5.2).

**Table 5.2: Scores of topics in the Project Environment category**

Project Environment category	Financing	Law	Marketing and Sales	Resource Management
	6	7	8	9
Average ( <i>n</i> = 138)	72%	83%	57%	63%
Civil ( <i>n</i> = 95)	71%	85%	60%	60%
Building ( <i>n</i> = 26)	77%	77%	65%	58%
Engineering ( <i>n</i> = 17)	71%	76%	29%	88%

Project Environment category	Environmental/ Sustainable Development	Economic Environmental/ Impact	Stakeholder/ Political Environment
	10	11	12
Average ( <i>n</i> = 138)	74%	67%	82%
Civil ( <i>n</i> = 95)	77%	64%	85%
Building ( <i>n</i> = 26)	77%	69%	69%
Engineering ( <i>n</i> = 17)	53%	82%	82%

**(7) Law (83%)**

‘Law’ scored relatively high. The civil sector rated it at over 85%. This clearly shows good awareness of the legal issues on the part of the different groups within the construction industry.

**(8) Marketing and Sales (57%)**

Overall, the culture and processes in the construction industry do not support marketing and sales activities. That is why the marketing and sales issue is the lowest-ranked both by individual sectors and overall. For instance, the procurement system, which depends on long-term relationships between clients and contractors, undermines the need for serious marketing policies by contractors. The nature and duration of construction projects also have a similar effect on the Marketing and Sales strategy. Once a construction project is started, there is a possibility that it can last for over around 10 to

30 years. During such a long execution phase, the people who are assigned to execute construction work may not need knowledge of Marketing and Sales. In such circumstances, the importance of attention to market needs tend to be forgotten.

While the civil and building sectors scored 60–65%, the engineering sector scored only 29%. Considering the nature of the market, it is surprising that the civil and building sectors are keener on Marketing and Sales issues than engineering. The engineering sector should be expected to obtain a higher rate, because its market is mainly overseas. The Japanese domestic construction industry has had a more stable market than the construction sector overseas.

Furthermore, strength of the Japanese domestic construction industry is that the government constantly creates demand for construction projects. It has continued to stimulate the domestic Japanese economy as well as maintaining construction work to keep its employees occupied.<sup>i</sup> Awareness of the needs of the market is important for Project Management, because Project Management has, after all, to fill the needs of the market. This is also strength of the Japanese construction industry and it should be clearly recognised. Marketing and Sales therefore should be retained in the Japanese PMBoK.

### **(9) Resource Management (63%)**

Only the engineering sector scored 85% for this topic. Resources are not readily thought of as being subject to control in Japan (Baba, 1994). Human resources especially are considered as the capital of Japanese organisations. With regard to this topic, the high score from the engineering sector is due to the fact that engineers are relatively familiar

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<sup>i</sup> Japanese firms have lifetime employment systems. Even during a recession, Japanese companies rarely lay off their employees (Morita, 1990)

with the Western business environment. Most of their projects are located outside Japan. In fact, differences can be found by project location. Resource Management is much lower in Japanese projects as compared with overseas projects (Table 5.3). In Japan, humans cannot be thought of as a resource. The boundary between management and the work-force is relatively unclear. People in the Japanese management culture have aspects of both work-force and managers. In this sense, resource management is not common in Japan.

**Table 5.3: Resource Management: differences in scores according to project location**

Resource Management ( <i>n</i> = 128) (other than research projects)		
	Japan	Overseas
Average	56% ( <i>n</i> = 107)	90% ( <i>n</i> = 21)
Civil	57% ( <i>n</i> = 83)	100% ( <i>n</i> = 7)
Building	52% ( <i>n</i> = 21)	75% ( <i>n</i> = 7)
Engineering	67% ( <i>n</i> = 3)	91% ( <i>n</i> = 11)

**(10) Environmental/Sustainable Development (74%)**

Only 74% of respondents agreed on Environment/Sustainable Development. The engineering sector scored especially low (53%). Considering the differences in scores according to project location (Table 5.4), this reflects the enthusiasm for environment issues in Japanese domestic construction projects.

**Table 5.4: Environmental/Sustainable Development: differences in scores according to project location**

Japan	( <i>n</i> = 114)	76%
Overseas	( <i>n</i> = 21)	62%



### **(11) Economic Environment/Impact (67%)**

Economic Environment/Impact is one of the lowest rated topics. A significant difference is seen between the sectors. Only the engineering sector scored over 80%, whereas the civil and building sectors scored 64% and 69%. There was no difference between other categories. It implies that the engineering sector is in a harsh business environment as compared with the other two sectors.

### **(12) Stakeholder/Political Environment (82%)**

Table 5.5 shows the differences according to organisation type with regard to this topic. In particular, client organisation was rated higher (91%), whereas contractor organisation was rated relatively low (77%) This reflects a general understanding that management outside of project execution is mainly the task of client's organisations. There was no significant difference within comparisons between other elements.

**Table 5.5: Difference according to organisation type in Stakeholder/Political Environment**

Stakeholder/Political environment	
Client organization	91%
Contractor organization	77%

### 5.2.3 Project execution strategy category (see table 5.6)

**Table 5.6: Scores of the topics in the Project execution strategy category**

Project strategic execution category	Safety/Health	Quality	Cost Control	Schedule
	13	14	15	16
Average ( <i>n</i> = 138)	83%	95%	93%	95%
Civil ( <i>n</i> = 95)	81%	93%	92%	94%
Building ( <i>n</i> = 26)	92%	100%	96%	96%
Engineering ( <i>n</i> = 17)	82%	100%	100%	100%

Project strategic execution category	Value Management	Risk/Peril	Risk/Uncertainty
	17	18	19
Average ( <i>n</i> = 138)	72%	79%	51%
Civil ( <i>n</i> = 95)	73%	78%	51%
Building ( <i>n</i> = 26)	88%	81%	54%
Engineering ( <i>n</i> = 17)	47%	82%	47%

#### **(13) Safety/Health (83%)**

Considering the fact that safety is a priority on Japanese construction sites, it scored lower than expected. In particular, the 20-something age group (mostly in client organisations) scored considerably lower than the other groups (excluding research projects – the group is not concerned with site management) (see table 5.7). This shows that only people who are associated with site management are concerned with Safety/Health. In the UK, the responsibility of the designer for safety issues is included in CDM regulations. On the other hand, there is no such regulation for designers to maintain safety on-site in Japan. It is thought that both management level and experience are concerned with degree of attentions to Safety/Health issue of Japanese managers.

**Table 5.7: Safety/Health Management: difference in scoring according to respondents' age**

Safety/Health			
	Average	People in other age groups	Twenty-something age group
Average	80% ( <i>n</i> = 138)	88% ( <i>n</i> = 125)	42% ( <i>n</i> = 13)
Civil	75% ( <i>n</i> = 95)	86% ( <i>n</i> = 84)	50% ( <i>n</i> = 11)
Building	95% ( <i>n</i> = 26)	96% ( <i>n</i> = 25)	0% ( <i>n</i> = 1)
Engineering	70% ( <i>n</i> = 17)	88% ( <i>n</i> = 16)	0% ( <i>n</i> = 1)

The data exclude research projects.

#### **(14) Quality (95%)**

Almost all agreed Quality Management is important.

#### **(15) Cost Control (93%)**

Cost control came third after quality management and schedule.

#### **(16) Schedule (95%)**

The Schedule obtained the highest score of all the topics. Time is important in Japan.

Time is the enemy and all things must be completed on time.

#### **(17) Value Management (72%)**

The building sector scored higher on Value Management. This sector always has a close relationship with private clients – many are individuals. Therefore, they can apply this method more easily than in the other sectors. The lowest score is in the engineering sector. This may have a relationship with their understanding of the scope of the term ‘project’, in that it is more or less the execution of construction.

### **(18) Risk/Peril (79%)**

Peril Management in the Japanese language can normally be translated to risk management in English. Peril Management in Japan means 'to prepare for unexpected danger'. This term is now famous in Japan. The Japanese government and organisations, as well as individuals, are usually said to be weak in dealing with unexpected events. Therefore, this score is roughly as expected.

### **(19) Risk/Uncertainty (51%)**

As expected, the uncertainty topic scored considerably lower (see Table 5.6). There is no significant difference between any categories. Compared with Risk/Peril (which scored 79%), it clearly shows that the Japanese are weak at dealing with uncertainty, but not danger. Risk Management is not understood as the handling of uncertainty. Because of an unwillingness to tackle uncertainty, the Japanese are not good at dealing with 'risk'. This tendency should be emphasised in order to more clearly understand Japanese management. It is also good for Japanese management to manage their attitude toward uncertainty in decision-making. If we always try to avoid uncertainty, we might lose the opportunity of benefiting by accepting and managing uncertainty. If we do not care about uncertainty, then we might suffer hugely.

#### 5.2.4 Technical category (see Table 5.8)

**Table 5.8: Scores of the topics in the Technical category**

Technical Category	Research and Technology Management	Modelling and Testing	Design Management	Change Control
		20	21	22
Average ( <i>n</i> = 138)	75%	41%	84%	87%
Civil ( <i>n</i> = 95)	75%	46%	84%	83%
Building ( <i>n</i> = 26)	81%	42%	77%	96%
Engineering ( <i>n</i> = 17)	71%	12%	94%	94%

Technical Category	Phasing	Estimation	Value Engineering
		24	25
Average ( <i>n</i> = 138)	77%	82%	72%
Civil ( <i>n</i> = 95)	75%	81%	68%
Building ( <i>n</i> = 26)	85%	81%	92%
Engineering ( <i>n</i> = 17)	76%	88%	65%

#### **(20) Research and Technology Management (75%)**

This figure shows that all levels of management appreciate the technology issue. The difference between the sectors expresses how technological innovation is likely to happen. Civil engineering is less likely to show innovation than other sectors.

#### **(21) Modelling and Testing (41%)**

Modelling and Testing are normally required when new technology is used in projects. None of the respondents from the engineering sector agreed that this topic is important. Compared with ‘(20) Research and technology management’, this topic attained low scores. Hence, this topic can be merged with ‘(20) Research and technology management’.

## **(22) Design Management (84%)**

There was a difference by project location. While the answers from overseas projects scored 100%, projects in Japan scored 82% in the civil sector and 71% in the building sector (Table 5.9). This figure shows that the environment outside Japan requires that managers must have a clear awareness of the management of the design process. In Japan, as mentioned in the chapter 4, design is not reimbursed proportionately to the number of hours spent. The invisibility of the design process underlines this result. Professional managers in construction projects need to be more enthusiastic about the management of the design process, because the quality of the design determines a large part of the performance of a project.

**Table 5.9: Design Management: difference in score according to the project's location**

Design Management				
	Japan		Overseas	
Average	80%	(n = 107)	100%	(n = 21)
Civil	82%	(n = 83)	100%	(n = 7)
Building	71%	(n = 21)	100%	(n = 3)
Engineering	100%	(n = 3)	100%	(n = 11)

## **(23) Change Control (87%)**

Change control was rated highly. This is not surprising because change is inevitable in all projects.

## **(24) Phasing (77%)**

This figure is not so high considering that Japanese undertake Phasing that means concurrency of executions of tasks of different project phases, in many projects. This

expresses that the practice is not explicitly recognised as a technique for scheduling compared with their practice that Phasing is done in many projects.

**(25) Estimating (82%)**

A difference was found depending upon the location of the project. In domestic projects, Estimating was awarded lower points than was the case in overseas projects (Table 5.10). The difference according to the location of the project shows a different perception of cost in Japanese projects. On overseas projects, costs and profits need to be estimated more clearly.

**Table 5.10: Estimating: difference in the score according to the location of the project**

Estimating		
	Japan	Overseas
Average	78% (n = 107)	100% (n = 21)
Civil	80% (n = 83)	100% (n = 7)
Building	76% (n = 21)	100% (n = 3)
Engineering	33% (n = 3)	100% (n = 11)

**(26) Value Engineering (72%)**

As with Value Management, the building sector scored highest. In value management and value engineering, the relationship and the contract between clients and contractors should be flexible in order to allow real value for clients. Value management and value Engineering require tighter communication and mutual understanding between clients and contractors in order to create real value for the clients. Building projects are more suited to establishing such a relationship because the number of decision-makers in the client’s organisation is smaller than in other sectors.

### 5.2.5 The Industrial category (see Table 5.11)

#### (27) Industrial Relations (50%)

The topic of Industrial Relations in the Japanese straw man deals with inter-company relations as well as union relations. Japanese organisations are connected by a network of associations, and they perform as if they were a single organisation (Scher, 1997; Miyashita and Russell, 1994; Gerlach, 1992). Nevertheless, industrial relations were given low scores (50%). This score shows that each manager does not necessarily need to intensively concern him or herself with the network of firms. Rather, such an association of organisations functions according to customs, i.e. it is based on long-term relationships and mutual trust.

**Table 5.11: Scores of topics in the ‘Industrial’ category**

Industrial category	Industrial Relations	Contract Management	Bidding
	27	28	29
Average (n = 138)	50%	76%	72%
Civil (n = 95)	56%	72%	69%
Building (n = 26)	50%	77%	77%
Engineering (n = 17)	18%	100%	82%

Industrial category	Partnering Management	Re-engineering	Procurement
	30	31	32
Average (n = 138)	69%	41%	80%
Civil (n = 95)	64%	40%	75%
Building (n = 26)	73%	50%	88%
Engineering (n = 17)	88%	35%	94%



**Table 5.12: The ‘industrial’ category: difference in scores according to project location**

No.	Topics	Japan ( <i>n</i> = 107)	Overseas ( <i>n</i> = 21)
27	Industrial Relations	53%	48%
28	Contract Management	73%	100%
29	Bidding	70%	95%
30	Partnering	64%	81%
32	Procurement	76%	95%

**(28) Contract Management (76%)**

Although Contract Management used to be unfamiliar to Japanese managers, this topic is now being taken seriously. Some 76% agreed that this topic has become an important issue in the Japanese construction industry. However, a clear difference by project location was found (see Table 5.12). Contracts for domestic projects have not been prioritised because the relationships between clients and contractors are not based on formal contracts but rather on mutual trust (Bennett, 1998). Contract issues will be increased as markets are opened to foreign companies. Furthermore, the Japanese construction industry that has been criticized for *Dango* and unclearness in management, should be more aware of this topic, so that it is clearer and more transparent to the public.

**(29) Bidding (72%)**

Again the scores differed according to whether the project was located in Japan or overseas (see Table 5.12). This figure shows that competition in Japan is not yet as vigorous as overseas. Some 70% of agreement in domestic projects is quite a high rate, considering the existence of *dango* (consultation) in Japan. Bidding has become a more serious issue in Japan, because competition in the Japanese construction industry is probably becoming greater than ever.

### **(30) Partnering (69%)**

Although Partnering is seen throughout Japan (Bennett, 1998), this topic did not score highly. In particular, in the civil and building sectors, which are mainly in the domestic market, it scored lower than engineering. Further, agreement on Partnering by Japanese managers is less different according to project location than other commercial topics such as Bidding, Procurement and Contract Management (see Table 5.12). Partnering is a Japanese practice that has been studied and named by researchers in the West. For Japanese managers, in turn, an explicit understanding of ‘partnering’, as well as aspiring to the construction of partnering relationships, would help in developing their practice.

### **(31) Re-engineering (41%)**

Many managers did not agree on Re-engineering. Firstly, this topic is an unfamiliar term in Japan. Secondly, it is related to procurement, quality management, and value management/engineering. Re-engineering is about the remaking of existing systems and/or processes such as supply chains. Re-engineering itself is concerned with changes or projects. This concept may be helpful for initiating changes, but may not be helpful for managing the process of change. Therefore, this topic should be merged with Project Management.

### **(32) Procurement (80%)**

Although the average score was 80%, domestic projects scored lower (76%) than overseas projects (95%) (see Table 5.12). This implies that Procurement is relatively unfamiliar to managers within the Japanese procurement system, where relationships between supply-chain members are based on cultural and social contexts.

## 5.2.6 Control/ System/ Organisation category (see Table 5.13)

**Table 5.13: Scores of topics in the ‘Control/ System/ Organisation’ category**

Control/ System Organisation	Inter- Sectional Cooperation	Systems Management	Requirement Management	Work Content and Scope Management
	33	34	35	36
Average (n = 138)	78%	74%	78%	73%
Civil (n = 95)	77%	74%	77%	68%
Building (n = 26)	81%	77%	77%	77%
Engineering (n = 17)	82%	71%	82%	94%

Control/ System Organisation	Performance Measurement	Organisation structure	Information management	Communication
	37	38	39	40
Average (n = 138)	91%	72%	83%	94%
Civil (n = 95)	89%	77%	85%	94%
Building (n = 26)	92%	65%	81%	96%
Engineering (n = 17)	100%	72%	76%	94%

### **(33) Inter-Sectional Cooperation (78%)**

Inter-Sectional Cooperation is important for integrative activity in projects. This scored lower than ‘(44) teamwork’. Japanese people are thought to be good at cooperating within the same culture. However, the challenge for them is to cooperate with people in different cultures from different sections. If people in different sections cannot have total mutual understanding, then they may find difficulty in creating a good relationship (Hamaguchi, 1998, pp. 239–242; Ghosn, 2000).

### **(34) Systems Management (74%)**

All sectors scored above 70%. Notions of Systems Management are not high but substantially familiar for Japanese managers.

### **(35) Requirement Management (78%)**

Although Requirement Management scored lower than goals and objectives, the importance of this topic was agreed upon by a large proportion of the managers.

### **(36) Work Content and Scope Management (73%)**

Engineering scored higher than the other sectors. On overseas projects, it is essential to make the work content clear. It turned out that this topic is not strongly emphasised in domestic projects (see Table 5.14).

**Table 5.14: Work Content and Scope Management: difference in the scores, according to whether the project was located in Japan or overseas**

Work Content and Scope management		
	Japan	Overseas
Average	67% ( <i>n</i> = 107)	100% ( <i>n</i> = 21)
Civil	66% ( <i>n</i> = 83)	100% ( <i>n</i> = 7)
Building	71% ( <i>n</i> = 21)	100% ( <i>n</i> = 3)
Engineering	67% ( <i>n</i> = 3)	100% ( <i>n</i> = 11)

### **(37) Performance Measurement (91%)**

Performance Measurement scored highly. In Japan, it is important to measure the performance of a project in order to make sure that the project will meet the client's requirements.

### **(38) Organisation Structure (72%)**

There was not found to be any difference in the scores by sectors, the age of the managers, project locations, or any other categories.

### **(39) Information Management (83%)**

Civil sector and Building scored relatively higher (85% and 81%).

As for the relation of Information Management and Communication Management, PMI-PMBOK®, for instance, treats Information Management as a major part of Communication Management, whereas Japanese managers considered Communication Management (below) is more important than Information Management.

**(40) Communication (94%)**

Communication scored highly. All levels of managers in all sectors responded that communication as an interface issue among people is important in the management of their projects. Hence, communication must be managed effectively.

**5.2.7 The Human category (see Table 5.15 and Table 5.16)**

**Table 5.15: Scores of topics in the Human category (1)**

Human category (1)	Ethics	Personnel management	Leadership	Teamwork	Decision-Making
	41	42	43	44	45
Average (n = 138)	86%	70%	94%	93%	92%
Civil (n = 95)	86%	68%	93%	93%	93%
Building (n = 26)	88%	69%	100%	96%	88%
Engineering (n = 17)	76%	82%	94%	94%	94%

**(41) Ethics (86%)**

As expected, ethics had one of the highest marks. Ethics are highly prioritised in Japanese management.

**(42) Personnel Management (70%)**

This topic did not achieve a high score. Personnel Management is thought to be the task of personnel divisions. However, the engineering sector was enthusiastic about this topic

(82%), because engineers are relatively isolated from their headquarters due to their location, and also because they need to manage human resources overseas.

**(43) Leadership (94%)**

This topic scored highly. Leadership is required at every level of project management.

**(44) Teamwork (93%)**

All sectors scored over 90%. This is reasonable, because Teamwork is a fundamental facet of Japanese society (Morita, 1990; Bennett, 1991; Burnes, 1996, p. 101).

**(45) Decision-making (92%)**

The high score shows that Decision-making is a fundamental element in project management (see Table 5.16)

**(46) Conflict (78%)**

Conflict is expected to be awarded a lower score because conflict is traditionally believed to be concealed and treated tacitly as much as possible in Japanese society. However, the data show the importance of this topic. In construction projects some conflict is inevitable. Therefore, conflict should be well managed.

**(47) Negotiation (91%)**

Negotiation scored highly. This is a fundamental part of the improved management of projects.

**Table 5.16: Scores of topics in the Human category (2)**

Human category (2)	Conflict	Negotiation	Stress Management	Behaviour and Influence	Coaching
	46	47	48	49	50
Average (n = 138)	78%	91%	49%	68%	65%
Civil (n = 95)	72%	89%	51%	68%	68%
Building (n = 26)	92%	96%	50%	73%	65%
Engineering (n = 17)	88%	94%	35%	59%	47%

**(48) Stress Management (49%)**

Stress Management was awarded low scores by all sectors. This uncommon topic is relatively ignored by management. The mental health of Japanese employees was not given enough consideration.

Traditionally, employees' *gaman* which means 'to put up with' or 'fight to the death' tend to be highly evaluated in Japanese firms. Consequently, Japanese are said to be workaholics (Burnes, 1996). Japanese managers need to care for the mental health of all their employees in order to create a healthy environment and increase productivity.

**Table 5.17: Difference by respondents' age in the scores for '(49) Behaviour and Influence' and '(50) Coaching'**

Difference by age (n = 138)	Behaviour and influence	Coaching
20–29 (n = 13)	85%	92%
30–39 (n = 31)	71%	68%
40–49 (n = 40)	68%	58%
50–59 (n = 46)	61%	61%
Over 60s (n = 8)	61%	61%

**(49) Behaviour and Influence (68%)**

Respondents in their twenties gave Behaviour and Influence high marks (85%). Those in their fifties gave a considerably lower score (61%), which may be because managers in

their fifties undoubtedly have a huge influence on their subordinates. These managers should be mindful of the importance of this topic.

### **(50) Coaching (71%)**

Different age groups scored differently for Coaching. Those in their twenties scored the highest (92%) (Table 5.17). They may feel that they need to be coached in organisational learning. With increasing age, the score goes down to 61%. In order to achieve better professional development of all those involved in a project, knowledge and coaching skills with regard to all human resources need to be consciously managed.

## **5.3 Data analysis for question 4: missing topics in the straw-man**

### **5.3.1 Data from question 4**

Question 4 asks people if there are any more potential topics in project management.

– *Q4. Are there any topics missing from the list given in question 3?*

The following are answers to question 4. The number in brackets indicates the number of respondents to each topic.

#### **(1) Risk-management-related issues**

- Preparation for disasters (1), – positive preparation for danger (1),
- Unexpected costs (1), – Risks after implementation of contracts (1),
- Security system (1)

There were some answers that stressed the importance of risk management. These answers can be summarised as a need for positive preparation for unexpected events. They reflect the fact that the Japanese are generally said to be weak at dealing with unexpected events.



## **(2) Human-related issues**

Human-related issues are emphasised. There were the following four elements:

- Vision (– creating a good atmosphere (1), – view of life, philosophy (1))
- Motivation (– Motivation (1), – Incentives (1))
- Learning (– Education for engineers/managers (1))
- Teamwork (– Redundancy (1))

Among the above four elements, ‘motivation’ (personnel management or leadership) and ‘teamwork (redundancy)’ are covered by the straw-man list. ‘Vision’ also can be categorised in Leadership.

On the other hand, ‘learning’ can be a new topic. Personnel management can be too broad to cover the learning and/or education of managers. Both formal-explicit and informal-implicit learning should be managed. Learning by both the individual and the team should be considered. Learning, therefore, should be considered as a potential topic for a Japanese PMBoK.

## **(3) Technical knowledge (1)**

As expected, there was an answer that point out that technical knowledge is essential. It is a matter of course that engineers need to be knowledgeable in technical knowledge as well as in knowledge of management. Since management needs to integrate technical issues and management issues, managers need to have a sense of technical issues.

Although technical knowledge is not directly related to management, technology management may represent the management of technical issues.

#### **(4) Innovation**

- Innovation (in finance and marketing) (1), *soui-kufuu*<sup>ii</sup> (1)

Innovation and/or *soui-kufuu* are related to the creation of new things. This may be related to many things in the straw-man list. For instance, excellent cost control can be done in a good and innovative way. Value engineering/management are part of ‘innovation and/or *soui-kufuu*’, because innovation and/or *soui-kufuu* are concerned with the human imagination. Since innovation/*soui-kufuu* represents many topics, the use of these terms is so general that the meaning cannot be expressed clearly. This sort of concept should be allocated to elements that have clear meanings, such as ‘value engineering/management’, and ‘cost control’. Furthermore, these topics are functions that help us to utilise our best imagination – innovation and *soui-kufuu*.

#### **(5) Build-up**

- Build-up (bottom-up) (1)

Build-up (bottom-up) is the way that an organisation creates new knowledge and makes decisions using a bottom-up approach. Bottom-up is named after the fact that people at the bottom of the organisational hierarchy can contribute to creating new ideas or solutions for problems. New ideas and solutions must be approved by all levels of management if they are to be adopted as company policy. From the initiation of the new idea or solution, the person who proposed the idea must hold the responsibility for propelling the idea to be approved as a company policy (Hamaguchi, 1998, pp. 239–242).

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<sup>ii</sup> *Soui-kufuu* means to create new ideas and to find appropriate solutions in some circumstances.

This is the opposite view from the more traditional top-down approach where a top manager directs his/her subordinates. As one topic in the straw-man list, ‘build-up’ (or ‘bottom-up’) could be included in Leadership, since such an attitude is based on strong leadership. In fact, strong intentions are required in both top-down and bottom-up (build-up) approaches to tackling the subject.

#### **(6) Common sense (2)**

Common sense is the generally accepted knowledge of a particular group. For instance, there is knowledge that is commonly owned and used by companies, industries, and/or nations. Common sense in itself does not represent a particular knowledge area. It is the status or ontology of knowledge. Therefore, common sense cannot be a topic in the straw-man list.

Knowledge that is kept as common sense is widely used intentionally and/or unintentionally. Common sense should be explicitly recognised if it is an essential part of the knowledge for managing projects. All useful knowledge in common sense should be allocated using the PMBoK framework, so as to be recognised explicitly as a project management discipline.

#### **(7) Social and cultural issues**

- Social trends (1), – *Fusui-gaku* (1), – Modesty (1), – Cultural issues (1),
- Regional conflict management (1), – Regional culture engineering (1),
- Inter-cultural communication (1), – Management of ceremonies and parties (1)

Although some of the above topics can be categorised as topics of the straw-man list – such as Stakeholder Management, Conflict Management, Communication – some topics are not covered by the list.

***Fusui-gaku*** is a form of divination to determine the most auspicious orientation for a building. Some clients in Japan attach particular importance to spiritual matters when deciding the design of houses or buildings.

**Social trends** may be implicit values of society. They represent people's opinions and feelings.

**Regional culture engineering** could cover everything about the culture of a specific region, including its history, geography, climate and religions. These subjects should be considered as one of important context issues of a project.

**Ceremonies and parties** are frequently held during construction projects. For instance, at the beginning of construction work, a *kikou-shiki* ceremony is performed, and at the end of the project there is a *shunkou-shiki* ceremony. There are many other formal and informal ceremonies and parties. Ceremonies are valued in Japanese society. At ceremonies, participants and other stakeholders are able to share the same feelings toward the project, communicate with each other and motivate all project members.

These things may be crucially important for a project's success, in that such elements sometimes have a huge impact on projects. Social and cultural issues, therefore, may be one of the topics in a Japanese PMBoK.

## **(8) Past experience**

- Experience, success/failure cases (1),
- Tacit knowledge of experienced managers (1)

Past experiences are useful in managing similar situations in ongoing projects. These cases should be examined in order to determine why the project succeeded or failed.

Knowledge should be stored effectively so that many people can access it.

As long as tacit knowledge can be expressed as explicit knowledge, it is usable. However, tacit knowledge itself cannot be used and stored as common knowledge. Therefore, tacit knowledge should be made explicit so as to be used as common knowledge.

How we deal with experience is the same question as how we conceive knowledge. Therefore, we need to consider how we can deal with knowledge. Management of knowledge should be listed as a potential topic.

### **5.3.2 Potential topics that could be included in a Japanese PMBoK**

Therefore the following topics can be thought of as potential elements in a Japanese PMBoK.

#### **(1) Learning and knowledge**

Project managers learn during projects. The performance of project managers on their current project depends on the knowledge that was gained by past experience.

Learning is essential to gaining knowledge (Kolb, 2000). Therefore, current learning in management practice is closely linked with tomorrow's project management performance. Learning takes place or should take place all the time in project management. The effectiveness of learning determines the effectiveness of project management. Learning should be consciously managed.

Through learning, managers obtain knowledge. Knowledge is essential in the management of projects. Such knowledge is easily lost. Knowledge should also be consciously managed.

#### **(2) Social and Cultural issues**

Social and cultural issues have close relationships with many topics important for project management. For instance, 'project needs' might be affected by cultural values. We may need to consider the cultural background of stakeholders. Project teams and/or organisations have their own cultures. When people deal with risk, people might have a fear of taking on an uncertain project. Thus, project management need to deal with various cultural boundaries. Therefore, social and cultural issues cannot be ignored.

## 5.4 Data analysis for question 5: agreement on the definitions of topics

### 5.4.1 Data collected in question 5

Question 5 was provided to find more appropriate descriptions of topics in the Japanese language. In addition, question 5 tests the Japanese perception toward ‘defining clear terms’.

– Q5. See definition of topics. Please point out if you find any disagreement on any of them.

In general, the Japanese are not as enthusiastic as the British about making each definition absolutely clear. Words have broader meanings, and these meanings are not discussed in such a serious way. Hence, an attempt at defining the meaning of words is a challenge. To make the terms of project management clearer is one of the central roles of a PMBoK. The application of a PMBoK in Japanese culture requires full consideration of the Japanese perception of making each term clearer.

- Japanese language
  - The use of *katakana*<sup>iii</sup> should be minimised in the definitions. (2)
  - You should use an easier expression. (1)
  - I had difficulty reading the definition. (1)
  - Some definitions are wrong. (1)

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<sup>iii</sup> *Katakana* characters are the angular form of *kana*, the phonetic Japanese alphabet. *Katakana* are used to express phonetic sounds that come from other languages. *Katakana* characters normally express new concepts borrowed from English (see section 5.4.3 on *katakana* characters).

- The following expressions are not common in Japan (1 respondent to each topic).
  - 9. Resource Management
  - 10. Environmental/Sustainable development
  - 11. Economic Environment/impact
  - 17. Value Management
  - 18. Risk/Peril
  - 20. Research and Technology management
  - 22. Design management
  - 26. Value Engineering
  - 31. Re-engineering
  - 35. Requirement management
  - 49. Behaviour and Influence
  - 50. Coaching

As expected, some words were unfamiliar to some respondents. Words should portray concepts as accurately as possible. Using an existing similar Japanese term is one way. Creation of new words using existing terms is another way. It is sometimes good to use *katakana* characters to introduce new concepts. Selecting terminology needs creativity. Creating an expression of concepts should be done persistently, so that a set of concepts is fully understood and used in practice.

#### **5.4.2 Concepts in the Japanese language**

The Japanese language sometimes does not have specific common terms for a particular concept whereas having similar vocabularies that are used in more specific situations.

The following are examples:



- Estimation:

There is no one word to express 'estimation'. Instead of estimation, there are the words '*sekisan*' and '*mitsumori*'.

– *Sekisan* means:

‘Estimation that is done by clients’ in the civil sector

Or ‘to estimate quantity’ in the building sector

– *Mitsumori* means:

‘Estimation by non-clients’ in the civil sector

‘Estimation of the unit price’ in the building sector

Thus, estimation as a conceptual word is not commonly used across all sectors in Japan.

- Contract:

Contract is normally used as:

– an *ukeoi* contract (e.g. a contract between clients and contractors)

– a subcontract contract (the contract made by a contractor with his/her subcontractors/suppliers)

These express the weakness of the Japanese in grasping 'concepts'. The Japanese are not as good at logical thinking as European people (Tobioka, 1999). Therefore, collections of concepts in project management are more helpful for making matters clearer than are context-dependent terms such as *sekisan* and *mitsumori*. Academics in particular need clear concepts in order to grasp all elements in project management.

### 5.4.3 *Katakana* characters

*Katakana* characters are the square form of *kana*, the phonetic Japanese alphabet.

*Katakana* are used to express sounds that come from other languages. When the Japanese take in new concepts, *katakana* characters tend to be used. Many concepts have been translated from English into Japanese. It is unavoidable for many *katakana* to be used in the straw-man list and definitions of topics in Japanesea PMBoK. Unlike Chinese characters, which are traditionally used in the Japanese written language, the *katakana* characters express only sounds. Hence, the use of *katakana* needs some degree of consideration for it to be understood by Japanese managers.

Value is expressed as '*baryu*' in *katakana*. The following terms are also expressed in *katakana*:

2. Programs and Project Management (*Puroguramu* and *purojekuto manejimento*)
3. Business Needs and Cases (Business = *bijinesu*)
4. Project Life-cycle (*purojekuto raifu saikuru*)
6. Financing (*fainansu*)
8. Marketing and Sales (*ma-keteingu* and *se-rusu*)
15. Cost Control (*kosuto*)
16. Schedule (*sukeju-ru*)
17. Value Management (*baryu*)
21. Modelling and Testing (*moderu* and *tesuto*)
24. Phasing (*fue-jingu*)
26. Value Engineering (*baryu enjiniaringu*)
30. Partnering Management/Relations (*pa-tonaringu*)
31. Re-engineering (*rienjiniaringu*)

- 34. Systems Management (*shisutemu*)
- 40. Communication (*komyunike-shon*)
- 43. Leadership (*ri-da-shippu*)
- 44. Team Working (*ti-mu wa-ku*)
- 48. Stress Management (*sutoresu*)
- 50. Coaching (*ko-chingu*)

Among the above elements the following terms are common in Japan:

Project Management, Business, Project Lifecycle, Financing, Marketing, Cost, Schedule, Systems, Communication, Leadership, Teamwork and Stress.

Some respondents pointed out that the following words are not familiar to Japanese people:

Value Engineering, Value Management, Re-engineering, and Coaching

However all of the above-mentioned words have been used in the Japanese literature or some other media.

- Value Engineering

Value Engineering was mainly known as a set of procedures of a new contract system called 'VE contract'.

- Re-engineering

Re-engineering was introduced through literature of Hammer and Champy's (1993) that had Japanese translation version.

- Coaching

Coaching is also used as a term in sports such as football, baseball, or volleyball.

These terms will be accepted as long as they are helpful concepts like other terms that have been used in practice.

Overall, many respondents required the definitions to be as clear and familiar as possible for them. Explanation of topics should be kept as brief as possible so that they can be understood easily.

Furthermore, not many respondents had strong opinions on the definitions of topics. In contrast to the lively debate on the definitions of topics in the UK, this apparent reticence is characteristic of Japanese managers. It may indicate that Japanese managers have only vague knowledge of management. The Japanese language also makes it difficult to have clear meanings for concepts, since many terms are normally used as subjective expressions, rather than as clear concepts (Tobioka, 1999).

### **5.5 Data analysis for question 6: other comments from respondents**

Question 6 was provided to find out Japanese managers' perceptions of PMBoKs and the perceptions of this research.

– *Q6. Make any other comments on this questionnaire*

- The contents are difficult.

Some respondents felt that the definitions were too difficult to understand. Basically, the Japanese are said to be weak at capturing concepts (Tobioka, 1999). Therefore the

descriptions of topics should be developed in a way that makes it easier for everyone, although conceptual explanations should be retained.

- I could not fully understand the content, because it is less than two years job experience since I graduated from university. (1)
- I could not understand some of the content. Sorry. (1)
- The topics are so conceptual that I wondered how I could answer the questions (1)
- The topics in the straw-man list are so conceptual that I am not sure whether you could obtain valid answers from the questionnaire. (1)

- Structure

One respondent mentioned the structure of the PMBoK. Although it is not a central issue in PM, people may require a more acceptable and familiar structure.

- I prefer the following structure. General (concepts, strategic, approval, etc.), Management, Planning, Design, Maintenance, Operation. (1)

- Human factors are important

Some people stressed the human issues.

- Human skills are central in project management. (1)
- Big projects can be accomplished by the passion of a leader and teamwork. (1)
- The following elements are crucial for accomplishment of projects: (1)  
Communication with society; the needs of society; an understanding of society; the motivation of the organisation; a strong will to accomplish projects; and leadership.

- Organisational knowledge

Some respondents mentioned the existence of organisational knowledge. Unlike in Western culture, Japanese individuals have limited roles and responsibilities and, hence, individuals cannot have all the knowledge that is required in project management. Instead of individual knowledge, the comprehensive knowledge of team(s) and/or organisation(s) should be examined.

- The role and responsibility of individuals is unclear (in Japanese organisations).

Therefore, I am interested in how you can analyse the data. (1)

- The role of individuals is limited. You should consider all participants' knowledge, including consultants, clients and contractors, in one construction project. (1)

- It is impossible to find common terms and disciplines for all industries. I am not sure how you summarise all the data from various kinds of projects from different industries. You cannot sum up all data from those who have different responsibilities and perceptions of projects. (1)

- How can you trust the individual's subjective opinion and use it as valid data? (1)

- Individuals have little responsibility in the organisation. How can each person answer all these questions. Could you gain valid data from such individuals? (1)

- Japanese knowledge

Some respondents said that the Japanese do not have explicit awareness of their own management.

- The Japanese do not see their management logically. Everyone would be bewildered at answering these questions. (1)
  
- The Japanese have managed projects very well without a clear awareness of the processes involved in their thinking. You should find out why Japanese engineers could manage projects perfectly well until now, and what, if anything, is wrong with that. (1)
  
- The Japanese do not regard their practices as management. (1)
  
- I had difficulty answering the questionnaire. There are two reasons. Firstly, no subordinate refuses my order in my research projects. Therefore it is very easy to control my research project. Secondly, I do not need to care about costs, because I do not purchase expensive equipment for my engineering research. (1)
  
- Construction management has not been regarded as an academic subject. Skills are gained through in-house training and on-the-job training. (1)
  
- Experience and intuition are important in project management. We should consider both the system that we are pursuing and experience and intuition, in order to ensure the success of the project. (1)
  
- All of the 50 topics are important. But even if some of them are lacking, the projects can be done well (as long as we are aware of the core topics). Knowledge can be obtained through experience and cannot be written in textbooks. (1)

– Even same terminology when used in both Japanese and English can mean different things. Value engineering may not have the same meaning.

‘Engineering’ in English may not be the same concept as in Japanese. There may be more important things than the project life-cycle. But people may respond that the project life-cycle is important because they care about the opinions of the general public rather than individual opinions. (1)

- The questionnaire was helpful for me

The following respondents expressed the usefulness of topics and definitions in the straw man. They said that topics were good to reflect past experiences. This shows that a valid PMBoK may be used in practice for the individual learning of management.

– I have never studied management as my main subject. I could learn project management by reading the questionnaire. (1)

– The questionnaire enlarged my view toward management. Using this research, I hope that the practical systems will be improved so that we can perform our work more easily. (1)

– The 50 knowledge elements in your questionnaire are right. They are certainly helpful. (1)

– The elements in your questionnaire are issues that we are now discussing at my company. Because the construction market is shrinking, my company has to change its business. Then, the contents in your questionnaire will be important, and I will refer them. (1)



– The elements in question 3 that I ticked as ‘important ’ are things that I think we should do immediately. Consequently, I answered ‘yes’ to too many elements (and these elements are not well managed in my job.) Therefore I could know that we are still developing. (1)

- We need to have a structure of knowledge domains in CM/PM

Some respondents referred to the importance of structuring knowledge domains in (construction) project management. By doing so, academic activities can be made more actively.

– We have had long discussions within the construction management research committee. Nevertheless, we have had difficulty finding agreement on the definition of ‘management’. Guidelines for the discipline of management should be developed. (1)

– In Japan, research into construction management is not organised. Many research activities may have been undertaken. However, these research findings are not well organised. We need to adopt a systematic approach in order to determine the relationships between all the research findings. Therefore, your point of view with regard to the research is valid. (1)

– Construction project management techniques will be more important than in the past, because the construction industry is undergoing an era of change. In this sense, this research will be important. (1)

– I have studied a little of the PMI-PMBOK®. Therefore I am interested in organising elements of competency and the work of managers in the execution of construction projects. (1)

- The Japanese construction industry should be restructured.

Some responded that an explicit guide to Japanese construction project management will be beneficial to the Japanese construction industry. Traditional customs in the Japanese construction industry cannot be changed without Japanese management approaches being explained clearly.

– In the construction industry, we rarely apply logic, because management is determined by custom and cultural reasons. An explicit guide to Japanese management for engineers can change this situation by breaking down conventional obstacles. (1)

– In overseas projects, the discussions have a logical and commercial basis. In Japan, time, quality – and especially budget control – are everything in our (public works) projects. This is because national financial concerns are overemphasised. We have to ignore contract conditions in order to meet the requirements of national finance. (1)

– (I have realised that) I ended up acquiring and using the national budget as a guide, and executing of project on budget as planned. Hence, I have rarely had a chance to revise my work. (1)

– I feel the time has come to change our entire system by ourselves so that we can respond to social change. (1)

- Project success criteria and project appraisal are fairly important. However, these principles are ignored for political reasons. I worry that many unnecessary infrastructural projects are now being undertaken in Japan. (1)
  
- The system in the Japanese construction sector is so complicated that it is difficult to change. The Japanese system needs to be destroyed once and reconstructed in the Western way. (1)
  
- I would like to find a new business model in Japan, and I want to find the way in which PM/CM can be applied in Japan. (1)
  
- I believe that, eventually, PM/CM will be accepted in Japan. The Japanese model will be just one of many models in the world. The Japanese model cannot be a generic model for us. (1)

Many respondents agreed that the Japanese construction system should be changed immediately. The system is generally called '*seido*', i.e. it is a system that determines the entire set of rules for managing construction projects. Many people think that the *seido* should be changed. Winch (2002) refers to the national construction business systems that are related with the *seido*. He uses a conceptual framework that consists of system level and actor level. The two levels are interrelated with each other. Regulatory context as of construction projects as system level structure range of action. "In turn, practice on projects at the actor level shapes the institutions of the regulatory context" (Winch, 2002, p.19). To change the *seido*, it is essential to know the philosophy behind it. To manage construction activities such as projects, a knowledge of project management is required.

The respondents above implied that a Japanese PMBoK, if it is valid, could be the solution.

- Almost all topics would become ‘important’.

Quite a few people believed that everyone would regard most of the 50 sub-questions in question 3 as ‘important’. Some wondered whether the 50 elements in the straw-man list are so fundamental that actually no valuable findings could be achieved from the questionnaire.

- Almost all of the topics are important. What is the benefit of the outcome, if all the topics are important? (9 similar answers)

The following two conclusions can be implied from the above answers:

First, the Japanese are not enthusiastic about making an explicit guide of their thinking. Some people even got angry talking about topics such as ‘goals and objectives’, ‘team-working’ and ‘schedule management’. Some people responded that even talking about such things is meaningless, because such topics are already known. Nevertheless, it is also true that even such ‘basic knowledge’ had been neither well defined nor written down in any kind of Japanese literature. These topics could be learned only through on-the-job training and even imparted in tacit ways.

Further, as for dealing with concepts of project management, Nonaka and Takeuchi explain Japanese language treat more concrete objects than abstract concepts.

“...the ultimate reality for the Japanese lies in the delicate, transitional process of permanent flux, and in visible and concrete matter, rather than in an external, unchanging, invisible, and abstract entity. They see reality typically in the

physical interaction with nature and other human beings. These basic attitudes are clearly different from the prevailing Western view that the thinking self seeks the eternal ideal as a detached spectator” (Nonaka and Takeuchi, 1994, pp.31-32).

Understanding abstract concepts is one of central issues of project management. To some extent, the Japanese may have disadvantage in learning and using abstract management concepts compared to the English due to their mother language.

Second, the results indicate the existence of a form of knowledge. Some Japanese said that “all questions would get a ‘yes’ answer”. These people believe that there is a ‘commonly accepted belief’ among the Japanese. Some people strongly believe that there is common agreement on views and perceptions between most Japanese.

In general, knowledge is thought of as being owned by individuals. Such kind of knowledge is owned by society as a special form that is different from individual knowledge.

When many people believe that there is some sort of agreement among people with regard to particular things, it creates a kind of knowledge that differs from individual knowledge. Even if one does not know about a particular thing, as long as one believes that there is commonly accepted knowledge about the matter, the person will try to access that commonly accepted knowledge. The person will then use the commonly accepted knowledge, if any. If many people do the same things, then the commonly accepted knowledge can become a generally accepted discipline on how to do particular things.

This can be called 'common sense'. The common-sense approach is at work in project management by Japanese engineers.

Common sense is thought of as difficult to change, since it is tacit and collective. But we can *control* common sense as well as *use* it. Argris and Schon (1974) explain such sort of knowledge as theory-in-use. The theory-in-use is the theory behind the people's action that may create incongruence between their actions and their espoused theory that they believe their behaviour is based on. "Few people think about their theory-in-use" (Argris and Schon, 1974, p.37). "But if we can make explicit the theory-in-use, then we can explain, predict, and have the basis for changing these findings" (Argris, 1992, p.81).

It is the Japanese who have created their common sense. The Japanese can change common sense if they are conscious about the fact that the Japanese 'own' it. A Japanese PMBoK will work to make such common sense explicit, in order to use it effectively.

## **5.6 Summary of data analysis for question 4, question 5 and question 6**

(1) From question 4, the following two elements should be considered as potential topics for a Japanese PMBoK.

- Learning
- Social and cultural issues

(2) From questions 5 and 6, the following conclusions can be drawn:

1. Many Japanese have never learnt or thought about concepts explicitly in management. Some Japanese had difficulty understanding the concepts in the questions.

2. The definitions of the topics need to be clear, familiar and short.
3. The concepts in the straw-man list were helpful to some Japanese managers in reconsidering their experiences.
4. Some respondents implied that the Japanese carry knowledge in their organisations rather than individually.
5. Valid guides to Japanese construction projects are helpful in changing social customs and systems.
6. Many Japanese believe that most Japanese would have the same understanding of the topics. (However, there was not agreement on all topics, and the answers differed between respondents.)

## **5.7 Revised version of the Japanese construction PMBoK**

The straw man was revised based on the results of the responses to the questionnaire, so that it can be used as the Japanese construction PMBoK (JC-PMBoK). Table 5.18 shows topics of a revised version of the JC-PMBoK.

### **5.7.1 Topics that were added as main topics**

The following topics were added:

#### **(1) Learning and Knowledge**

Project managers learn within projects. The performance of project managers on their current project depends on the knowledge that they gained by past experience.

Learning is essential to acquiring knowledge (Kolb, 2000). Therefore, current learning in management practice is closely linked with tomorrow's project management performance.

Learning takes place or should take place all the time in project management. The

effectiveness of learning determines the effectiveness of project management. Learning should be consciously managed.

Through learning, managers acquire knowledge. Knowledge is essential in the management of projects. Such knowledge is easily lost. Knowledge should also be consciously managed.

## (2) Social and Cultural Issues

Social and Cultural Issues have close relationships with many important topics within project management. For instance, 'project needs' may be affected by cultural values. We may need to consider stakeholders' cultural backgrounds. Project teams and/or organisations have their own cultures. When people deal with risk, they may have a fear of taking on an uncertain project. Thus, project management is associated with people. Therefore, Social and Cultural Issues can be a major topic in the Japanese PMBoK.

## (3) Trust

Trust form the basis of the Japanese management. Every relationship, including those of individuals, teams, organisations, and nations, are based on trust (Osaki, et. al., 1998, Bennett, 2000). At first, the author thought that trust is so common in Japanese society that it does not need to be considered and to be taught as a special type of knowledge in management (project management). However, the West has definitely been struggling to implement trust in business practices (Latham, 1994, Hartman, 2001). However, the establishment of trust in relationships among business partners is not determined by context. If properly managed, trust can be developed in the business context quickly (Humphrey, 1998). Whereas Western management learn trust from Japanese management, Japanese managers need to learn explicit awareness of construction of trust



in management. If making trust is recognized as one of management tasks, it would be also recognized that relationships between Trust and other topics, such as Business Case, Contract Management, and Cost Control may be trade-offs. Japanese managers need to realise that Trust will have been established at some expense. We need to recognise the importance of trust as an explicit concept, in the same way as other topics in project management.

### **5.7.2 Topics that were not selected as main topics**

The following topics were merged with other topics:

- Modelling and testing

Modelling and testing are normally required when new technology is used in projects. However, none of the respondents in the engineering sector agreed with this. Compared with Research and Technology Management, this topic attained low scores. Hence, this topic can be merged with Research and Technology Management.

- Re-engineering

Re-engineering scored only 41%. Re-engineering itself is concerned with changes or projects. Since projects can emphasise the initiation and management of change, Re-engineering, as a topic, may not be helpful for managing the process of change. Therefore, this topic should be merged with Programs and Project Management.

- Stress Management

Although people issues generally scored more highly, Stress Management (49%) and Personnel Management (70%) were rated lower. This implies that Japanese management is not focused on the psychological and physical issues of individual employees. Both

formal and informal treatment of individuals should be emphasised. Therefore, Stress Management was merged with Personnel Management, and was given a better description to make people understand these issues.

- Behaviour and Influence

In an organisation, the behaviour of the experienced people affects others. As mentioned before, the data showed that younger people agreed with Behaviour and Influence than did their elders. This is probably because younger people learn from the behaviour of their elders. Behaviour and Influence is associated with Learning. Hence, Behaviour and Influence can be retained as Learning and Knowledge.

- Coaching

Since 'coaching' is associated with Learning, Coaching was merged with Learning.

A revised version of a Japanese Construction PMBoK's topics is shown below (Table 5.18).

**Table 5.18: Revised version of the Japanese Construction Project Management Body of Knowledge (JC-PMBoK)**

<p><b>Project Life</b></p> <p>1. Goals, Objective/Success, Failure  2. Programs and Project Management  3. Business Needs and Case  4. Project Life-cycle  5. Project Management Plan  6. Value Management</p>	<p><b>Industrial Issues</b></p> <p>26. Industrial Relations  27. Contract Management  28. Bidding  29. Partnering  30. Procurement  31. Inter-sectional Cooperation</p>
<p><b>Project Environment</b></p> <p>7. Financing  8. Law Awareness  9. Marketing and Sales  10. Resource Management  11. Environmental/Sustainable Development  12. Economical Environment/Impact  13. Stakeholder/Political Environment</p>	<p><b>Control/Organisation/System</b></p> <p>32. Systems Management  33. Requirement Management  34. Project Content/Scope Management  35. Performance Measurement  36. Project Organisation  37. Information Management  38. Communication</p>
<p><b>Project Execution strategy</b></p> <p>14. Safety/Health  15. Quality  16. Cost Control  17. Schedule  18. Risk/Peril  19. Risk/Uncertainty</p>	<p><b>Human Issues</b></p> <p>39. Ethics  40. Personnel Management  41. Leadership  42. Team-building  43. Decision-making</p>
<p><b>Technology</b></p> <p>20. Research and Technology Management  21. Design Management  22. Change Control  23. Phasing  24. Estimating  25. Value Engineering</p>	<p>44. Conflict  45. Negotiation  46. Learning &amp; Knowledge  47. Culture &amp; Social Issues  48. Trust</p>

Note: Definition of each topic is shown in Appendix H.

## **5.8 Summary**

In this chapter, data regarding agreement on topics for PMBoKs from Japanese managers are analysed. Through the analysis, the data from different sectors and ages are compared. There were some differences between different sectors and ages, but overall, the differences were little. From the respondents, some additional topics were proposed. Then, responses of Japanese managers regarding explicit learning of project management were examined. It is presented that PMBoKs are useful for individual learning for some respondents. Other respondents implied that some of topics in the questionnaire are subject to organisational and/or social knowledge. Finally, revised version of Japanese PMBoK was proposed.

## **Chapter 6 Data analysis 2: an international comparison**

### **6.1 Introduction**

In this chapter, data analysis is done from an international point of view. Firstly, data from question 3 of the questionnaire are analysed, based on the differences between projects in Japan and overseas, managed by Japanese managers. This shows the differences for different context that projects are executed by Japanese managers. Secondly, data from UK managers, which were collected in 1998 by Centre of Research for Management of Projects in UMIST as part of the research project to create the APMBOK fourth edition, and data from Japanese managers, which were collected during this research, are compared. Thirdly, the identified differences are examined by comparing with actual selections of topics of PMBoKs that was made during 2001 – 2013. Finally, the meaning and roles of PMBoKs for Japanese managers are discussed based on the research data.

### **6.2 Differences by project location between Japan and overseas within data from Japanese managers**

Tables 6.1 and 6.2 show topics with more than a 15% difference in the percentage of agreement from Japanese managers between overseas projects and projects in Japan.

Topics in Table 6.1 achieved a higher percentage agreement for domestic projects than for overseas projects. Topics in Table 6.2 achieved more agreement for overseas projects than for domestic projects. Both of the tables display the differences in the percentage of agreement (Overseas (%); – Japan (%)) in their first column.

In total, there are thirteen topics in Tables 6.1 and 6.2. These topics can be categorised into three groups. The first group is about Learning (group no. 1). In this group, the education and training of human resources are treated in a more formal way in overseas projects than they are in domestic projects. In addition, Personnel Management is thought of as being the role of the personnel division. In overseas projects, more formal management of human resources is required than in domestic projects.

The second group shows the relationships between organisations (group no. 2). These are ‘(30) Partnering Management’ (16%), ‘(32) Procurement’ (20%), ‘(25) Estimating’ (22%), ‘(29) Bidding’ (25%), and ‘(28) Contract Management’ (27%). All these topics are concerned with relationships between organisations. In overseas projects, management must be more conscious of its relationships with other organisations.

**Table 6.1: Difference according to project location within data of Japanese managers: Difference that overseas show less agreement than in Japan is under – 15%**

Topics where overseas projects showed less agreement than in Japan			
	No.	Topics	Group
= -29%	8	Marketing and Sales	-
= -17%	49	Behaviour and Influence	1
= -15%	10	Environmental/Sustainable Development	-

(%) = Overseas; (%) – Japan (%)

**Table 6.2: Difference according to project location within data of Japanese managers: Difference that overseas show more agreement than in Japan is over 15%**

Topics where projects overseas showed more agreement than in Japan			
	No.	Topics	Group
= 16%	30	Partnering Management	2
= 18%	18	Risk/Peril	-
= 20%	22	Design Management	-
= 20%	32	Procurement	2
= 22%	25	Estimating	2
= 25%	42	Personnel Management	1
= 25%	29	Bidding	2
= 27%	28	Contract Management	2
= 33%	36	Work content and Scope Management	3
= 34%	9	Resource management	3

(%) = Overseas (%) – Japan (%)

- Group No. Group category**
- 1 Learning**
  - 2 Relationships between organisations**
  - 3 Work content**

The third group is related to defining the Work Content of projects (group 3). These topics are ‘(36) Work Content and Scope Management’ (33%) and ‘(9) Resource Management’ (34%). The second group and the third group are related to each other in a sense that the relationships between organisations in projects are concerned with the

allocation of work and responsibility between organisations. In general, the relationships between organisations in overseas projects require clearer definition than in Japan, because relationships between organisations in a Japanese context are established on a long-term basis rather than relying on a formal contract.

### 6.3 Differences between Japanese managers and English managers

In this section, data from Japanese managers are compared with data from UK managers. Since the UK and Japan have quite different approaches to management (Oliver *et al.*, 1992; Burnes, 1996), they are supposed to have a different approach to project management. These differences may give us an overview of the generic discipline of project management. The data from the UK were obtained from the research by CRMP (Centre of Research in the Management of Projects), at UMIST in 1999 (see section 3.4.2 in Chapter 3).

#### 6.3.1 Coverage of sectors of industry

The data used in this research come from the following sectors (Table 6.3).

**Table 6.3: Coverage according to sector in the UK and Japan**

UK data	Japanese data
Engineering	Civil engineering
Facilities and utilities	Building Engineering
Manufacturing	
Process industries	
Information and services	
Construction	

Details of the classification of sectors of industry are shown in Table 6.4. The concept of classification is slightly different between the UK and Japan. The UK's sectors were classified using the scheme of Betts and Lansley (1995, cited in CRMP, 1999). They used the following classification for their analysis of journal articles in project management (Table 6.4).

In order to conduct the international comparison study, the differences according to sector were considered. However, as regards the Japanese data (see the previous section and Appendix H), no significant differences were found. As regards the UK data, there were only a few differences between the score for the construction sector and the

aggregated score (see Appendix B). Therefore, the data from all sectors are used in this comparison study.

**Table 6.4: Classification of sectors of industry in the UK and**

UK		Japan	
Sector	Sub-sector	Sub-sector	Sector
Construction	Civil engineering	Civil engineering	Civil engineering
	Urban design and planning	Gas	
	Maintenance	Urban design and planning transport	
	Building (Urban design and planning)	Government (public works)	
	Housing	Maintenance (in the civil sector)	
Process industries	Chemical	Building	Building/ architecture
	Nuclear	Urban design and planning	
	Oil offshore and underwater	Housing	
	Petro-chemical plants	Asset maintenance (in buildings)	
Utilities	Energy and power		Engineering
	Telecommunications	Nuclear	
	Gas	Oil offshore and underwater	
	Transport	Petro-chemical plants	
Manufacturing	Aerospace	Energy and power	
	Pharmaceuticals		
	Product development		
	Ship-building		
	Vehicles		
Services	Data processing		
	IT systems		
	Defence		
	Education		
	Finance		
	Government		
	Health and medical		

### 6.3.2 Comparison between Japan and the UK (Table 6.5.1-6.5.5)

The data are ordered from the top to the bottom, based on the percentage of agreement. Topics are arranged into three categories – high-rated (over 85%), middle-rated (65–85%) and low-rated (fewer than 65%).

Table 6.5.1-5.5 shows the comparison of the data between Japanese and English managers. Topics that are highlighted in dark collar means the topics are in different category of the percentage of agreement compared with its counterpart. Definition of each topic is shown in Appendix B for the UK and in Appendix H for the Japan. N.A. means that there is no corresponding topic to the counterpart's data.



**Table 6.5.1: Topics that were no significant differences between Japanese and English managers**

%	Japan	UK	%
	<b>High-rated topics (over 85%)</b>		
94	<b>Leadership</b>	<b>Leadership</b>	100
95	<b>Schedule Management</b>	<b>Schedule Management</b>	93
88	<b>Programs and Project management</b>	<b>Programme Management</b>	85
	<b>Topics in the middle level (65%-85%)</b>		
70	<b>Personnel Management</b>	<b>Personnel Management</b>	82
76	<b>Contract Management</b>	<b>Contract Planning and Administration</b>	79
69	<b>Partnering Management</b>	<b>Supply Chain Management and Logistics</b>	74
72	<b>Value Management</b>	<b>Value Improvement</b>	73
72	<b>Value Engineering</b>		
73	<b>Work Content and Scope</b>	<b>Work Management</b>	73
78	<b>Conflict</b>	<b>Conflict Management</b>	69
	<b>Topics in the bottom level (lower than 65%)</b>		
57	<b>Marketing and Sales</b>	<b>Marketing and Sales</b>	50

In Table 6.5.1, topics that were rated as the same category by both Japanese and English managers were presented. Out of about 40 topics, there were only 10 topics that were rated as the same categories. Other about 30 topics was rated significantly different by the two groups as shown in the following tables (Table 6.5.2).

**Table 6.5.2: Topics that Japanese managers scored higher than 84% and comparisons with the English managers' scores**

%	Japan	UK	%
95	<b>Schedule Management</b>	<b>Schedule Management</b>	93
95	Quality	Quality Management	84
94	Communication*	N.A.	
94	<b>Leadership</b>	<b>Leadership</b>	100
93	Cost Control	Cost Management	74
93	Teamwork	Teamwork	84
92	Decision Making*	N.A.	
91	Performance Measurement	Performance Measurement	43
		Project Monitoring and Control	78
91	Negotiation*	N.A.	
90	Project Plan	Project Management Plan	81
89	Goals. Objective/Success Criteria	Goals. Objective/Success, Failure	35
88	<b>Programs and Project management</b>	<b>Programme Management</b>	85
		Project Management	79
87	Change Control	Configuration Management and Change Control	75
86	Ethics*	N.A.	

Table 6.5.2 shows topics that were rated as the top level by the Japanese managers. 7 topics among 10 topics were rated lower by English managers.

**Table 6.5.3: Topics that English managers scored higher than 84% and comparisons with the Japanese managers' scores**

%	Japan	UK	%
94	<b>Leadership</b>	<b>Leadership</b>	100
83	Law	Legal Awareness	100
83	Safety/Health	Safety, Health and Environment	99
74	Environmental/Sustainable Development		
80	Procurement	Procurement (with Purchasing)	98
73	Project Life Cycle	Project Life Cycles	98
79	Risk/Peril	Risk Management	95
51	Risk/Uncertainty		
69	Financing	Financial Management	94
50	Industrial Relation	Industrial Relations	93
95	<b>Schedule Management</b>	<b>Schedule Management</b>	93
72	Business Need and Case	Business Need and Case	89
74	Organisation Structure	Project Organisation	89
82	Stakeholder/ Political Environment	Project Context	87
67	Economical Environment/Impact		
88	<b>Programs and Project management</b>	<b>Programme Management</b>	85

Table 6.5.3 shows topics that were rated as the top level by the English managers. 10 topics among 13 topics were rated lower by Japanese managers.

**Table 6.5.4: Topics that Japanese managers scored lower than 65% and comparisons with the English managers' scores**

%	Japan	UK	%
63	Resource Management	Resources Management	77
57	<b>Marketing and Sales</b>	<b>Marketing and Sales</b>	50
51	Risk/Uncertainty	Risk Management	95
50	Industrial Relation	Industrial Relations	93
49	Stress Management	Stress Management	68

Table 6.5.4 shows topics that were rated as the lowest by the Japanese managers. 4 topics among 5 topics were rated as higher by English managers.

**Table 6.5.5: Topics that English managers scored lower than 65% and comparisons with the Japanese managers' scores**

%	Japan	UK	%
84	Design Management	Design Management	62
57	<b>Marketing and Sales</b>	<b>Marketing and Sales</b>	50
83	Information Management	Information Management	46
91	Performance Measurement	Performance Measurement	43
74	Systems Management	Systems Management	36
89	Goals. Objective/Success Criteria	Goals. Objective/Success, Failure	35
78	Inter-sectional Corporation	Integrative Management	33
78	Requirement Management	Requirements Management	32

Table 6.5.5 shows topics that were rated as the lowest by the English managers. 7 topics among 8 topics were rated as higher by Japanese managers.

### **6.3.3 Analysis of Table 6.5.1-6.5.5**

Overall, very few topics occur within the same level. In the following sections, the above differences are analysed in the light of hypothetical five categories as the followings.

#### **(1) Goals and Tasks topics (Table 6.6)**

The Goals and Objectives topic shows totally contradictory results in the two countries. While Japanese managers prioritised this topic (90%), English managers gave it a very low rating (35%).

In addition, both countries showed relatively low scores in task-related topics – Work Content and Resource Management, in Japan (Work Content and Scope Management 73%, Resource Management 62%) and in the UK (Work Management 73%; Resource Management 77%).

Although Japan scored 91% for Performance Measurement, the topics of Work Content (73%) and Resource Management (62%), which are essentially related topics for measuring performance, were awarded much lower scores. UK managers, on the other hand, rated Performance Measurement (with Project Monitoring and Controlling) at only 61%. However, Work Content (77%) and Resource Management (73%) achieved significantly higher scores than Performance Measurement (with Project Monitoring and Control') (61%).

These show the different attitudes of the two groups toward goals and tasks. Whilst Japanese managers are enthusiastic about measuring performance, they are not very interested in defining tasks. Their UK counterparts rated task-related topics higher than performance measurement. Therefore, this would seem to reflect the nature of the UK managers. In fact, the task idea is a fundamental notion in the UK. It can be seen in classic management theories, such as those of Smith (1766) and Taylor (1911). For instance, Taylor (1911) says:

All of us are grown-up children, and it is equally true that the average workman will work with the greatest satisfaction, both to himself and to his employer, when he is given each day a definite task which he is to perform in a given time,

and which constitutes a proper day’s work for a good workman. This furnishes the workman with a clear-cut standard, by which he can throughout the day measure his own progress, and the accomplishment of which affords him the greatest satisfaction.

(Taylor, 1911c, pp. 120–121)

**Table 6.6: Comparison of ‘Goals and Tasks’-related topics between the UK and Japan**

Rank	Japan	UK
High-rated topics (over 85%)	Performance Measurement 90%, Goals and Objectives/Success Criteria 89%	–
Topics in the middle level (65%-85%)	Work Content and Scope Management 73%	Resource Management 77% Work Management 73%
Topics in the bottom level (lower than 65%)	Resource Management 62%	Performance Measurement (with Project Monitoring and Control) 61% Goals and Objectives (with Success and Failure) 35%

In Japan this theory does not work well. In fact, when Taylorism was introduced to Japan in the early nineteenth century, Japanese artisans strongly refused to be given tasks that were written in manuals. Rather, they were more willing to participate in the activity of *kaizen* (continuous improvement). Rigid separations between planning and execution had not been occurred (Oliver and Wilkinson, 1988, P.39).

Morita, former Vice-president of Sony, says:

“When engineers or scientists are given a clear target, they make an effort to achieve the goal. But when there is no target, for instance, even if companies spend a huge amount of money and tell engineers to ‘develop something’, nothing will come up.”

(Morita, 1988)

With regard to Work Content, as seen in section 6.2, Work Content shows significantly higher scores when Japanese managers undertake overseas projects. This implies that the requirement to use knowledge of Work Content may be affected by the environment in which the projects are undertaken.

With regard to the goal-related topics, Chapter 5 showed that the high score awarded to the goal-related topics by Japanese managers does not vary according to any of the categories (i.e. differences in clients and contractors, differences in the ages of the managers, differences in the project locations, or differences in the sectors). This tendency can therefore be used to characterise a basic tendency of the Japanese. Meanwhile, in the UK, the different sectors showed different scores for the goal-related topics. This means that the importance of goals and objectives is understood in some circumstances. UK managers can understand the importance of topics through learning and work experience. In fact, many books in the West stress the importance of looking at the real goal. Some of this literature refers to situations in Japanese business or society where goals and objectives are highly prioritised (e.g. Senge, 1990; Hammer and Champy, 1993). This focus on goals and objectives by recent management practices in the West stems significantly from Japanese management practices. Goal-oriented management is characteristically Japanese.

Both goal and task ideas are fundamental attributes of project management. The goal should be defined in order to be achieved. The task is a basic facet of obtaining any achievement. Project management needs to create a 'bridge' between goals and tasks. In this sense, the two different societies each naturally contained one of these two fundamental elements – Japan had the 'goal' idea and the UK had the 'task' idea. Each society has learnt something from the other society. Both societies have helped each other to develop their management, especially in the last century.

## **(2) Social-relations topics (Table 6.7)**

Law, Procurement, Financial Management, Industrial Relations, Business Need and Case, Project Organisation, Contract Management, Supply-chain Management and Logistics (Partnering in Japan), and Bidding and Estimating, are about relationships with other organisations. These topics are ranked highly in the UK but not in Japan (Table 6.7). In

Japan, relationships between organisations (and individuals) had been determined culturally (Pascal and Athos, 1981).

The contract, for instance, means nothing to Japanese organisations (Bennett, 1998). People rarely go to court even if they have a dispute. People understand that going to court itself means a failure to keep up cooperative relationships with others (Johnson, 1993, p. 221). Such disputes are supposed to be solved by the parties involved, before resorting to the courtroom.

**Table 6.7: Comparison of social-relations topics between the UK and Japan**

Social-relations topics	Japan	UK
Legal Awareness	82%	100%
Procurement (with purchasing in the UK's data)	79%	98%
Financial Management	69%	94%
Industrial Relations	54%	93%
Business Need and Case	69%	89%
Project Organisation	74%	89%
Contract Planning and Administration	81%	79%
Supply Chain Management and Logistics (this is defined as Partnering in the Japanese data)	65%	74%

The reason for the difference between the UK and Japan comes from differing notions with regard to social relationships. When Japanese managers need to work in overseas (Western) environments, they need to be more familiar with these topics. In fact, the scores in this category are different by project locations (see 6.2). Topics related to social relationships need to be learnt and better appreciated in Japan. Here Japan can learn from the West.

### **(3) Uncertainty avoidance**

Whilst the English rated risk as one of the highest-ranking topics (95% for Risk Management), Risk/Uncertainty Management was rated considerably lower (46%) by Japanese managers. This low score clearly shows that the Japanese have negative attitudes toward uncertainty. In Japanese management, uncertainty is avoided as much as possible. The Japanese tend to dislike taking risks. 'Risk' means 'danger' in Japanese. 'Danger' is wrong (Ota, 1995). Many Japanese firms and organisations are observed their typical failures on unsuccessful project case studies that were resulted from ignoring risks

and sticking their original project plans (Kharbanda and Pinto 1996, pp.159-175., Tobe, et al., 1991).

It was Hofstede (1980) who proposed ‘uncertainty avoidance’ as a cultural dimension. According to Hofstede, Japanese is one of those groups least likely to allow for uncertainty. English, on the other hand, is one of those groups which place a low priority on avoiding uncertainty. This tendency was clearly shown in the data.

#### **(4) Control topics (Table 6.8)**

Japanese managers also give high priority to planning and monitoring topics (System Management:74%; Performance Measurement: 91%; Project Plan: 88%; Schedule Management: 97%), than English managers (System Management: 36%; Performance Measurement: 43%; Project Plan: 80%; Schedule: 93%) (Table 6.9). Overall, these topics’ scores indicate that Japanese Managers tend to emphasise that things are done on time, meeting perfect quality standards, and exactly as planned beforehand. This reflects what Japanese Managers do in their business practices. They make plans in as much detail as possible. They try to eliminate all possible uncertainty in order to achieve their goal. They have little (if any) hesitation in doing overtime work when the work is behind the planned schedule (Bennett, 1991).

English managers, on the other hand, did not prioritise these topics in the same way as the Japanese. This is reflected in the tendency for frequent delays in projects in the UK. Also, relatively few people are willing to do overtime work even if they are behind schedule. Whilst not many English managers are keen on these topics (System Management: 36%; Performance Measurement: 43%), Japanese managers deemed them high-priority topics (System management: 74%; Performance Measurement: 91%). Overall, English managers agreed on ‘time’ and ‘plan’ (Project management plan: 81%; schedule management: 93%). However, Japanese managers agreed on these topics even more so than English managers. ‘Time to market’ is a slogan of Japanese business practices.

The Japanese are more enthusiastic than the English about planning. The schedule is emphasised in Japanese projects. Once a goal is set, the Japanese try to meet it (Morita, 1990; Bennett, 1991). Planning and monitoring are essential to meet the goal. However,

the Japanese can be too keen on sticking to their plans. After all, plans are just plans. Plans can generate nothing unless they are linked the real goals and objectives of projects.

**Table 6.8: Comparison of control topics between the UK and Japan**

Control topics	Japan	UK
Schedule Management	97%	93%
Project Management Plan	88%	81%
Monitoring and Control	(91%)*	78%
Performance Measurement	91%	43%
System Management	74%	36%

\*Monitoring and Control in the Japanese straw-man list is combined with Performance Measurement.

The Japanese attitude is indeed remarkable in terms of achieving a pre-set goal. However, the Japanese construction sectors have to be keener on deriving real value from projects<sup>i</sup>, such as, for example, ‘quality of life’. Philosophy is required in every construction project, so that construction projects can produce real value for the public.

### **(5) Issues related to human factors**

Topics that are related to human factors were rated highly in Japan. Leadership (100% in the UK, 95% in Japan) was strongly agreed upon by both groups. Teamwork is more appreciated by Japanese managers (94%) than English managers (84%). Negotiation (91% in Japan), Decision-Making (90% in Japan), and Communication (94% in Japan) cannot be compared, since the UK straw man does not contain these topics. However, in the UK research, many managers pointed out that issue of human relationships is important. Hence, these topics were finally retained in the APMBok fourth edition. Furthermore, in the update for the aforementioned APM research in 2004, Negotiation’ and Communication’ were each awarded 97% and 96% agreement by UK managers.

Japanese managers strongly supported Ethics (86%). Although the UK data from 1998 do not include Ethics, the topic obtained high agreement (84% as Project Management or 90% as Program Management) in the research for the APMBok’s fourth edition update

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<sup>i</sup> Bennett (1991) pointed out that the design of Japanese buildings shows less originality. Under the pressure to meet deadlines, standards and quality, creativity tends to be sacrificed. This results in Japanese building that are less attractive than buildings in the UK.



in 2004 (Morris et al. 2006). Since project management needs to create value for the public and to deal with people, Ethics are an essential element in project management.

## **6.4 Selection of topics in PMBoKs during 2001–2013**

### **6.4.1 Research findings and selections of topics in the P2M and other PMBoKs during 2001–2013**

A Japanese construction PMBoK (JC-PMBoK) was proposed through data from the Japanese construction industry that was collected in around June 2000. The data obtained through the questionnaire to Japanese managers is ‘a snapshot’ of that time that was analysed as is in the earlier part of this chapter.

In 2001, the P2M first edition was produced as one of first project management knowledge guides in Japan (PMCC, 2001, 2002). In 2007, the P2M new edition was produced though its structure and topics are almost unchanged (PMAJ, 2007). In the period of these years, other English PMBoKs have also been revised and GAPPS has produced *A Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers*’ (GAPPS, 2007).

It is examined how much characteristics of proposed JC-PMBoK in terms of the differences from English PMBoKs is congruent to the actual selections of topics in published PMBoKs. The analysis is done through comparing actual selection of topics in the P2M as a Japanese PMBoK and other representative English PMBoKs that are the APMBOK, Construction Extension to the PMI-PMBOK®, and GAPPS (see table 6.9). IPMA’s ICB (Caupin, et al., 2006) is not used in this comparison because it is based on the APM model and it represent rather European model than English model.

Comparisons in the following sections are done based on the aforementioned five categories:

- Goals and Tasks topics,
- Social-relations topics,
- Uncertainty avoidance,
- Control topics,
- and Issues related to human factors.

## 6.4.2 Goals and Tasks topics

### (1) P2M

In the P2M, Program Management, Project Objectives Management, and Project Value Management are three topics directly related to this category. Each topic stresses goals more than tasks through its definition, as well as its structure.

#### i) Program Management

Program Management, one of main concepts of front-end issues, is introduced as the top of “the project management tower” (PMCC, 2001, p17) as well as used as part of the standard’s name. Defined as “Value creating undertaking based on holistic mission” (PMCC, 2001, p29), importance of awareness of holistic view is stressed. A program “consists of multiple project interrelated to each other under a program” (PMCC, 2001, p19). By this definition, Projects are introduced as tasks to achieve holistic mission under a Program as activity defining and aiming at holistic mission as goals.

#### ii) Project Objectives Management

Project Objectives Management is selected as one of eleven topics having many of control topics, i.e. Project Life Cycle Plan, Scope Management, Cost Management, Time Management, Quality Management, Earned Value Management, Reporting and Change Management, and Delivery Management.

#### iii) Project Value Management

Value Management in the P2M is a distinctive topic because its definition is different from that of other PMBoKs in the West. Value Management in the P2M is defined as “a cyclic management process of value identification and evaluation, recognition of value source and value feed-forward and, in a broad definition, is to build sources of value such as knowledge, intellectual property, know-how residing in a portfolio of technical or managerial expertise acquired through business and project operations and feed forward such values to ongoing project activities” (PMCC 2002. p93). On the other hand, Value Management in the APMBok is defined as “Value lies in achieving a balance between the satisfaction of many differing needs and the resources used in doing so. The fewer resources used or the greater the satisfaction of the need, the greater is the value” (APM 2000, p20).

Value Management in the P2M includes Knowledge Management, Kaizen, and Total Quality Management (TQM). Value Management in the P2M focuses more on project deliverable and satisfaction through projects, while its definition is weak at cost and/or resource aspect, if not ignoring it. Crawford, et al. (2007) observed that the P2M is only standard that identifies Value Management within the Product Functionality category among five national standards, which include Japan (the P2M), UK, US, South Africa, and Austria. The P2M has Information Technology Management as a topic, but it does not directly mention Technology Management, which topic treats relations between technology, organization, and projects (APM, 2000, 2005). Value Management includes most of technology-related issues, because many of sub-headings such as Knowledge Management, Kaizen, and TQM are all related to management of technology.

In short, by value, the P2M means value for customer, rather than value for me. Thus, thinking of Value Management in the P2M indicates that the P2M prioritizes more goals than tasks.

#### iv) Less emphasis on Procurement

In the P2M, there is no independent section regarding Procurement. Procurement is only mentioned in the text under Project Resource Management but not selected as neither topic nor sub-heading. Procurement, which is regarding relationships with contractors and subsidiaries, is mentioned at only sub-headings such as Contract and Strategic alliance. Because Procurement is about capability acquisition that is more task-oriented topic, less emphasis on this topic implies, to some extent, task-related issue is not prioritised in the P2M.

## (2) Construction Extension to the PMI-PMBOK®

### i) Claims Management

PMI explains claims as “Often claims are thought of in terms of the contractor making claims against the owner or other prime party and by subcontractors against the contractor; but claims can also originate with the owner who believes that some requirement of the contract is not being performed by the contractor” (PMI, 2003, p125).

In the P2M, claims is translated in Japanese as Kujo and explained as the following: “Kujo (claims) are, to a great extent, expression of customer’s dissatisfaction and it often includes factor that they have bad feeling on the matter” (PMCC, 2002, p341).

Bennett (2000, pp.189-190) describes meetings within Japanese construction projects. He says that he was impressed by that sub contractors mention no claim for extra money and time and all participants are concentrated on their agreed goal during the meetings. His description in-turn reflects the normal use of claims in the UK as is in aforementioned PMI’s definition.

Melville (1999, p. 56) insists that relationships of customers and suppliers of Japanese firms are hard to believe as “in Japan the user’s taste ‘is everything’ - as Japanese people say, ‘the customer is god.’ ”

The difference of common view toward claims between the above two standards is very contrastive regarding relationships between customers/owners and contractors; while one is that contractors mainly make claims against customer/owners, the other one is the opposite.

Relationships with customers/owner are more related to goal defining/setting than issues of defining/conducting tasks for contractors/suppliers. Relationships with contractors are more related to issues of defining/conducting tasks than goal defining/setting among these two factors are interdependent. The difference in treatment of claims implies different approaches in Goals and Tasks topics category.

### (3) APMBok

The APMBok fifth edition added the following front-end topics: Portfolio Management, Project Sponsorships, Project Office, Issue Management, and Governance of Project Management.

The APMBok sixth edition promoted the topic of Governance to a section level.

Regarding the issue of Governance issue, a new term ‘P3Management’ was introduced.

Other new topics such as ‘P3 Assurance’, ‘Reviews’ and ‘Provider Selection and Management’ were added.

### i) Portfolio Management

Portfolio management is “the selection and management of all of an organisation’s projects, programmes and related business-as-usual activities taking into account resource constraints” (APM, 2005, p3). Among the three English PMBoKs, only the APMBoK deals with this issue as an independent topic.

### ii) Topics relating to organisational roles

The following four new topics are concerns to linkage between projects and senior management’s or organizational needs and/or tasks.

- 1.5 Project sponsorship; “an active senior management role”(APM, 2006, p4),
- 1.6 Project office; “organisation’s project management needs”(APM, 2006, p4),
- 3.8 Issue Management; “concerns that threaten the project objectives and cannot be resolved by the project manager” (APM, 2006, p8), and
- 6.10 Governance of project management; “concerns those areas of corporate governance that are specifically related to project activities.” (APM, 2006, p14)

(The number of each topic is as is in the APMBoK fifth edition)

The topics of Project Sponsorship and Project Office define roles of each entity. Issue Management and Governance of Project Management are also topics that implicate tasks ‘beyond’ project managers’ responsibility. Whereas these four topics are about more goal-related than traditional project management topics, expression of these four topics are task/function-based, which describe roles for specific players in project management.

In the APMBoK sixth edition (2012), Governance (of project, program, and portfolio management) is promoted to the structural level. The sixth edition emphasises importance of P3Management in coordinating the disciplines of project, program, and portfolio management. Although P3Management is not selected as an independent topic, its concept is discussed throughout the APMBoK sixth edition. In P3 Assurance and Reviews, sponsor’s responsibility to meet stakeholder’s expectations is clearly stated. Furthermore, the role of project, program, and portfolio management in each topic is described in many of topic sections.

### iii) Provider Selection and Management

‘Provider Selection and Management’ defines long-term relationships with providers. Japanese management characteristics stress on stresses long term relationships between clients and contractors. An interesting point is that, while the P2M stresses on long-term relationships ‘with clients’, the APMBOK sixth edition introduces the same relationships ‘with providers’. The same contrast between the P2M and Construction Extension to the PMI-PMBOK®, which is explained in the above section, holds for the treatment of ‘clients’.

### (4) GAPPS

All units are a more objective expression of project managers’ responsibility from the point of the client’s view rather than merely descriptions of work processes. Descriptions of the six units are very clear in that they are described as project manager’s tasks in a particular management role.

Nevertheless, GAPPS does not include senior management roles, such as Portfolio Management and Governance of Project Management.

#### i) Manage Product Acceptance

‘Manage Product Acceptance’ unit includes many front-end topics such as Benefit Management, Requirement Management, Success, and Business Case. The unit also includes technology-related topics such as Technology Management, Value Management, and Design Management. It focuses on the ‘product’, i.e. the projects’ deliverables as well as their (products’) acceptance from clients who need the product for a specific purpose.

- **Hierarchy of goals to tasks in the P2M**

The P2M structure consists of three levels. Program Management is an integrative topic at the top level of the tower. Objectives Management is at the topic level of the tower. Task-related control topics follow these two levels. These are placed at the sub-heading level under Project Objectives Management. A hierarchy from the front-end topic to task-related topics can be seen and the relationship between goals and tasks is clearly displayed. In the P2M, goal-related topics are clearly emphasized over task-related topics.

Mr. Watanabe, one of the authors of the P2M, explained the P2M topic selection as followings:

“[The need for] project management topics in the PMI-PMBOK® is too obvious, because all knowledge areas [in the PMI-PMBOK®] aim to achieve one objective. As a result, we have pushed all of the PMI-PMBOK®’s topics into the single topic of Objectives Management. [Only] Risk Management and Organizational Management are treated as independent topics and have not been pushed into [the Objectives Management].”

(Watanabe, 2004, interviewed by the author)

Watanabe’s idea can be contrasted with the relatively long debates in the West over different project management models, that are PMI’s and European regarding if front-end issues such as Program Management and Portfolio Management should be contained in PMBoKs (Morris 1999, Morris and Pinto 2004).

The P2M (2001) is described with strong emphasis on front-end issues. The P2M includes Program Management and other strategic topics whose approaches are objective. Project Objectives Management and Project Value Management are such examples.

The APMBok fifth edition (2006) also stresses the importance of front-end issues by describing roles such as Project Sponsorships and Project Management Office that deal with and are concerned about front-end issues. These two topics imply not only the importance of front-end issue tasks but also that of the need for relationships among management or for integration between people responsible for front-end tasks and other roles such as traditional control topics. Morris’s “‘job family’ sharing a responsibility for the ‘management of projects’ ” (Morris, et al., 2006a, P.718) explains the rationale of the APMBok fifth edition that includes various management-level jobs. The above idea is further shaped in the APMBok sixth edition (2012). While there is focus on the importance of the governance of project, program, and portfolio management, these three disciplines remain as independent topics.

On the contrary, GAPPS (2007) does not priorities project manager’s role in front-end issues such as Program Management. The standard selected ‘Manage Stakeholder Relationships’ as one of the six units. The unit represents many strategic/front-end topics

such as Program Management, Benefits Management, and Goals, Objectives, and Strategies. Such topics are described from a project manager's viewpoint. The GAPPS's community notes that such front-end topics are necessary for project managers to manage relationships with projects' clients/owners. GAPPS stresses a need for other documents that address issues related to front-end tasks (GAPPS, 2007, Foreword).

- **Scopes of functions of defining individuals' roles in the three English PMBoKs**

The following is analysis of the PMBoKs in terms of their functions in defining 'roles' within project management practice.

The APMBOK fifth edition contains topics of role descriptions such as Project Sponsor and Project Management Office. In addition, the APMBOK sixth edition (2012) introduces the section of Interface. To this end, it concerns relationships among six different disciplines such as Accounting and 'Health and Safety'. Change Management and Operations Management, as roles of existing disciplines in project management practices, were added in the section of Delivery. The roles of certain key players in project management are described under these topics.

GAAPS excludes concepts/topics regarding descriptions of any professional roles in the topic list of the standard. The standard focuses on individual roles since it is designed for a specific role that is defined as "two levels of the role of project manager" (GAPPS, 2007, p.1).

Construction Extension to the PMI-PMBOK® excludes general management skills. It describes knowledge and tools of defining project's works as a project managers' primary function. In fact, most topics in Construction Extension to the PMI-PMBOK®, which includes Claims Management, are concerned with management activities to define works for project members and/or contractors. While Construction Extension to the PMI-PMBOK® is critiqued that reductionism and exclusive model, it could be interpreted as all inclusive model of defining works in projects, i.e. project control.

While the PMI-PMBOK® diligently describe topics for defining project works, it excludes other roles of project managers' activities such as 'general management responsibilities' and strategic issues of projects.



GAPPS expands its scope to main activities in the workplaces of individual project managers. The standard can be said that all inclusive model for responsibility of ‘individual project managers’.

The APMBok has broader scope in defining roles, which is for all principal responsibilities and/or professions in project management.

While the scopes of the above three PMBoKs are different to each one, these PMBoKs share the same view to define roles and responsibilities of individuals in projects.

- **Absence of issues of defining individuals’ roles in the P2M**

In the P2M (2001/2007), while overall knowledge for ‘project management professional’ is proposed, there is lack of clear definition of individual professional roles. Also, Project Management and Program Management are described within a single standard.

While PMCC defines four certification levels, these levels are not spread into different management roles, such as Portfolio Management and Program Management. Instead, a level of maturity in personal knowledge of Project Management is presented. To date, PMCC has neither published nor planned for information on an additional standard that introduce knowledge for individual project managers.

Although Crawford (2004a) allocated the P2M as the document for both ‘organisation’ and ‘individual projects’, the P2M is not used for the assessment of organizational capability.

Furthermore, the P2M includes very few issues of definitions of individual program managers and/or project managers’ roles.

The P2M was originally designed for national certification programs. It is not directly related to professional in organizations such as the English associations/communities that include PMI, APM, and GAPPS. According to Project Management Association of Japan (PMAJ), the certification programs were developed for the need of industry. Background of the development of the P2M is described as follows:

“...for Japanese industries that lag behind their U.S. and European counterparts in adoption of PM, it is of urgent necessity to train personnel who carries out PM in a practical manner.

For this purpose, we carried out promotion and distribution related activities for the project and program management standard guidebook (the P2M), held PM seminars, and formulated a PM certification system. We hope people in Japan and overseas will study the P2M to obtain PM certification and carry out PM to establish global competitiveness in various fields”.

(PMAJ, 2002)

The association is driven by both industry and government. Therefore, intension and needs of association to determine professional boundaries is assumed to be considerably weaker than in the context of the West. Generally speaking, in lifetime employment system, employees in the Japanese companies rarely change their companies. Core employees in the Japanese firms are trained through career pass in each firm. This context results in Japanese managers’ identity as a company’s general manager rather than sense of specialist’s carriers as seen in the West (Oliver and Wilkinson, 1992).

More crucially, management roles between senior management and middle management are not rigidly separated as Kanou (1997) pointed out.

In this situation, each company could have its own definitions of roles of project managers. When there is no need to establish profession in the field of project management, it is not a problem that definitions of roles of project managers are different to each other. At least, Japanese organizations and associations have less interest in determining clear boundaries for certain professional roles such as ‘project managers’ and/or ‘program managers’, unless Japanese managers work in international context.

In summary, although the P2M is used for individual certifications, role issues are next to nothing in the P2M. The following two contexts are thought of as these reasons. In Japan boundaries between management levels are not clear. Further, while core employees in

Japanese firms have a sense of member of their companies, professional communities are considerably weaker than in the West.

- **Summary of the analysis on Goals and Tasks topics**

The P2M, with three new topics, is more intensive in seeking goals, while absence of defining roles of individual project managers in the P2M is clearly contrasted to strong implication that the three English PMBoKs are influenced by the idea of divisions of management roles in project management (Bredillet 2007, Crawford, 2009).

Further, topics of roles and skills of particular management job were not selected in the strawman of Japanese PMBoK. The assumption (not hypothesis) that Japanese PMBoK should not have role issues is match to contents of the P2M at least for the last ten years.

Therefore, Goals and Tasks topics category can be an effective framework in a comparison of Japanese PMBoK and English PMBoK.

### 6.4.3 Social-relation topics

#### (1)P2M

##### i) Project Relationships Management

In the P2M, “Project Relationships Management” is selected as a topic. Project Relationships Management covers Partnering in JC-PMBoK (Supply-chain Management and Logistics in the UK). Contract Management is explained in this topic in terms of a method of maintenance of relationships.

Other than Project Relationships Management among Social-relations topics category, only Financial Management and Project Organisation are selected as topic level.

Many of other Social-relations topics, such as Procurement, Industrial Relations, and Bidding and Estimating are not even selected as sub-headings nor clearly mentioned in the text. Considering the PMI-PMBOK® and the APMBOK have selected these topics as principle topics, omission of these topics is a characteristic of the P2M.

#### (2) Construction Extension to the PMI-PMBOK®

Three of four extended topics in Construction Extension to the PMI-PMBOK®, Project Finance Management, Project Environment Management, and Project Claims Management, are related to social-relation topics. Although Construction Extension to the PMI-PMBOK® introduces these topics as construction specific topics, these topics are more supported from English managers than Japanese managers. Selection of these topics by Construction Extension to the PMI-PMBOK® is also closer to English managers’ selection than Japanese managers’.

The PMI-PMBOK® fifth edition added Project Stakeholder Management. The scope of the stakeholder includes all parties that concerned to the project, although primary focus is put on the member of Project Team.

It is not surprising that standards in the US and the UK, because both of them have Anglo-Saxon background, have common characteristics in selection of social-relations topics.

### (3) APMBoK

The APMBoK originally has richer coverage on Social-relation category. On the top of the which, the APMBoK fifth edition added two topics regarding relationships, which are Project Sponsorship and Project Management Office. This is intended to give emphasis to the role of the client as sponsor/project manager within Supply Chain Management (Morris, et al., 2005). In regard of strength of relationships with stakeholders, importance of relationships with those people who are interested in front-end issues of projects is particularly reinforced.

The APMBoK sixth edition reinforced relationships regarding to the following three categories:

- i) As a structure level, Setting defines relationships between P3Management and the host organisation.
- ii) As 'Provider Selection and Management', long-term relationships with providers is defined.
- iii) Relationships with professionals of six disciplines in the section of Interfaces are clearly stated. Needs to manage interfaces between project management team and the professionals of these distinctive disciplines are explicitly defined.

Thus, the APMBoK sixth edition further emphasised the relationships with various stakeholders.

### (4) GAPPS

#### i) Manage Stakeholder Relationships

GAPPS introduced 'Manage Stakeholder Relationships' unit. This unit is defined as to ensure "the timely and appropriate involvement of key individuals, organisations, and groups throughout the project." Many of front-end topics and human-related topics are in this section. All such topics are selected as issues to establish and maintain relationships with stakeholders. The stakeholders are thought to be not only as clients, but also other parties that is key individuals, organizations, and groups such as "team members, clients, sponsors, internal and external parties, decision makers, and others" (GAPPS, 2007, p.12).

- **Social-relations and bilateral (client-management) relations**

In regards of that integration is a subject of project management, Relationships Management between various professions/roles/aspects can be one of major aspects of

project management. For instance, Wenger (1998, p.109) sees project managers in an organization as specialists who are “brokering across boundaries between practices”.

In 2001, the P2M introduced Project Relationships Management that is about management of relationships with sponsors/clients. The standard elaborately describes relationships issues as one topic. While most description of Project Relationships Management in the P2M is about with clients/customers, other relationships topics such as Procurement and Claims Management are remained left behind. This fits the research data in that English managers had strong intention toward Social-relation topics than Japanese managers.

Construction Extension to the PMI-PMBOK® shows tendency of relatively strong awareness toward Social-relation topics with three related topics, which are Project Finance Management, Project Environment Management, and Project Claims Management.

In 2006, the APMBok fifth edition added roles of various positions such as project sponsors, project teams, and project management offices. Hence, the standard is richer in describing relation between these different roles in project management profession.

GAPPS (2007) selected Manage Stakeholder Relationships as one of main six units. By Manage Stakeholder Relationships unit, the standards stressed importance of relationships with clients/sponsors of the projects. GAPPS’s approach is to state ‘roles of project managers’ to manage relationships with clients/sponsors who deal with higher management issues.

The APMBok sixth edition (2012) explicitly introduced the section of Interfaces that has six distinctive management roles. Relationships issues with host organization as well as providers are also selected as topics.

The PMI-PMBOK® fifth edition (2013) added Project Stakeholder Management as its tenth knowledge areas. The topic treats not only relationships with project team members and sponsor, but also treats other various stakeholders such as client/customers, program manager, operational management, and others.

As for the APMBok and GAPPs, relationships with various positions are introduced; the relationships include with clients', sponsors', project teams', and contractors'. Among them, relationships with clients/sponsors of the projects are emphasized to show importance of dealing with front-end issues. The PMI-PMBOK® follows similar treat. It also relatively emphasizes project sponsor as well as team members and providers.

On the other hand, Project Relationships Management in the P2M is heavily inclined to the relationships with client/sponsor of projects leaving other relationships without related topics such as Procurement and Contract. In other words, P2M's relationship is about primarily bilateral relationships, while relationships in English PMBoKs are basically multi-directional relationships with additional emphasis on relationships with clients/sponsors afterword.

The background of the above discussion can be summarized that relationships issues are closely related to front-end issues, because front-end tasks are usually needed to be done as collaborative activities between management teams and clients/sponsors of projects. It was 2001 that the P2M firstly showed emphasis of this importance whereas having weakness in stressing other social relationships with other various parties, especially contractors, compared to the English PMBoKs.

- **Summary of the analysis on Social-relations topics**

Whereas the P2M is not explicit in selecting issue of relationships with various stakeholders, the P2M clearly show emphasis on importance on relationships with clients/customers.

For this category, Partnering was proposed in JC-PMBoK. This is endorsed clearly by the selection of Project Relationship Management by the P2M as well as Relationships Management in three English PMBoKs.

Social-relations topics category is thought to be effective as a framework in a comparison of Japanese PMBoK and English PMBoK.

#### **6.4.4 Uncertainty avoidance topics**

##### **(1) P2M**

Risk/Uncertainty is not contained while Risk/Peril is selected as Project Risk Management. Uncertainty avoidance is a tendency of people's attitude toward situation that the prospect is not clear. Management of such tendency is about meta- management framework. Such topics and contents are not included in the P2M.

##### **(2) Construction Extension to the PMI-PMBOK®**

Only stakeholder risk tolerance implies factor of uncertainty avoidance. If risk tolerance is intentionally managed, it would lead to management of attitude toward uncertainty. There is no implication of intension to manage attitude to uncertainty. In fact, management of attitude to uncertainty is considered as outside of core PM processes.

##### **(3) APMBoK**

In Risk Management, positive attitude toward uncertainty is recommended. The APMBoK fourth edition explains "Risk management should balance the upside opportunities with downside risks, doing so in an open, clear and formal manner" (APM, 2000, p22). The APMBoK fourth edition tries to encourage seeing opportunity side in addition to managing threat.

In the APMBoK fifth edition, Opportunity Management is combined with Risk Management. The APMBoK fifth edition defines Project Risk Management as management of uncertainty that contains both threats and opportunities; "Project risk management is a structured process that allows individual risk events and overall project risk to be understood and managed proactively, optimising project success by minimising threats and maximising opportunities" (APM, 2006, p5). Definition of Risk Management in the APMBoK fifth edition is defined as that is associated with opportunity and threat. Attitude toward uncertainty of the APMBoK fifth edition is more proactive than that of the APMBoK fourth edition.

This trend is continued to the APMBoK sixth edition as an introduction of Risk context. Whereas Risk technique deals with conventional technical aspect of Risk Management, "the Risk context describes the institutional and individual environment, attitudes and



behaviours that affect the way risk arises and the way it should be managed” (APM, 2012, p.182).

Thus, intentional management toward uncertainty is observed in the revisions of the last three revisions of the APMBok.

#### (4) GAPSS

There is no particular characteristic in GAPSS regarding this category.

- **Summary of the analysis on uncertainty topics**

Whereas P2M does not contain uncertainty management aspect, the APMBok treats both opportunity and threat. This tendency is the same as proposed in JC-PMBok.

There is difference on attitude toward uncertainty between the P2M and the APMBok at least for the last ten years. The APMBok has been more enthusiastic to deal with attitude toward uncertainty avoidance. Whereas the definition of the APMBok (the fourth through the fifth to the sixth edition) has been changed toward managing uncertainty, the P2M (1<sup>st</sup> and new edition) does not address on this matter. In terms of the difference in attitude toward uncertainty, the difference of data between Japanese managers and English managers matched to actual descriptions in PMBoks, although only the APMBok shows tendency of this category explicitly among three English PMBoks. It was also supported by the fact that there are members of APM community, such as Hillson and Webster (2006), who explicitly promote the intentional control of attitude toward uncertain events in project management practice. Compared to the APM community, the treatment of risks by Japanese community is far behind in terms of the above viewpoint.

Uncertainty avoidance topics category is effective as a framework in a comparison of Japanese PMBok and the APMBok, but not necessary with all English PMBoks.

### **6.4.5 Control topics**

#### (1) P2M

Project Systems Management, Project Organization Management, Project Information Management, Communication are selected as topics. Requirements Management, Project

Content/Scope Management and Performance Management are selected as sub-headings. Overall, control topics are well covered in the P2M.

#### (2) Construction Extension to the PMI-PMBOK®

Project Content/Scope Management and Communication Management (that deals with mainly information) are selected as topics level. Project Organization is contained in Human Resource Management. Systems Management, Performance Management, Requirement Management, are considered as environment of projects.

Management jobs regarding control topics are elaborately described in Construction Extension to the PMI-PMBOK®. Other topics such as Systems Management and Project Organization that are thought of as outside the management tasks are explained as 'environment' of project management processes. Such topics as the tasks of higher management levels are not well covered in Construction Extension to the PMI-PMBOK®.

#### (3) APMBoK

This category is treated as traditional topics of Project Management (APM, 2000, Morris et. al., 2006). Earned Value Management is selected as an independent topic in the APMBoK fifth edition as well as the APMBoK fourth edition. Among control topics only System Management has not been selected, since the topic was dropped from the APM third edition (Morris, 1999).

The APMBoK sixth edition further enriched control topics in terms of sophistication of professional knowledge such as Schedule Management, P3 Assurance and Review, and Provider Selection and Management. As for System Management, the APMBoK sixth edition reselected Mobilisation in terms of resource deployment that is needed for P3Management activities. Some topics in Governance in the APMBoK sixth edition, such as Infrastructure and Knowledge management, also include system thinking.

#### (4) GAPPS

There are two units that mainly contain control topics: Manage Development of the Plan for the Project and Manage Project Progress. In these two units, control topics are dealt with as project managers' activities. These two units are abstract concepts of control topics.

- **Enthusiasm to control topics**

The P2M treats many of control topics that include System Management, which is thought of as relatively complex, as well as traditional control topics such as Cost Control. The P2M has stratification of complexity from Program Management as a top of the tower structure, then Project Management as the second level of the tower structure, System Management as the third level that is topics level, and other control topics such as Cost Management and Schedule Management as the fourth level that is sub-headings level under the topic of Objective Management. The P2M is clearly influenced by system thinking. The P2M as a single standard is particularly enthusiastic to deal with issue of management of systems than other three English standards.

In the West on the other hand, influence of system thinking on project management subject is decreasing, though system issues are bases of the early development of project management (Crawford, Pollack, and England, 2007).

In fact, merged with Program Management, System Management has not been selected as a topic level of the APMBOK until its sixth edition reselected Mobilisation; because System Management is relatively complex, it was merged with Program Management in the APMBOK fourth edition update. As for the Construction Extension to the PMI-PMBOK®, it excludes some of control topics such as Systems Management and Project Organization as ‘environment’ of project management processes. PMI treats Program Management as different management roles. Program Management, Portfolio Management, and Project Management are clearly defined as separate standards for individual management roles. The above three topics are described as part of a system within an organisation. Portfolios and Programs are linked with higher management issues such as corporate strategy with Portfolio Management and Benefit and Return On Investment (ROI) with Program Management.

- **Summary of the analysis on control topics**

The research data that shows a Japanese manager’s tendency, which are more enthusiastic than English managers about control/planning topics. The tendency is congruent to the differences on treatment of control topics in the P2M and the three English PMBoKs.

There can be obtained implication that such Japanese managers' tendency might come from enthusiasm to system idea. This could have linkage with category of Japanese attitude that stresses Goals topics more than Tasks topics.

Control topics category is thought to be effective as a framework in a comparison of Japanese PMBoK and English PMBoK.

#### **6.4.6 Issues related to human factor**

##### (1) P2M

###### 1) Culture and Social issue

Culture and Social issue is treated in Project Communication Management.

The Project Communication Management in the P2M includes not only communication within organization but also communications between different social backgrounds for projects undertaken at international environment.

###### 2) Learning and Knowledge

Learning and Knowledge is treated in Knowledge Management that is a sub-heading of Value Management. Project Value Management treats Knowledge Management in terms of value creation through projects.

###### 3) Topics regarding managers' functions for organizing people

Team-building and Leadership are selected as sub-heading under Project Organization Management.

Personnel Management is only mentioned in Project Organization Management.

It can be understood that the P2M treats these three topics as Project Organization Management because organizations consist of people.

Conflict and Negotiation are only mentioned as activities for coordination with stakeholders under topic of Project Relationships Management.

###### 4) Other topics

Other human-related issues are not well covered in the P2M.

Ethics is introduced only in Program Management as one of 'Balanced overall value indicators'.

Trust is mentioned in Project Strategy Management.

Decision Making is not mentioned at all in the P2M first edition, though it is added to the P2M new edition (2007) as a sub-heading under the Project Strategy Management.

Most of human-related topics in the P2M are included in one of the following five topics: Project Strategy Management, Project Communication Management, Project Organization Management, Project Value Management, or Project Relationships Management.

In the P2M, Project Relationships Management and Project Communication Management treat main parts of human issues.

Project Communication Management especially focuses on communications with different countries that have different cultural backgrounds.

In Project Relationships Management, relationships with clients are emphasized. Issue of interfaces with clients is crucial for undertaking front-end issues of projects. Topics regarding interfaces with other than clients, i.e. social relation topics, such as Procurement and Stakeholder Management in terms of broader stakeholders' relations specifically with contractors, are not covered are not given strong attention. These results probably are closely related with section '6.4.2 Goals and Tasks topics' and '6.4.3 Social-relation topics'.

Leaderships and Team-building are not selected in terms of individual knowledge but as some of key elements that constitute teams' and organisations'. In the P2M topics of organizing people, which are concerned to defining roles and responsibilities of project members, are especially weak. Japanese firms rely on face to face meetings and exchanging tacit knowledge (Nonaka and Takeuchi, 1994, Davenport, 1998). Teams are formed by a sense of collective responsibility (Burnes, 2000) and decision is made based on consensus among teams and/or organisations (Stallworthy and Kharbanda, 1983). In such a context, topics that related to management of interfaces of individuals such as

Communication Management and Decision Making, Leadership, Conflict Management, and Negotiation are inevitably treated differently to the Western counterparts. Although Issues related to human factors in the P2M are highly prioritised. The treatment of these topics is different to the English PMBoKs.

### (2) Construction Extension to the PMI-PMBOK®

Construction Extension to the PMI-PMBOK® also excludes human-related topics from core knowledge areas because they are ‘general management skills’. Every topic in Construction Extension to the PMI-PMBOK® does not have independent human-related topics such as Ethics, Personnel Management, Leadership, Team-building, Decision-making, Conflict, Negotiation. Only Human Resource Management contains some of these factors. Team-building, for instance, is introduced only as a sub-heading. Negotiation is explained as a necessary skill for staff acquisition. While managing core process that the PMI-PMBOK® defines is main concern, other topics that deal with human factors are not covered. For instance, Communication Management in Construction Extension to the PMI-PMBOK® deals with information, while other PMBoKs contain human issues. Narrow scope of the PMI-PMBOK® in selecting topics of this category is due to the notion that mainly concerned to the idea of project management core processes that no other profession deal with.

Selecting Claims Management in 2003 was implication of the treatment of issues of relationships with contractors’ and/or subordinates’ matters. Human issues have been basically put outside the main topics because its emphasis on management of project work processes. In 2013, the PMI-PMBOK® fifth edition added Project Stakeholder Management. Project Stakeholder Management deals with management around the project team and the sponsor of the project. This is a real progress toward substantial coverage of human issues in the PMI-PMBOK®.

### (3) APMBoK

In the revision to the fifth edition, human factors are substantially enlarged. Behavioral Characteristics includes many of human factors that are trust, communication, influencing and negotiation, conflict management, problem solving, delegation and empowerment, motivating, and culture (Morris et al. 2006b).

Learning and Development is also added to define as the continuous development of capability of organisations. In the sixth edition, this issue is significantly enlarged by adding Knowledge Management, Communities of Practice, and Competence under a group of 2.2 Professionalism.

In the fifth edition, Ethics is also added as a topic of 'Professionalism and Ethics'. In the sixth edition, Ethics is selected as an independent topic as Ethics Frameworks, under the section of Professionalism.

The APMBok fifth edition has topics to describe various roles such as Programme Management, Portfolio Management, Project Sponsorship and Project Office as well as Project Management. Topic of 'Organisational Roles' also describes one of role issues. Thus, the APMBok fifth edition is a multi-role model. It can be said that the standard is designed as a platform for all project management professional families. The APMBok six edition further extended this factor. Six disciplines, which are Accounting, Health and Safety, Human Resource Management, Law, Security, and Sustainability, are identified to have interfaces with project management team. Having topics for various roles in project management, the APMBok fifth and sixth edition enlarged human-related topics. Topics for the human-related issues are needed to manage the interfaces between various professionals in projects.

#### (4) GAPPS

Most of human-related issues, which are Leadership, Negotiation, Personnel/Human Resource Management, Team-building /Development are grouped into 'Manage Stakeholder Relationships'. These topics are treated as technique to manage relationships with stakeholders.

GAPPS is defined to show functions of specific roles that is 'two levels of project manager'. As the standard explains, other roles such as program managers and portfolio managers are described as different standards. Since GAPPS describes project managers' competency, tasks of individual managers is central issue. Consequently, management of interfaces between those people who have various professional roles could be a main topic for PMBoKs.

- **Summary of the analysis on Issues related to human factor**

There are several aspects in human-related topics as the followings.

First, regarding relationships with others' roles and/or organizations, all PMBoKs selected Relationships Management. While the P2M has less emphasis on relationships with contractors' and/or subordinates, English PMBoKs give much attention to relationships with contractors. Instead, the P2M is the first PMBoK that selected Project Relationships Management with clients. This was shortly followed by other two PMBoKs as the selections of Relationships Management.

Second, regarding to Learning and Social issue, both the APMBOK and the P2M selected as a topic. In the data from Japanese managers implicated that this issue got much attention while control of people in terms of resource is not emphasized. In this regards, actual selection of topics in the APMBOK and the P2M show similar tendency.

Third, topics regarding organize people, such as Leadership and Team-building got less emphasis in the P2M. While English PMBoKs selects these topics, the P2M does not give much attention to this issue. The P2M treats these topics as that leaders and teams that constitutes of an organization. On the other hand English PMBoKs clearly show rationale in selecting knowledge and role for individuals. Therefore, Leaderships and Team-building, for instance, should essentially be selected as topics of these PMBoKs.

'Issues related to human factor' category is, if it is broken-down to the three sub categories, thought to be effective as a framework in a comparison of Japanese PMBoK and English PMBoKs. Since relationships issue is treated in Social-relation topics, 'Issues related to human factor' category can be represented as '**Issues Related to Organizing People**'.



**Table 6.9 (1/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Project Life Cycle**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extension
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
1. Goals, Objective/Success, Failure	Project Objectives Management		2.1 Project Success and Benefits Management	1.1 Ensure that stakeholder interests are identified and addressed 2.4 Confirm project success criteria	1.1.7 Success Factors and Maturity 3.2.1 Benefits Management	
2. Programs and Project Management	Programs Management Project Management	Portfolio Management (The Standard) Program Management (The Standard) Project Management	1.1 Project Management 1.2 Programme Management 1.3 Portfolio Management 6.10 Governance of Project Management	1.1 Ensure that stakeholder interests are identified and addressed	1.1 Governance 1.1.1 Project Management 1.1.2 Programme Management 1.1.3 Portfolio Management 1.2 Setting	Portfolio Management (The Standard) Program Management (The Standard) Project Management
3. Business Needs and Case	Programs Management		5.1 Business Case	1 Manage Stakeholder Relationships 2 Manage Development of the Plan for the Project 4 Manage Product Acceptance	3.1.1 Business Case	
4. Project Life-cycle	Project Objectives Management / Project Lifecycle		6.1 Project Life-Cycles 6.2 Concept 6.3 Definition 6.4 Implementation 6.5 Handover and Close-out 6.6 Project Reviews	5.1 Manage project start-up 5.2 Manage transition between project phases 5.3 Manage project closure	1.1.6.Life-Cycles	
5. Project Management Plan	Project Strategy Management		2.4 Project Management Plan	1 Manage Stakeholder Relationships 2 Manage Development of the Plan for the Project	1.2.3 Strategic Management	
6. Value Management	Project Value Management		2.3 Value Management	1.3 Manage stakeholder communications 4.3 Secure acceptance of the product of the project.	3.2.6 Solutions Development	

**Table 6.9 (2/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Project Environment**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extension
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
7. Financing	Project Finance Management	15. Project Finance Management	5.3 Project Financing and Funding	2 Manage Development of the Plan for the Project	3.4.2 Funding 3.4.3 Investment Appraisal	15. Project Finance Management (in Construction extension)
8. Law Awareness			5.5 Legal Awareness 6.9 Methods and Procedures	2.2 Ensure the plan for the project reflects relevant legal requirements	4.4 Law	
9. Marketing and Sales			5.2 Marketing and Sales	1 Manage Stakeholder Relationships 4 Manage Product Acceptance		
10. Resource Management	Project Resources Management	9. Project Human Resource Management	3.3 Resource Management	3 Manage Project Progress	3.7 Resource Management 3.7.2 Mobilisation	9. Project Human Resource Management
11. Environmental/Sustainable Development		14. Project Environment Management	1.4 Project Context	1 Manage Stakeholder Relationships	4.6 Sustainability	14. Project Environment Management (in Construction extension)
12. Economical Environment/Impact			1.4 Project Context		1.2.1 Environment	
13. Stakeholder/Political Environment			2.2 Stakeholder Management	1.3 Manage stakeholder communications 1.4 Facilitate external stakeholder participation	1.2.1 Environment 3.1.2 Stakeholder Management	13. Project Stakeholder Management

**Table 6.9 (3/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Project Execution Strategy**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extension
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
14. Safety/Health		13. Project Safety Management	2.7 Health, Safety and Environmental Management	2 Manage Development of the Plan for the Project 3 Manage Project Progress	4.2 Health and Safety	13. Project Safety Management (in Construction extension)
15. Quality	Project Objectives Management/ Quality	8. Project Quality Management	2.6 Project Quality Management	4.3 Secure acceptance of the product of the project	3.6 Quality Management 3.6.1 P3 Assurance 3.6.2 Reviews	8. Project Quality Management
16. Cost Control	Project Objectives Management/ Cost Control	7. Project Cost Management	3.4 Budgeting and Cost Management	2 Manage Development of the Plan for the Project 3 Manage Project Progress	3.4 Financial and Cost Management 3.4.1 Budgeting and Cost Control 4.1 Accounting	7. Project Cost Management
17. Schedule	Project Objectives Management/ Schedule Project Objectives Management/ Earned Value Management	6. Project Time Management	3.2 Scheduling 3.6 Earned Value Management	2 Manage Development of the Plan for the Project	3.3 Shedule Management 3.3.1 Resource Scheduling 3.3.2 Time Scheduling	6. Project Time Management
18. Risk/Peril	Project Risk Management	11. Project Risk Management	2.5 Project Risk Management	2.3 Document risks and risk responses for the project. 3.2 Monitor risks to the project	4.5 Security	11. Project Risk Management
19. Risk/Uncertainty		11. Project Risk Management	2.5 Project Risk Management	2.3 Document risks and risk responses for the project 3.2 Monitor risks to the project	3.5 Risk Management 3.5.1 Risk Context 3.5.2 Risk techniques	11. Project Risk Management

**Table 6.9 (4/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Technology**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extention
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
20. Research and Technology Management			4.4 Technology Management 4.6 Modelling and Testing	4 Manage Product Acceptance		
21. Design Management			4.2 Development	4.1 Ensure that the product of the project is defined 4.3 Secure acceptance of the product of the project	3.1.5 Planning	
22. Change Control	Project Objectives Management/ Report and Change Control (p257)		3.5 Change Control 4.7 Configuration Management	4.2 Ensure that changes to the product of the project are monitored and controlled	3.2.2 Change Control 3.2.3 Configuration Management	
23. Phasing				2 Manage Development of the Plan for the Project		
24. Estimating			4.3 Estimating	2 Manage Development of the Plan for the Project		
25. Value Engineering			4.5 Value Engineering		3.2.6 Solutions Development	

**Table 6.9 (5/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Industrial Issues**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extension
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
26. Industrial Relations						
27. Contract Management					3.7.1 Contract	
28. Bidding					3.7.4 Provider Selection and Management	
29. Partnering	Project Relationships Management			1 Manage Stakeholder Relationships	3.7.4 Provider Selection and Management	13. Project Stakeholder Management
30. Procurement		12. Project Procurement Management 16. Project Claims Management	5.4 Procurement	1 Manage Stakeholder Relationships 2 Manage Development of the Plan for the Project	3.7.3 Procurement	12. Project Procurement Management 16. Project Claims Management (in Construction extension)
31. Inter-sectional Cooperation				2 Manage Development of the Plan for the Project		

**Table 6.9 (6/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Control/Organisation/System**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extension
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
32. Systems Management	Project Systems Management				3.7.2 Mobilisation	
33. Requirement Management	Project Objectives Management/ Requirement/ Delivery Management		4.1 Requirement Management	4 Manage Product Acceptance	3.2.5 Requirement Management	
34. Project Content/Scope Management	Project Objectives Management/ Scope Management	5. Project Scope Management	3.1 Scope Management	2 Manage Development of the Plan for the Project	3.2 Scope Management	5. Project Scope Management
35. Performance Measurement	Project Objective Management/Earned Value Management		3.6 Earned Value Management	3.1 Monitor, evaluate, and control project performance. 6.2 Evaluate the project in accordance with plan	3.1.2 Control	
36. Project Organisation	Project Organization Management		1.6 Project Office 6.7 Organisational Structure 6.8 Organisational Roles	2 Manage Development of the Plan for the Project	1.1.4 Infrastructure 1.2.2 Operations Management 2.1.3 Delegation 3.1.4 Organisation	
37. Information Management	Project Information Technology Management		3.7 Information Management and Reporting	1 Manage Stakeholder Relationships 3 Manage Project Progress	3.1.3 Information Management	
38. Communication	Project Communications Management	10. Project Communications Management	7.1 Communication	1 Manage Stakeholder Relationships 3 Manage Project Progress	2.1.1 Communication	10. Project Communications Management

**Table 6.9 (7/8): Topics selected in PMBoKs during 2001 – 2013**

**Topics in Human Issues**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extension
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
39. Ethics			7.9 Professionalism and Ethics		2.2.3 Ethics Frameworks	
40. Personnel Management			7.6 Human Resource Management	1 Manage Stakeholder Relationships	2.2.2 Competence 4.3 Human Resource Management	
41. Leadership			7.3 Leadership 7.7 Behavioural Characteristics	1 Manage Stakeholder Relationships 3 Manage Project Progress 4 Manage Product Acceptance 6 Evaluate and Improve Project Performance	2.1.4 Influencing 2.1.5 Leadership	
42. Team-building	Project Organization Management / Project Teambuilding (p187)		7.2 Teamwork	1 Manage Stakeholder Relationships	2.1.7 Teamwork	
43. Decision-making			6.7 Organisational Structure		3.1.4 Organisation	
44. Conflict			7.4 Conflict Management	1 Manage Stakeholder Relationships 3 Manage Project Progress	2.1.2 Conflict Management	
45. Negotiation			7.5 Negotiation	1 Manage Stakeholder Relationships	2.1.6 Negotiation	
46. Learning & Knowledge	Project Value Management / Knowledge Management (p351)		7.8 Learning and Development	6.3 Capture and apply learning	1.1.5 Knowledge Management 2.2.1 Communities of Practice 2.2.4 Learning and Development	
47. Culture & Social Issues	Project Communications Management		7.7 Behavioural characteristics		2.1.4 Influencing	
48. Trust			7.7 Behavioural characteristics			

**Table 6.9 (8/8): Topics selected in PMBoKs during 2001 – 2013**

**Additional topics (Topics that JC-PMBoK has no categories.)**

JC-PMBoK	P2M	Construction Extension to PMI-PMBOK®	APMBoK 5th edition	GAPPS	APMBoK 6th edition	PMI-PMBOK® 5th edition & Construction Extention
produced in 2001	published in 2001	published in 2003	published in 2006	published in 2007	published in 2012	published in 2013
			1.5 Project Sponsorship		1.1.8 Sponsorship	
			3.8 Issue Management		3.2.4 Change Management	

## **6.5 Discussion on meanings and roles of PMBoKs for Japanese managers**

### **6.5.1 An explicit model of what Japanese managers know and Comparison to different models**

As stated in Chapter 1, management practice in the Japanese construction industry is not clearly recognized. Individual Japanese managers also need to have explicit awareness to what they are managing and hence, what they are learning from experience.

In this section, the roles of a Japanese PMBoK for Japanese managers are discussed. For this purpose, the roles of individuals and implicit learning are to be examined as the followings:

Firstly, the roles of individual Japanese managers in Japanese social context should be examined, because what they can learn from experience is closely linked with what and how they are supposed to do and/or think as an individual manager.

Secondly, implicit learning should be examined, because meaning of having PMBoKs for Japanese managers is known from the gaps between what they are learning without explicit guides and what they can additionally learn using such an explicit guide.

### **6.5.2. Hypothesis of Japanese groupism approach**

In this section, general Japanese management theories regarding Japanese groupism approach, which is contrasted to professionalism in the West, are examined. Then these



theories are examined if they are fit to the research results, which are led to the development of the research results.

Adopting Haitani's (1990) description of characteristics of the Japanese groupism<sup>ii</sup> as well as definitions suggested by other authors<sup>iii</sup>, this research defines the Japanese groupism as follows:

- The Japanese groupism is the tendency for individuals to think and act as members of a group in a manner that emphasizes cooperation (*wa*) among members. Japanese groupism resists the centralization of power. Instead, the whole group forms a complex power centre.

From Western (non-Japanese) point of view, the Japanese are seen as “an unusually homogeneous ethnic group” (Whitehill, 1991, p.51). The sense of such emotion is expressed as ‘*amae*’, a word in Japanese language, which is a good example that expresses interdependency of which does not exist in English language (Whitehill, 1991, Doi, 1971).

Nonaka and Takeuchi (1994) also point out that Japanese individuals are complement with each other. The nature of relationships between individuals, which is ‘Oneness of self and other’, is differentiated from a dichotomic nature in the relationships among individuals in the West. “While Western societies promote the realization of the individual self as the goal of life, the Japanese ideal of life is to exist among others

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<sup>ii</sup>Haitani (1990, pp.238-242) summaries Japanese groupism as having seven key characteristics:

- “(1) [Japanese] individuals find identity and a sense of security through affiliation with a group
- (2) [Japanese groupism] is the hierarchical relationship among its members that is based on seniority.
- (3) [Japanese groupism] stresses relationships of harmony and cooperation (*wa*). Members and the group are *isshin-dotai* (one mind, same body).
- (4) [The Japanese have a tendency towards] exclusivism, or the insider-outsider mentality.
- (5) [The Japanese prefer] rank and status consciousness ... Rank consciousness translates into a keen sense of rivalry among individuals and groups for higher rank and status within a larger group.
- (6) The Japanese are averse to centralization of power. The whole society consists of a complex of a power center.
- (7) The Japanese take the phenomenal world as absolute. ... They tend to regard apparent reality as reality.”

<sup>iii</sup> Dictionary.com defines groupism as “the tendency to conform to the general thinking and behaviour of a group” (groupism. (n.d.). Dictionary.com Unabridged. website: <http://dictionary.reference.com/browse/groupism>

Merriam Webster defines groupism as “the tendency to think and act as members of a group :the tendency to conform to the cultural pattern of a group at the expense of individualism and cultural diversity” website: <http://www.merriam-webster.com/dictionary/groupism>

harmoniously as a collective self. The natural tendency for the Japanese, to work for others means to work for oneself” (Nonaka and Takeuchi,1994, pp.31-32).

Organizational decision-making called *ringi* is also the one that shows Japanese groupism approach. Although decisions are made at certain management levels, Japanese organizational decision making is done through the forming every management level’s consensus. It reduces risks of resistances to the decision when the actions are implemented (Oliver and Wilkinson, 1992, p.52).

Many Japanese organizations have a tendency towards groupism (Haitani, 1990). In particular, team working is a typical Japanese management style, which is usually contrasted with Western individualism and professionalism.

This study tries to explain how the Japanese groupism approach can affect different results in the selections of topics between the Japanese P2M and the English PMBoK approach.

Japanese managers are inclined to regard holistic systems more important than what their Western counterparts do. Therefore, P2M could be thought of as a groupism approach that defines all the roles of the project management professional family within a single standard without establishing clear boundaries between different management roles. This explanation fits the research results. For example, while some Japanese managers answered that no single individual has the ability or responsibility to answer the questions, there was no specific opinion regarding role issues within Japanese project management.

The knowledge of relatively complex systems, such as Program Management, can be accepted as a necessary concept requiring a holistic system rather than enthusiastically discussing the definition of the roles of each personnel. In this context, Japanese organizational goals are relatively more easily shared between all management levels. This view is supported by the research data, which shows that many of the respondents referred to their knowledge of the following three systems/entities: an organization, an industry, or a society.

With the groupism approach to the relationships between individuals, Japanese managers tend not to select some of the human-related topics based on the premise that a dichotomic nature underlies the relationships between individuals such as Negotiation and Conflict Management.

There are five categories that explain the differences between Japanese and English managers. Meanwhile, the groupism approach is thought to be relevant to four out of these five categories. The only exception is ‘control of attitude toward uncertain avoidance’ category. The subsections that follow describe how the five categories are extended in relations to the groupism approach.

#### (1) Goals and Tasks, Relationships Management, and Roles of Managers

Rather than defining individual roles, Japanese managers are more willing to act as a self-management team. These teams act together to achieve their goals, which are mainly defined by themselves. In this situation, organizational goals are prioritized by the members of these organizations and teams. In addition, the management of the relationships with clients and/or customers is given priority for the defining, and revising, their goals. Meanwhile, defining the subordinate’s and subsidiary’s work does not receive much attentions in the groupism approach.

#### (2) Social Relationships and Bilateral (i.e. Client Management) Relationship

By the groupism approach, individual roles are determined in the relationships between people in a groupism approach. While there are many relationships to manage within project management, Japanese management pays particular attention to the relationships with clients. Accordingly, other relationships, such as Procurement, Contract Management, and Legal awareness, do not receive much attention.

#### (3) Control of Attitude toward Uncertain Avoidance

To some extent, a difference in the degree of attitude to accept uncertainty is observed in the selection of topics in PMBoKs. However, attitude to accept uncertainty is not thought of as relevant, especially with regard to the differences between the groupism approach and professionalism approach.

#### (4) Enthusiasm to Control Topics

The groupism approach pays considerable attentions to systems thinking, which can be related to high awareness of organizational, industrial, and social knowledge and to knowledge related to individual roles. It may also be related to a tendency to avoid risks that is brought about by planning.

#### (5) Issues Related to Organizing People

In Japanese organizations, individuals are regarded as elements of a team and of an organization rather than being seen as independent professionals. Furthermore, knowledge and skills such as negotiation and leadership, which are based on the premise that there is dichotomy in relationships between clearly separated individuals, are not selected as a part of the main topic.

### **6.5.3. Implicit learning, learning difficulty, and roles of explicit standards**

Schön (1983) pointed out that rethinking practices in daylily works is difficult for practitioners because “the practitioner has “over-learned” what he knows” (Schön, 1983, pp.60-61).

Over-learning is also applicable to social experiences. For instance, Turner (2000) observed how the Japanese construction industry is excellent in keeping to the original schedule. He explains such Japanese practice is resulted from (1) customers’ pressure; “a building even one day late; they would lose face and lose business” and (2) Procedures of daily patterns of work are standardized throughout Japan; “The day begins with a fixed routine of stretching exercises learnt at school and practiced daily throughout Japan” (Bennett, 2000, p189). The above two points are too obvious for the most of Japanese managers to have awareness as explicit management practices because both elements are somewhat socially embedded. It would be difficult for the most Japanese managers if he/she is asked to explain reasons of such Japanese management practices to foreigners in an explicit manner. Accepted as social customs, to think of alternative ways became harder for the most Japanese managers. It could be considered as over-learning of management-related practices at a social level.

Through examination of Japanese managers’ perceptions toward an explicit guide to their own project management practice, it was implied that Japanese managers access to their

own social and organizational knowledge. It was also implied that many Japanese managers lack explicit awareness to management practice as well as a holistic picture of project management. We need to understand the system(s) to restructure and/or utilize the systems (*SEIDOs*).

If effects of implicit learning are too strong, it leads to over-learning and hence, difficulty for alternative thinking, as Schön (1983) explained. The research data implies that an explicit guide would be helpful for the Japanese managers to overcome such learning difficulty.

#### **6.5.4 Impacts of explicit guides for Japanese managers to learn project management**

There are at least the following two levels of learning points for Japanese managers that were more explicitly presented by the research. These two learning levels are (1) individual level and (2) social level.

##### **(1). Individual level**

A strawman with fifty key project management topics were distributed to some hundreds Japanese managers. From 138 individual managers' responses, the following feedbacks related to implicit learning were obtained.

- 1) Some Japanese managers said that topics were good to reflect past experience that had not been explicitly reflected without any explicit guide.
- 2) Many respondents insisted that the Japanese construction system generally called '*SEIDO*' is not explicitly recognised. Many people think that *SEIDO* should be changed and Project Management Bodies of Knowledge would be necessary guides for Japanese managers to have awareness to the philosophy that constitute the *SEIDO*.
- 3) For some experts, all topics are thought to be undoubtedly important. For such experts, all topics are even too commonly known to discuss as explicit professional knowledge. However, some of these topics are not commonly recognised for many other Japanese managers. Such Japanese managers need to recognise and develop their knowledge in project management practice.

Many topics that some experts regarded as Japanese common knowledge were not commonly owned for all Japanese managers. Although, generally speaking, the Japanese tend to think that there is commonly shared knowledge among most the Japanese managers, such an assumption was not applicable to knowledge of project management.

Mr. Watanabe, a Japanese project management practitioner and one of co-authors of the the P2M explains that:

“Each topic (in the P2M) such as, say finance management or so, is not new. (Japanese practitioners) usually say that ‘we all know all terms and contents (and so what). (the P2M is) merely a list of such well known topics.’ But gradually, every community’s member is changing their view to the P2M. They have become to evaluate it only after successful project cases studies are explained using the P2M’s words. ... So we are gathering successful projects cases (to explain using the P2M). The more projects were explained, the more community members appreciate the P2M.”

(Watanabe, 2004)

Thus, topics in the P2M are used as the language of Japanese project management practices. By using a PMBoK, such as the P2M, Japanese managers can be aware of what they know and experienced in the context of team working or organisational practices. PMBoKs can foster Japanese managers’ learning with explicit awareness to their knowledge and experiences.

## **(2). Social level**

As the social level, through the comparison in this chapter, the aforementioned five categories were identified and developed. Among the five categories, ‘Goals’ and ‘Relationships’ were selected as an element of structure or a topic of PMBoKs after 2001.

The above five categories are thought to be useful when Japanese managers understand their own tendency in the treatment of project management topics compared to the Western counterparts. It could also be used to understand and/or maintain of a holistic management system of a Japanese organization, the Japanese government or even the Japanese construction industry.

Then, through the examination of the P2M and comparison with other Western PMBoKs, the professional approach in rationale of making Western PMBoKs was clearly contrasted to the groupism approach of the Japanese organizations and/or society, although the groupism approach is still a hypothesis.

As a hypothetical groupism approach, the P2M proposed a framework of project management knowledge in the organizational context. Within the Japanese project management association, many people have accepted the P2M as a material for the individual learning and common language among those who have interests in the Japanese project management.

Meanwhile, in Japan discussions on the roles of individual managers in project management are left behind. For Japanese organizations and project management communities, it is a theme to define roles of individual managers more clearly in project management. To do so, merits to define roles of individual managers in Japanese organizations should be discussed and researched more by Japanese organizations and academics.

Japanese practitioners and academics should clearly recognize, manage, and research the tension between managers' awareness toward roles of individual managers and functions of a holistic system of an organization. In such a context, PMBoKs, if intentionally used, are very useful for Japanese managers' reflective learning on their project management practice.

The above points are useful for not merely the issues of the development of PMBoKs. They are very important for Japanese practitioners and academics, because many of knowledge could be gained through organizational/social learning, which is tacitly accumulated to individuals and there is only little chance to doubt and to reform their systems. For Japanese organizations and project management communities, PMBoKs are useful, perhaps necessary, maps to reconsider a system that most of Japanese individuals are 'participating' (Wenger, 1999) to the practice.

## **6.6 Summary**

In this chapter, data regarding the agreement on the topics for PMBoKs from the Japanese managers and the English managers are compared. Through the comparisons, five categories of difference were identified. Using the five categories, some actual selections of the topics in existing PMBoKs during 2001 – 2013 that are the P2M and other three English PMBoKs were examined. A hypothesis regarding the relation between the Japanese groupism approach and the selection of the topics in PMBoKs was proposed. Finally, meanings of making and using a PMBoK for the Japanese managers were discussed.



## **Chapter 7 Conclusions: research findings and further study**

### **7.1 Introduction**

In this chapter the research findings are summarised in line with the research questions that were presented in Chapter 4. Then, impacts of the research findings on the theory of PMBoKs are explained. Finally, the limitations of the research as well as opportunities for further research are discussed and proposed.

### **7.2 Research findings**

#### **7.1.1 Topics that constitute the Japanese PMBoK (in the Japanese construction industry)**

This section reviews the answers to the research question (1). In Chapter 4 a hypothetic model of a Japanese PMBoK in construction sector was proposed as a ‘straw man’. The straw man was then tested by the questionnaire and the interviews to Japanese managers. In the questionnaire, the following questions were asked:

- (1) If each topic is important or not for their projects.
- (2) If there is any missing topic in the straw man for their projects.
- (3) How they see such a list of topics and definitions to manage projects (i.e. a PMBoK)

From the response of 138 individuals from 77 companies, a potential Japanese PMBoK in the construction industry was proposed (see Table 5.18 in Chapter 5).

In Chapter 5, the data was analysed. Coverage of topics is relatively broad. It is similar to the APMBOK and other European PMBoKs than the PMI-PMBOK®.

Through the qualitative data of the questionnaire and the interviews, Japanese managers’ views toward an explicit guide for project management were also analysed. It was observed that Japanese managers were relatively unfamiliar to deal with explicit knowledge regarding management topics (see chapter 5).

Further, as explained in Chapter 6, the roles of PMBoKs as explicit management guides for Japanese managers were explained as individual level and social level. PMBoKs foster explicit awareness of individual managers. In addition, a Japanese PMBoK is

helpful for recognizing of tacit learning of organizational and/or social knowledge that would helpful in reconsidering Japanese customs and systems in the industry.

### **7.2.2 Implications from difference of selection of topics of PMBoKs between Japanese managers and English managers**

In this section, the conclusion regarding research question (2) is presented.

In the first half of Chapter 6, by conducting a study comparing the situations in Japan and the UK, different approaches to project management were found which had the following implications:

#### (1) Goals and tasks,

The fundamental differences between Japanese managers and English managers are in respective attitudes toward goals and tasks.

- Japanese managers have a stronger awareness to a ‘goal idea’.
- English managers have a clearer awareness to a ‘task idea’.

#### (2) Social-relations topics

English managers had more awareness of dealing with socially related topics such as law, contracts and procurement, than Japanese managers. Japanese managers will be required to deal more with such topics in the global market.

#### (3) Uncertainty avoidance

Japanese managers were weak at dealing with uncertainty. They need to be more aware of this topic.

#### (4) Control topics

Japanese managers were primarily keen on planning, time, quality, and performance measurement. This tendency was probably related to the above-mentioned strong awareness of the goal idea.

#### (5) Issues related to human factors.

There is no significant implication in this comparison.

It must be mentioned that there was difference between Japan and the UK in the degree of maturity of project management community. At the time the data was taken, there were not established project management community in Japan compared to the UK. English managers had the APMBok third edition. On the contrary, most Japanese managers had no PMBoK when they responded to the questionnaire. When English managers chose topics for their PMBoK, most of them have seen literature such as their certification programs and detail explanation through text books. In this sense, the English managers were supposed to have more concrete images of each topic compared to Japanese managers. Japanese managers need to select from topics that were explained using only abstract explanation in the questionnaire.

Nevertheless, to respond to the questionnaire, the Japanese managers are thought to draw upon their practical knowledge whether gained individually or organisationally experienced. Therefore, the results of the comparison between the two groups can be considered valid. Project management should reflect knowledge of both contexts. A mixture of these two different approaches would lead to a more generic project management approach.

In the last half of Chapter 6, the topics selected for the PMBoKs during 2001-2013 were analysed. The aforementioned five factors were further examined through the comparison. The result of the analysis can be summarised as the following categories that can be thought of as an effective framework in a comparison between Japanese and English PMBoKs, of which detail is defined in section 6.5.2.

- (1) Goals and Tasks, Relationships Management, and Roles of Managers
- (2) Social Relationships and Bilateral (Client-Management) Relationships
- (3) Control of Attitude toward Uncertain Avoidance
- (4) Enthusiasm to Control Topics
- (5) Issues Related to Organizing People

By the above categories, differences between Japanese and English PMBoKs can be understood better.

### **7.2.3 Roles of PMBoKs for Japanese managers and the implications for the professionalization of project management in the West**

This section discusses the conclusion regarding the research question (3). In the first half of this section, interactions of Japanese management practices to the development of PMBoKs are briefly summarized. Then, the roles of PMBoKs for Japanese managers are discussed.

PMBoKs' approach was firstly introduced in the West from the PMI-PMBOK®'s control model. Two primary questions have been asked within project management communities and project related industries: (1) what is project management, and (2) what are roles of project managers. Then, European models were produced with broader coverage of knowledge areas. In such PMBoKs, topics of project management were expanded to the external issues such as Project Context, People issues, and other middle management topics.

Academics in the West have studied Japanese management styles, which are based on their unique social background. In fact, there were some implications that project management communities have taken some essences of the Japanese management practices such as Quality Management (Stallworthy and Kharbanda, 1983), Partnering (Bennett, 1995/2000), and Team Building (Stallworthy and Kharbanda, 1983, Bennett, 2000) as parts of their discipline. All of these Japanese management styles are based on owner's view and/or groupism, and therefore, it is matter of course that the above mentioned Japanese oriented management issues were taken into account in the P2M.

In regards to a contribution of the P2M to project management communities in the West, the Japanese community had no hesitation in treating front-end issues as project management topics. The Japanese community was relatively free from tensions regarding issues of professional boundaries.

In the West, there are, to some extent, established management programs such as Master of Business Administration (MBA) and/or general top management. The existence of other established management roles is not irrelevant: the western project management communities have had long debates on whether PMBoKs should include Program

Management, Strategy, and other front-end oriented topics as knowledge and skills for project managers.

In Japan, professional boundaries such as between middle management and top management are far looser than the West. Such boundaries, regarding management tasks in particular, are thought to be determined within the relationships among those managers who share the boundaries. Middle managers' tasks in Japanese organizations are described by Nonaka and Takeuchi (1995) as 'up and down management', which is time consuming in managing processes to get consensus for organizational strategies of all members in his/her organization.

Accordingly, when the Japanese community created the P2M, their primary question was "what is 'we Japanese' project management knowledge?" The question implies a sense of a groupism approach and can clearly be contrasted to the question by the Western communities when they try to define roles and/or functions of individual project management professions that might be linking to a hypothesis that "a public ideology that pose the question 'what are we all here for?' and believed that the answer was to achieve our best selves" (Whitty and Schulz, 2007, p.16). The above philosophic difference in project management will make differences in the selection of project management topics.

With the groupism approach, a unique PMBoK model was proposed as P2M by the Japanese community. P2M is unique in that role issues are not prioritized in the selection of topics. This characteristic is interrelated to the Japanese community's willingness to treat Program Management and Project Management as a single discipline. Stimulated by the first Japanese PMBoK, the discussions in the West went forward that led to adding the matters of governance and integration of projects, which includes Program Management and Portfolio Management.

Another aspect in which the Japanese showed their characteristics in project management is the way of managing interfaces between individuals under an overall sense of a groupism. Team Building, Partnering, Quality management are examples of the use of group works for creating knowledge. Project Relationships Management directly treats this issue. Project Communication Management in the P2M treats face-to-face meetings

between individuals rather than issues of management of information as is in Communication Management in the PMI-PMBOK®.

Crawford (2004) and some others (Gao, Feng, and Wang, 2007) show concerns to the threat of having fragmented PMBoKs as a result of competition between project management associations. In fact, the P2M is one of the fragmented BoKs. What then the P2M can contribute toward a generic model of PMBoK? If the P2M has provided groupism approach as a unique philosophy of a PMBoK, it should be useful to discuss a global PMBoK.

In turn, Japanese managers have learnt a lot from the English explicit approach in management practices. Risk Management definitely comes from the West. Very few Japanese managers deal explicitly with risks. They normally avoid risks as much as possible. Japanese managers have learnt and will learn the sense of risk taking from the West.

Defining an individual's tasks is also relatively unfamiliar to Japanese managers. Task related concepts represented as some control tools, such as Work Breakdown Structure, originate from Western management. Strong intention to task-related issues is probably related to the enthusiasm in defining roles of Leaderships, Sponsorships, and other key functions in project management.

Recognizing differences between the groupism approach and the professional approach as well as its relationships with the afore-mentioned five categories, Japanese managers can take their management practice deeper. It would also be helpful for further development of PMBoKs.

#### **7.2.4 Impact of research findings on theories of PMBoKs**

##### **Different selection of topics in PMBoKs among different ideas for professionals**

This research explored a PMBoK outside the Western professional context. It showed that the Japanese groupism approach could lead to different selections of topics of PMBoKs compared to the English professional approach. This suggests that differences in professional ideas and individual roles in management could affect the selection of

topics in PMBoKs. For this inquiry, a methodology was developed, as shown in the following section.

### **Developed methodology to show differences between (Japanese and English) PMBoKs**

This research focused on the differences in the selection of concepts in PMBoKs between Japanese and English managers. It comprised the following three steps:

(1) A potential Japanese PMBoK was proposed referring existing concepts in PMBoKs and literature. The model was then tested using a questionnaire given to Japanese managers. It asked if each concept is used in practice and if there is any missing concept in the model.

(2) The result from step 1 was then compared with the data from the same survey in the UK, completed by English managers. This comparison displays a snapshot of the differences in 1999, when the survey was conducted. The differences fall into five categories (see section 7.1.2).

(3) The above five categories were then compared with actual selections of topics in PMBoKs in the last ten years. The comparison enabled researchers to review the development of PMBoKs as well as verify the five categories as a meta-framework for comparisons among PMBoKs.

These three examinations have different time scales. First, modelling a potential PMBoK involves examining the past language by referring to the literature and existing PMBoKs. Second, the questionnaire is an examination of the current language use at a certain time. Third, monitoring selections of topics is an ongoing process over a certain period of time.

The above research processes produced three research outputs. These are discussed in the following sections.

### **Validity of proposed topic of JC-PMBoK**

In this research, JC-PMBoK was proposed as a model for the Japanese construction sector in 2001. The selection of topics is broader and includes some new topics:

Partnering (Relationship Management with clients), Learning and Knowledge, Culture and Social Issue, Environmental/Sustainable Development, Ethics, and Risk (in terms of uncertainty). Many of these topics are later selected in actual PMBoKs, although there were some variations among different PMBoKs. As shown below, the JC-PMBoK model proved to be effective for comparisons among different PMBoKs.

### **A meta-framework for comparing of PMBoKs**

In past researches, the differences between the P2M and English PMBoKs were not fully explained (see for instance Crawford, et al., 2007). Crawford's (2004a, p. 1152, 2009, p.285) categorisation of PMBoKs is one of few effective meta-frameworks to analyse PMBoKs. In this research, a hypothetical framework was proposed on the basis of the data available in 2000. Through comparisons with actual PMBoKs during 2001–2013, the framework was verified and partly modified as shown in section 7.1.2 (see also 6.5.2). The differences between Japanese and English PMBoKs are described better using the proposed framework. In further research, it could also be used as a framework to show an overview of a generic PMBoK as well as revisions to PMBoKs.

### **Historical interactions between English and Japanese models**

This research reviewed the history of the development of selections of topics in PMBoKs (e.g. Relationships Management, which was first selected as a topic of the P2M. The topic was later taken in GAPPS. The emergence of the P2M has been attributed to the development of English PMBoKs.) On the basis of completely different backgrounds of the idea of a project management profession, Japanese and English communities have stimulated each other. This leads to the development of PMBoKs through the mixing of the two different perspectives of the profession. This research presented 'what actual differences between the two different PMBoKs are' and 'how these two communities potentially interact with and stimulate each other'.

This implication also provides material for the discussion that was raised by Whitty and Schulz (2007), who insisted that Puritans' ideology rules the formation of project management theories and practice. As shown in this thesis, at least for the last ten years, English project management societies have continually interacted with different societies such as the Japanese project management societies. Such interactions might have



generated the dynamics of the development of PMBoKs and project management professional societies. This means that Western project management societies were not only under the influence of Western traditional value, but also developed through interactions with other societies' views.

### **7.3 Limitations of the research methodology and further studies**

The research proposed a potential Japanese PMBoK in the Japanese construction industry. The differences between Japanese managers and English managers in selecting topics of PMBoKs were also compared. The methodology has the following limitations.

#### **(1) Sampling the different sectors, and number of the samples**

The Japanese data were taken from the civil engineering, building/architecture and engineering sectors. The research cannot ensure the validity of the body of knowledge at the national level without collecting data from other industries in Japan. Other industries should be investigated in order to create a more valid Japanese PMBoK. It is noted, however, that difference between Japanese managers and English managers were thought to be far more significant than difference between sectors within Japan since most of implications are thought of as not industry specific but national characteristics.

With regard to the number of samples, 138 answers were enough to examine agreement on the topics in the straw man (a potential Japanese PMBoK) and to show difference between sectors and countries with regard to the agreement of project management topics.

However, more samples would be needed for detailed analysis of differences in ages and management levels and of the background to the selection of each topic. Further, it is matter of course, in terms of the establishment of more valid Japanese PMBoK, other Japanese industries, such as manufacturing, IT and services, need to be examined.

#### **(2) Limitations of quantitative data analysis**

A questionnaire and interviews were conducted in the survey. The merit of the questionnaire is that it can deal more easily with quantitative data such as 'agreement on selecting topics'. Through the interviews, more qualitative data could be obtained. It was useful to know how PMBoKs are understood and used by Japanese managers.

Regarding the description of the topics that make up the Japanese PMBoK, discussions on workshops among Japanese managers are required in order to achieve more appropriate expressions of each topic.

Further, the questionnaire and the interviews were conducted with individual Japanese managers. There are two reasons that the survey was undertaken in this way. Firstly, the data from individuals are supposed to reflect their organisational knowledge as well as their individual knowledge. The other reason is that there was a suggestion from a Japanese academic that giving an empirical questionnaire to organisations would not adequately reflect every type of thinking and thus would not supply good-quality data. It is beneficial to examine the formation or the formulation of organisational knowledge. For such a purpose, various methods should be considered, such as observational research in organisations or intensive interviews with key people within each organisation.

Furthermore, the interview data showed that answers from Japanese managers are affected by various levels of knowledge, ranging from the social to the organisational, as well as the knowledge held by the individuals. This might be related to the formation and position of bodies of knowledge at various levels: social, organisational, and/or individual.

### **(3) Hypothesis of the groupism approach and the professional approach and its relationships with selection of topics**

Through the examination of the selection of project management topics of 'Project and Program Management' (P2M) and other English PMBoKs, a hypothesis regarding a Japanese model for PMBoK was proposed. The hypothesis is that the Japanese prefer a groupism approach, which prioritises overall knowledge guide for some professional families. Compared to Japanese managers, Western counterparts prefer the professional approach, which is more enthusiastic to find clear professional functions and boundaries. This is of course only hypothesis so it should be examined in future research.

The hypothesis that there are some relationships between Japanese groupism approach and selection of topics of PMBoKs should be examined through further research of the development of PMBoKs by project management communities. The degree and

meanings to establish professional boundaries in Japanese context should also be examined in terms of the difference to the Western counterparts.

Other different PMBoKs in different contexts should also be examined. If different variations of rationale of selections of topics of PMBoKs are found, the scope of discussions of project management and PMBoKs will be expanded.

## Bibliography

- Andersen, E. S., Grude, K. V., Hang, T., and Turner, J. R., 1984. *Goal directed project management*, Kogan Page, London: Cooper & Lybrand.
- APM *HP*, 2010. [online] Available at: <<http://www.apm.org.uk>> [Accessed on 26th September, 2010].
- Argyris, C., and Schön, D.A., 1974. *Theory in practice*. San Francisco, USA: Jossey-Bass A Wiley Company.
- Argyris, C., 1992, 1994, 1999. *On organizational learning*. 2<sup>nd</sup> edition. Oxford, UK and Massachusetts, USA: Blackwell Publishers Ltd.
- Association of Project Management, 1995. *APM Body of Knowledge*, 3<sup>rd</sup> ed. APM, Buckinghamshire, UK: Princes Risborough.
- Association of Project Management., 2000. *APM Body of Knowledge*, 4<sup>th</sup> ed. APM, Buckinghamshire, UK: Princes Risborough.
- Association of Project Management, 2005. *APM Body of Knowledge*, 5<sup>th</sup> ed. APM, Buckinghamshire, UK: Princes Risborough.
- Baba, K., 1993. Study on the urgent necessity of the systematization of construction management. *Construction management research papers collection* Vol. 1. pp. 93-104. Construction management committee, JSCE, Tokyo: JSCE.
- Baba, K., 1996. *Kensetsu Manejiment*. Tokyo: Korona-sya.
- Beer, S., 1985. *Diagnosing the system for organizations*. New York: John Wiley.
- Bennett, J., 1991. *International construction project management: General theory and practice*. London: Butterworth Heinemann.
- Bennett, J., 1995. *Trusting the team: the best practice guide to partnering in construction*. London, UK: Thomas Telford.
- Bennett, J., 2000. *Construction: the third way, managing cooperation and competition in construction*. Butterworth Heinemann.
- Berger, P. L. and Luckmann, T., 1966. *The social construction of reality: a treatise in the sociology of knowledge*, Garden City, NY, USA: Anchor Books.
- Besner, C. And Hobbs, B., 2008. Project Management Practice, Generic or Contextual: A Reality Check. *Project Management Journal*, 39, 16-33.
- Burke, R., 1994. *Project management, planning and control*, 2<sup>nd</sup> ed. John Wiley.
- Burnes, B., 2000. *Managing change: a strategic approach organizational dynamics*. 3<sup>rd</sup> ed. Financial Times Prentice Hall.

- Caupin, G., Knopfel, H., Morris, P. W. G., Motzel, E. and Pannenbacker, O., 1999. *ICB IPMA Competence Baseline*. International Project Management Association, Zurich.
- Caupin, G., Knoepfel, H., Koch, G., Pannenbacker, K., Perez-Polo, F. and Seabury, C., 2006. *ICB IPMA competence baseline. Version 3.0*. International Project Management Association, Nijkerk, Netherlands.
- Centre for Research in the Management of Projects (CRMP). 1999. *Association for Project Management Body of Knowledge Review*, CRMP, University of Manchester Institute of Science and Technology, UMIST.
- Cooke-Davis, T., 2004. Project success. In: Morris, P. W.G. and Pinto, J. A. eds., 2004. *The Wiley guide to managing projects*, Hoboken, New Jersey: John Wiley, pp. 99–122.
- Crawford, L. H., 2004a. Global body of project management knowledge and standards. In Morris, P. W.G. and Pinto, J. A. eds., 2004. *The Wiley guide to managing projects*. Hoboken, New Jersey: John Wiley. pp.1150-1196.
- Crawford, L.H., 2004b. Professional associations and global initiatives. In: Morris, P. W.G. and Pinto, J. A. eds., 2004. *The Wiley guide to managing projects*, Hoboken, New Jersey: John Wiley, pp.1389–1402.
- Crawford, L. H., In Morris, P. W.G., Thomas, J., Winter, M., 2006. Practitioner development: From trained technicians to reflective practitioners. *International Journal of Project Management*, 24, (8), pp.722-733.
- Crawford, L. H. and Pollack, J. B., 2007. How generic are project management knowledge and practice? *Project Management Journal*, 38, 87-97.
- Crawford, L. H., Pollack, J. B. and England, D., 2007. How standard are standards: an examination of language emphasis in project management standards. *Project Management Journal*, 38, 6-21.
- Crawford, L., 2009. World PM trends and the position of P2M in the global community. In: Ohara, S. and Asada, T. eds., 2009. *Japanese project management KPM – Innovation, Development and improvement*. Singapore: World Scientific Publishing. pp. 381-402.
- Crawford, L. and Nahmias, A. H., 2010. Competencies for managing change. *International Journal of Project Management*, 28(4), 405-412.
- CRMP, 1999. *Review of APM Body of Knowledge*, CRMP, Civil and Construction Department, University of Manchester Institute of Science and Technology, UK.
- Davenport, T.H., and Prusak, L., 1998. *Working knowledge. How organizations manage what they know*. Boston, Massachusetts, USA: Harvard business school press.

- Delisle, C. L. & Olson, D., 2004. Would the real project management language please stand up? *International Journal of Project Management*, 22, (4), pp. 327-33.
- Doi, T., 1971. *The anatomy of dependence, the key analysis of Japanese behaviour*. Tokyo: Kodansha international.
- Eguchi, T., 1997. The reform of procurement system for building construction projects, Movement from traditional procurement system to Project management/ Construction management contract. *Journal of architecture and building science. Special issue of 'thinking management of architecture PM/CM'*. vol. 112, No. 1413, August 1997. Pp.12-16. [online] <<http://jabs.aij.or.jp/backnumber/>> Available at: [Accessed 31th December, 2011].
- Enomoto, H., 1999. *Bukawo nobasu coaching, meireigata management kara shitsumongata management he (Japanese)*, "Coaching to develop subordinates' performances, from management by direction to management by questioning." Tokyo, Japan: PHP business sensho.
- Fayol, H., 1916/1949. *General and administrative management*. London, UK: Pitman.
- Field, M. and Keller, L., 1998. *Project management*. London, UK: The Open University/International Thompson Business Press.
- Gasik, S., 2011. A model of project knowledge management. *Project Management Journal*. April 2011. pp.23-44. PMI [online] < [http://www.apsolutions-llc.com/images/A\\_Model\\_of\\_Project\\_Knowledge\\_Management.pdf](http://www.apsolutions-llc.com/images/A_Model_of_Project_Knowledge_Management.pdf) > [Accessed on 30th December, 2012].
- Gao, Feng, and Wang., 2007. Development and comparative analysis of the project management bodies of knowledge. *Management Science & Engineering*, 1, 106-111
- Gerlach, M. L., 1992. *Alliance capitalism, the social organization of Japanese business*, Berkeley, CA, USA: University of California Press.
- GAPPS, 2007. *A Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers*. Sydney: Global Alliance for Project Performance Standards [online] Available at: <<http://www.globalPMstandards.org>> [Accessed on 20<sup>th</sup> September 2010].
- Global Performance Based Standards for Project Management Personnel, 2003. *Working Paper No1: Report from Working Session 24-26 February, 2003, Lille, France*. [online] Available at: <<http://www.globalPMstandards.org>> [Accessed on 20<sup>th</sup> September 2010].
- Global Performance Based Standards for Project Management Personnel, 2007. *A Framework for Performance Based Competency Standards for Global Level 1 and 2 Project Managers*. [online] Available at: <<http://www.globalPMstandards.org>> [Accessed on 20<sup>th</sup> September 2010].

- Global Performance Based Standards for Project Management Personnel, 2011. *A Framework for Performance Based Competency Standards for Program Managers*. [online] Available at: <<http://www.globalPMstandards.org>> [Accessed on 10<sup>th</sup> November 2012].
- Haitani, L., 1990. The Paradox of Japan's Groupism: Threat to Future Competitiveness?, In: *Asian Survey* Vol. 30, No. 3, Mar, pp. 237–250, University of California Press JSTOR, Available at, <<http://www.jstor.org/stable/i345479>> [Accessed on 12<sup>th</sup> May, 2012]
- Harris, C. E., Pritchard, M.S., and Rabins, M.J., 2000. *Engineering ethics: concepts and cases, 2nd ed*, Belmont, CA: Wadsworth.
- Hamaguchi, E., 1998. *Nihonkenkyugenron, Kankeitai toshiteno nihonjin to nihonsyakai*, [The principle of Japanese study, Japanese and Japanese society as Kankeitai], (in Japanese), Tokyo: Yuikaku.
- Hammer, M. and Champy, J., 1993. *Reengineering the corporation – a manifesto for business revolution*, London, UK: Nicholas Brealey.
- Hartman, F., 2001. Interviewed by the author at UMIST, on 23<sup>rd</sup> May 2001.
- Hillson, D., and Webster, R. M., 2006. Understanding risk attitude, In: *APM yearbook 2006/2007*. pp. 25.
- Hodson, D. and Muzio, D., 2010. Prospects for professionalism in project management. In: Morris, P. W.G., Pinto, J. A., and Söderlund, J., eds., 2010. *The oxford handbook of project management*. New York, USA:: Oxford university press. pp.107-130.
- Hofstede, G., 1980. Motivation, leadership, and organisation: do American theories apply abroad? In: *Organisational dynamics (Summer 1980)*, pp. 42–63, cited in Adler, J. N., 1991. *International dimensions of organisational behaviour, 2<sup>nd</sup> ed*. Belmont, California, USA: Wadsworth Publishing Company.
- Humphrey, J., 1998. Trust and the transformation of supplier relations in Indian industry. In: Lane, C., and Bachmann, R., eds., 1998. *Trust within and between organizations*. Oxford university press. pp. 214–240.
- IPMA, *HP*, 2010. [online] Available at: <<http://www.ipma.ch/>> [Accessed on 26th September, 2010].
- Johnson, F. A., 1993. *Dependency and Japanese socialization, psychoanalytic and anthropological investigation into amae*, New York and London: New York University Press. (referenced Japanese translated version). 1997. Tokyo: Koubundo.

- JSCE., 1987. *Summary of Lectures at 5th Symposium on Construction Management*. p. 120, Construction Management Committee, Tokyo: JSCE., cited in Kunishima and Shoji, 1994.
- Kanou, N., 1997. Management techniques of the construction. *Journal of architecture and building science. Special issue of 'thinking management of architecture PM/CM'*. vol. 112, No. 1413, August 1997. pp. 22-23. [online] <<http://jabs.ajj.or.jp/backnumber/>> Available at: [Accessed 31th December, 2011].
- Kenchiku academic society, 1999. *Meeting record of 'Accountability of Japanese construction industry.'* working group no 3 in Project management committee, Kenchiku academic society, Unpublished paper.
- Kerzner, H., 1998. *Project management: a systems approach to planning, scheduling, and controlling*, 6<sup>th</sup> ed. Van Nostrand Reinhold.
- Kezsbom, D. S., Schilling, D. L., and Edward, K. A., 1989. *Dynamic project management, a practical guide for managers and engineers*, Wiley-Interscience.
- Kharbanda, O.P., and Pinto, J.K., 1996. *What made gertie gallop?* New York, USA: Van Nostrand Reinhold.
- Kinoshita, T., 2005. Positioning of P2M in pragmatic management education and international academic exchanges. *International proceeding paper for IAP2M General meeting, 30<sup>th</sup> October, 2005*. [online] [http://ci.nii.ac.jp/vol\\_issue/nels/AA12406904/ISS0000441202\\_ja.html](http://ci.nii.ac.jp/vol_issue/nels/AA12406904/ISS0000441202_ja.html) [Accessed on 13th January, 2013].
- Knight, F.H., 1921. Risk, uncertainty and profit. p. 19. *Hart, Schaffner, and Marx Prize Essays, no 31*. Boston and New York: Houghton Mifflin. Cited in: Wikipedia [online] Available at: <<http://en.wikipedia.org/wiki/Risk>> [Accessed on 31th December, 2011].
- Kolb, D., 2000. *The process of experiential learning*. In: Cross, R. and Israelit, S. *Strategic learning in a knowledge economy*, pp. 313–331, Oxford: Butterworth Heinemann.
- Kunishima, M., 1999. '21 seikino kensetsu gyo wo kangaeru, (Japanese: thinking of the construction industry in the 21<sup>st</sup> century.)', *Kensetsu kikai, January 1999*, (Journal).
- Kunishima, M. and Shoji, M. eds., 1994. [Japanese version], 1995 [English version]. *The principles of construction management*, Tokyo: Sankaido.
- Latham, M., 1994. *Constructing the team: joint review of procurement and contractual arrangement*. Norwich, UK: HMSO.



- Lientz, B.P., and Rea, K., 1998. *Project management for the 21st century*. 2<sup>nd</sup> ed. Academic Press.
- Lock, D., 2000. *Project management*, 7<sup>th</sup> ed. Aldershot: Gower Publishing.
- Lockyer, K. and Gordon, J., 1996. *Project management and project planning*. Financial Times Prentice Hall.
- Lopes, M. D. S. and Flavell, R., 1998. Project appraisal – a framework to assess non-financial aspects of projects during the project life cycle. *International Journal of Project Management*, **16** (4), 223–233.
- Mainichi Shinbun (Japanese: Mainichi newspaper), telephone survey from 1050 individuals at random sampling, on 30<sup>th</sup> September, 2000.
- Maylor, H., 1996/1999. *Project management*, 2<sup>nd</sup> ed. Financial Times, Pitman Publishing.
- Melville, I., 1999. *Marketing in Japan*. Oxford, UK: Butterworth-Heinemann.
- Meredith, J. R., and Mantel, S. J., 2000. *Project management: a managerial approach*, 4<sup>th</sup> ed, USA: John Wiley.
- Miyashita, K. and Russell, D., 1994. *Keiretsu: inside the hidden Japanese conglomerates. A revealing look at the great corporate groups at the heart of Japan's industrial strength*, New York, USA: McGraw-Hill.
- Morita, A., 1988. *Made in Japan*. London, UK: Fontana.
- Morris, P. W. G., 1997. *The management of projects*, 2<sup>nd</sup> ed., London, UK: Thomas Telford.
- Morris, P. W. G., 1999a. Body building. In: *APM year book, 1998/1999*, pp. 43–46, APM, Buckinghamshire, UK: Princes Risborough.
- Morris, P. W. G. 1999b, *Updating project management bodies of knowledge*, 1999. [online] Available at: <<http://www.indeco.co.uk/filestore/UpdatingthePMBodiesofKnowledge.pdf>> [Accessed 31st December, 2011]. This paper has also been published as: Morris, P. W. G. 2000, Benchmarking project management bodies of knowledge, In: *IRNOP IV Conference —Paradoxes of project collaboration in the global economy: Interdependence, complexity and ambiguity*. Crawford, L., and Clarke, C.F.eds, 2000. Sydney, Australia: University of Technology, Sydney.
- Morris, P. W. G., 1999c. The power of knowledge, *Project (Journal)*, April, 1999.
- Morris, P.W.G., Patel, M. B., and Wearne, S.H., 2000. Research into revising the APM project management body of knowledge. *International Journal of Project Management*, **18**, 3. 155-164.

- Morris, P.W.G., 2001. Updating the project bodies of knowledge. *Project Management Journal*, 32, (3) pp.21-30.
- Morris, P.W.G., 2003. *The irrelevance of project management as a professional discipline*. [Online] <<http://www.indeco.co.uk/filestore/IrrelevanceofPMDiscipline.pdf>> [Accessed on March 09, 2013].
- Morris, P. W.G., 2004. The validity of knowledge in project management. In: Morris, P. W.G. and Pinto, J. A. eds., 2004. *The Wiley guide to managing projects*. Hoboken, New Jersey: John Wiley. pp. 1137-1149.
- Morris, P.W.G., Crawford, L., Hodgson, D., Shepherd, M.M. & Tomas, J., 2006a. Exploring the role of formal bodies of knowledge in defining a profession: The case of project management. *International Journal of Project Management*. 24, (8), pp.710-721.
- Morris, P. W. G., Jamieson, A. and Shepherd, M. M., 2006b. Research updating the APM Body of Knowledge, 4th ed., *International Journal of Project Management*, 24 (6), 461–473.
- Morris, P. W. G., 2010. A brief history of project management, In: Morris, P. W.G., Pinto, J. A., and Söderlund, J., eds., 2010. *The oxford handbook of project management*. New York, Oxford university press. pp.15-36.
- Nakazawa, T. and Akaike, M., 2000. *Toyota wo shiru to iukoto* [Japanese: To know about Toyota], Tokyo: Kodansha.
- Nihon doboku kogyokai survey, 18<sup>th</sup> July 2000, *Mainichi Newspaper* (Japanese)
- Nonaka, I., and Takeuchi, H., *Knowledge creating company*. 1995. New York: Oxford University Press.
- Osaki, K., Saito, T., Shibata, H., and Takasaki, H., 1998. A Study on the character of Japan-, Western style project management. *Construction management research papers collection* Vol. 6. pp 39-48. Construction management committee, JSCE, Tokyo: JSCE.
- O’Neil, J.J., 1989. *Management of industrial construction projects*. Butterworth-Heinemann Ltd.
- Ohara, S. et al. with Center for Project and Program Management Certification Program, 2004. *Project and program management, research report for Human Development Project (to Ministry of International Trade and Industry)*, [online] Available at: <<http://www.meti.go/report>>.

- Ohara, S., 2009. Framework of contemporary Japanese project management (1): Project management paradigm- Interpretation, application and evolution to KPM. In: Japanese project management. In: Ohara, S. and Asada, T. eds., 2009. *Japanese project management KPM – Innovation, Development and improvement*, Singapore: World Scientific Publishing. pp. 5-23.
- Ohara, S., 2009. Framework of contemporary Japanese project management (2): Project management paradigm- Interpretation, application and evolution to KPM. In: Japanese project management. In: Ohara, S. and Asada, T. eds., 2009. *Japanese project management KPM – Innovation, Development and improvement*, Singapore: World Scientific Publishing. pp. 24-43.
- Oliver, N, Wilkinson, B, 1992. *The Japanization of British Industry: new development in 1990s, 2<sup>nd</sup> edition*. Wiley-Blackwell.
- Ota, H., 1985. *Risuku no keizaigaku [Japanese: Economics of risk]*, Tokyo: Toyokeizaishinsha.
- Paton, S., Hodgson, D., and Cicmil, S., 2010. Who am I and what am I doing here?: Becoming and being a project manager, *Journal of Management Development*, Vol. 29, Issue2, pp.157–166, [online] [http://strathprints.strath.ac.uk/15236/1/Paton\\_et\\_al\\_Being\\_and\\_becoming\\_1\\_.doc](http://strathprints.strath.ac.uk/15236/1/Paton_et_al_Being_and_becoming_1_.doc) [Accessed on 4th January, 2013].
- Pascal, R.T. and Athos, A., 1981. *The art of Japanese Management*. Simon & Schuster: cited in Gordon, D. D., 1988. *Japanese Management in America and Britain*. Gower Pub Co.
- Project management committee, *Meeting record working group 3 in Project management committee*, Kentiku academic society, [down loaded from] <[http://www.aij.or.jp/jpn/comm/index\\_c.htm](http://www.aij.or.jp/jpn/comm/index_c.htm)> [no longer available: accessed in 1999].
- Project Management Institute, *HP*, 2010. [online] Available at: <[Http://www.pmi.org/](http://www.pmi.org/)> [Accessed 26th September, 2010].
- Project Management Institute, 1996, 2000, 2005, 2008. *PMI Guide to Project Management Body of Knowledge*, Pennsylvania, USA: PMI.
- Project Management Institute, 2003, 2007. *Construction extension to the PMBoK Guide to the 3<sup>rd</sup> edition*, Pennsylvania, USA: PMI
- Project Management Institute, 2006, 2008. *Organizational project management maturity model (OPM3) Knowledge foundation -2<sup>nd</sup> edition*. Pennsylvania, USA: PMI
- Project Management Institute., 2005, 2008. *Standard for Portfolio Management 2<sup>nd</sup> edition*. Pennsylvania, USA: PMI

- Project Management Institute., 2005, 2008. *Standard for Program Management 2<sup>nd</sup> edition*. Pennsylvania, USA: PMI
- Project Management Association of Japan (PMAJ), 2002. *HP*. downloaded on September 27th 2011, <http://www.pmaj.or.jp/ENG/index.htm>
- Project Management Association of Japan (PMAJ), 2001, 2002, 2004, 2005. *A guidebook of Project and Program Management for Enterprise Innovation*, Project Management Professionals Certification Center (PMCC), Tokyo [online] [http://www.pmaj.or.jp/ENG/P2M\\_Download/P2MGuidebookVolume2\\_060112.pdf](http://www.pmaj.or.jp/ENG/P2M_Download/P2MGuidebookVolume2_060112.pdf) [Accessed on 16th January, 2013].
- Project Management Association of Japan (PMAJ), 2007. *A guidebook of Project and Program Management for Enterprise Innovation, The new edition (Japanese)*. JAMAM, Tokyo.
- Project Management Association of Japan (PMAJ), *HP*. 2010. [online] <<http://www.pmaj.jp>> [Accessed on 26th September, 2010].
- Pryke, S., and Smyth, H., ed., 2006. *The management of complex projects: a relationship approach*. UK. Blackwell Publishing Ltd.
- Reich, G. H., and Siew, Y.W., 2006. Searching for knowledge in the PMBoK guide. *Project Management Journal*, 37, 11-26.
- Reiss, G., 1992/1995/2007. *Project management demystified. 3<sup>rd</sup> ed.* Taylor and Francis.
- Reusch, P. J. A., Lohr, K., and Khushnood, M., 2012. What can standards standardize in international project management? *Project management development – Practice and perspectives, First international scientific conference on project management in the Baltic countries, February 8*
- Ruggles, W. S., Jenet, E., and Carter, V. R., 1997. Modan purojekuto Manejiment no gulobaru tenkai (Globalisation of modern project management), *Kenchiku Zasshi (Japanese Journal of Architecture)* October, 1997 issue (in Japanese).
- Saeki, E., 1997. CM and Construction - Management separate contract. *Journal of architecture and building science. Special issue of 'thinking management of architecture PM/CM'*. vol. 112, No. 1413, August 1997. pp.38-39. [online] <<http://jabs.aij.or.jp/backnumber/>> Available at: [Accessed on 31th December, 2011].
- Scher, M. J., 1997. *Japanese interfirm networks and their main banks*, London: Macmillan.
- Schön, D., 1983. *The reflective practitioner. How professionals think in action*. London: Temple Smith.

- Sekiya, T., 1997. CM by Japanese general contractors. *Journal of architecture and building science. Special issue of 'thinking management of architecture PM/CM'*. vol. 112, No. 1413, August 1997. pp.36-37. [online]  
<<http://jabs.ajj.or.jp/backnumber/>> Available at: [Accessed on 31th December, 2011].
- Senge, P.M., 1990. *The fifth discipline, the art and practice of the learning organisation*, London: Random House.
- Sheldrake, J., 1996. *Management theory*. London: Thomson Learning.
- Shepherd, M and Atkinson, R., "Project Management Bodies of Knowledge; Conjectures and Refutations" *The Electronic Journal of Business Research Methods*, Volume 9, Issue 2, 2011. pp. 152
- Smith, A., 1776. *The wealth of nations, volume I*, 1970 ed. Penguin: Harmondsworth.
- Snider, K.F., and Nissen, M.E., 2003. Beyond the body of knowledge: a knowledge-flow approach to project management theory and practice. *Project management journal*, 34, (2) pp.4-12.
- Söderlund, J., 2004. Building theories of project management: past research, questions for the future. *International Journal of Project Management* 22 (2004) 183–191, [online] [http://www.kth.se/polopoly\\_fs/1.217799!/Menu/general/column-content/attachment/Soderlund\\_2004.pdf](http://www.kth.se/polopoly_fs/1.217799!/Menu/general/column-content/attachment/Soderlund_2004.pdf) [Accessed on 4th January, 2013].
- Stallworthy, E.A., and Kharabanda, O.P., 1983. *Total project management: from concept to completion*. Ashgate.
- Stretton, A. M., 2006. Bodies of Knowledge and Competency Standards in Project Management in Project Management. In Dinsmore, P. and Cabanis-Brewin eds., *The AMA Handbook of Project Management, 3<sup>rd</sup> ed.* pp.15-25. New York: AMACOM.
- Taylor, F. W., 1911a. *Shop Management*. 1947 ed., New York: Harper.
- Taylor, F. W., 1911b. *The Principle of Scientific Management*. 1947 ed. New York: Harper.
- Taylor, F. W., 1911c. *Scientific Management*, 1947 ed. New York: Harper & Row.
- Taylor, W. J., and Watling, T. F., 1973. *Practical project management*. London: Business Books.
- The Economic Planning Agency, 1999. *Keizai hakusyo* (Japanese; Economic white paper), 1999 fiscal year version, Tokyo: the Ministry of Finance Printing Bureau.
- Tobe, R., et al. 1991. *Shippai no honshitsu. Nihongun no soshikiteki kenkyu*. Tokyo Japan: Chuo koronsha.

- Turner, J. R. and Simister, S. J. eds., 2000. *Gower handbook of project management*, 3<sup>rd</sup> ed. Aldershot: Gower Publishing.
- Turner, R. J., 1999. *The handbook of project-based management*, 2<sup>nd</sup> ed. McGraw-Hill Professional.
- Turner, R. J., 2000a. Process for operational control in the project based organization. *Project management research at the turn of millennium, Proceedings of PMI research conference 2000* 21-24. June 2000 Paris, France, pp.123-134, PMI.
- Turner, R. J., 2000b. Do manage work, deliverables, or resources? *Editorial / International Journal of project management* 18 pp.83-83.
- Sun Tzu. 500 BC. *The art of war*. [online] Available at: <[http://en.wikipedia.org/wiki/The\\_Art\\_of\\_War](http://en.wikipedia.org/wiki/The_Art_of_War)> [Accessed 31th December, 2011].
- Wakabayashi, N. 1998. *Nihontekikeiei toha nandattanoka* [What was Japanese management] [in Japanese]. In: Taniguchi, *et al. Ke-su ni manabu keieigaku* [Case studies on executive management] (in Japanese), Tokyo: Yuikaku bukkusu.
- Watanabe, K., 2004. Interviewed by the author at office of ENAA in Tokyo, on 9<sup>th</sup> June, 2004.
- Wearne, in Smith, N. J., 1995. *Engineering project management*. Blackwell Science.
- Weber, M., 1947. *The theory of social and economic organisation*. Illinois: The Free Press.
- Wenger, E., 1999. *Communities of Practice: Learning, Meaning, and Identity (Learning in Doing: Social, Cognitive and Computational Perspectives)*. Cambridge, UK: Cambridge University Press.
- Whitehill, A.M., 1991. *Japanese management, Tradition and Transition*. Routledge.
- Whitty, S. J., Schulz, M. F., 2007. The impact of puritan ideology on aspects of project management', *International Journal of Project Management*, vol. 25, (1), pp.10-20. [online] [http://eprints.usq.edu.au/6916/4/Whitty\\_Schultz\\_2007\\_AV.pdf](http://eprints.usq.edu.au/6916/4/Whitty_Schultz_2007_AV.pdf) [Accessed on 6th January, 2013].
- Whitty, S. J., 2005. A Memetic Paradigm of Project Management, *International Journal of Project Management*, vol.23, (8), pp.575–583, [online] [http://eprints.usq.edu.au/6917/3/Whitty\\_Memetic\\_2005\\_AV.pdf](http://eprints.usq.edu.au/6917/3/Whitty_Memetic_2005_AV.pdf) [Accessed on 6th January, 2013].
- Wideman, R. M., 1995, Criteria for a project-management body of knowledge, *International Journal of Project Management*, 13 (2), Special issue: project-management body of knowledge, 71–76.
- Wideman, R. M., 2000. *First principles of project management*. [online] Available at: <<http://www.maxwideman.com>> [Accessed on 31th December, 2011].

- Winch, G.M., 2002. *Managing construction projects. An information processing approach*. Oxford, UK: Blackwell ]science Ltd.
- Yashiro, T., 1998. Systematic structure of construction management research from project-based aspect. *Construction management research papers collection* Vol. 6. pp. 49-58. Construction management committee, JSCE, Tokyo: JSCE.
- Yoshida, T. and Teikoku Data Bank Ltd. 1998. *Kensetsu gyokaini asu ha aruka (Japanese, Can the construction industry see the future?)*. Tokyo: Nihon jitsugyo syuppansya, pp. 130–154.
- Young, L. T., 1998. *The handbook of project management, a practical guide to effective policies and procedures*. Institute of Directors.

## **Appendix A: The questionnaire form for the Japanese PMBoK model**

\*\*\*\*\*Questionnaire form 1/4\*\*\*\*\*

### **Questionnaire of knowledge of construction project management in Japan**

**Please return this in four weeks times**

Shinichiro Hiyamizu, UMIST (University of Manchester Institute of Science and Technology), Manchester, UK; Metropolitan Express way Public corporation, Tokyo, Japan

#### Study objectives

Through this study, the knowledge of management that is required in construction projects is identified, to

- 1) recognize the management of construction projects as a discipline in Japan
- 2) study the learning method for the people in management of construction projects.

This study will be used to make a guide for the management in Japanese construction projects.

The attached questionnaire seeks to obtain definitive information on five specific things.

- The topics in which the experts and practitioners of various industries consider a project management professional should be knowledgeable.
- To what extent the knowledge level varies depending upon one's level of responsibility in the organisation.
- To what extent the knowledge level varies depending upon one's field and section.



- Whether this knowledge profile varies depending on whether one is acting primarily as a project sponsor/client or as a contractor/supplier.
- How practitioners in Japanese organisations learn the management of construction projects, and how they should learn it.

Thank you for your cooperation.

\*\*\*\*\*Questionnaire form 2/4\*\*\*\*\*

Q1. Please specify your point of view in the definition of your project.

1. Client, supporter of a client, or those who manage projects on behalf of a client
2. Those who manage part of project(s) as a contractor
3. Other (please specify; e.g. organisation change projects, research

<If you are not sure, please select 1>

Q2. Please specify your current construction project, or imaginary project to answer this questionnaire in terms of Size, type, term, place, etc. (E.g.; Rapid railway construction project, Art gallery construction project, LNG plant construction project).

Q3. Do you think that each of following elements is an essential knowledge (experience) topic for the management of your construction project/programme?

Choose from < 1. Important, 2. Not so important, 3. I cannot tell/I do not know>

- Project life category
  1. Goals. Objective/Success criteria <1. 2. 3.>
  2. Programs and project management <1. 2. 3.>
  3. Business need and case <1. 2. 3.>
  4. Project life cycle <1. 2. 3.>
  5. Project plan <1. 2. 3.>
- Project environment category
  6. Financing <1. 2. 3.>
  7. Law awareness <1. 2. 3.>

8. Marketing and sales <1. 2. 3.>

9. Resource management <1. 2. 3.>

10. Environmental/Sustainable development <1. 2. 3.>

11. Economic environment/impact <1. 2. 3.>

12. Stakeholder/Political environment <1. 2. 3.>

\*\*\*\*\*Questionnaire form 3/4\*\*\*\*\*

- Project Execution category
  - 13.Safety/Health <1. 2. 3.>
  - 14.Quality <1. 2. 3.>
  - 15.Cost control <1. 2. 3.>
  - 16.Schedule <1. 2. 3.>
  - 17.Value management <1. 2. 3.>
  - 18.Risk/Peril <1. 2. 3.>
  - 19.Risk/Uncertainty <1. 2. 3.>
- Technology category
  - 20.Research and Technology management <1. 2. 3.>
  - 21.Modelling and Testing <1. 2. 3.>
  - 22.Design management <1. 2. 3.>
  - 23.Change control <1. 2. 3.>
  - 24.Phasing <1. 2. 3.>
  - 25.Estimating <1. 2. 3.>
  - 26.Value Engineering <1. 2. 3.>
- Industry related category
  - 27.Industrial Relations <1. 2. 3.>
  - 28.Contract management <1. 2. 3.>
  - 29.Bidding <1. 2. 3.>
  - 30.Partnering Management/Relations <1. 2. 3.>
  - 31.Re-engineering <1. 2. 3.>
  - 32.Procurement <1. 2. 3.>

- System/Organisation /Control category

33.Integration <1. 2. 3.>

34.Systems management <1. 2. 3.>

35.Requirement management <1. 2. 3.>

36.Project work content and Scope Management <1. 2. 3.>

37.Performance measurement <1. 2. 3.>

38.Project organisation <1. 2. 3.>

39.Information management <1. 2. 3.>

40.Communication <1. 2. 3.>

\*\*\*\*\*Questionnaire form 4/4\*\*\*\*\*

- Human category
  - 41.Ethics <1. 2. 3.>
  - 42.Personnel management <1. 2. 3.>
  - 43.Leadership <1. 2. 3.>
  - 44.Team building <1. 2. 3.>
  - 45.Decision-making <1. 2. 3.>
  - 46.Conflict <1. 2. 3.>
  - 47.Negotiation <1. 2. 3.>
  - 48.Stress Management <1. 2. 3.>
  - 49.Behaviour and Influence <1. 2. 3.>
  - 50.Coaching <1. 2. 3.>

Q4.Are there any topics missing from the list of Q3?

Q5 – Q7: Missing numbers; Questions that were not used in this research.

Q8. See definitions attached to the questionnaire. Please point out if you find any disagreement on them

Q9. Could you tell me your responsibility in your construction project/ programme?

1. Organisation
2. Age; 20s, 30s, 40s, 50s, 60s
3. Name

4. Position
5. Industries; Engineering/building/Civil/Other
6. Sectors; Engineering/building/Civil/Equipment/business/Other
7. Contact address (either mail address, telephone no., e-mail)
8. Please make any other comments on this questionnaire

## Appendix B: Data from the research for the APMBok fourth edition

**Table B.1: Agreement of topics by industry sector, data from the research for the APMBok fourth edition (CRMP: UMIST, 1988)**

	Engineering	Facilities and Utilities	Manufacturing	Process Industries	Information and Services	Construction	SUMMARY Ind.Sector	SUMMARY No. Companies
<b>APM-Topics /// Industry Sector -&gt;</b>								
<b>Number of companies / Industry Sectors</b>	<b>5</b>	<b>26</b>	<b>4</b>	<b>7</b>	<b>42</b>	<b>21</b>	<b>6</b>	<b>105</b>
44. (Post-) Project Evaluation Review	100	66	100	90	78	90	87.3	80.1
43. Project Close Out	100	90	100	100	82	80	92.0	86.3
42. Testing, Commissioning and Hand-Over/Acceptance	80	81	100	100	90	92	90.5	88.7
41. Industrial Relations	100	90	75	100	96	92	92.2	93.4
40. Personnel Management	100	81	100	100	88	60	88.2	82.5
39. Stress Management	80	69	50	60	72	60	65.2	67.6
38. Conflict Management	100	66	75	70	66	70	74.5	69.0
37. Leadership	100	100	100	100	100	100	100.0	100.0
36. Teamwork	100	90	100	80	82	76	88.0	84.2
35. Legal Awareness	100	100	100	100	100	100	100.0	100.0
34. Contract Planning and Administration	100	82	75	80	74	80	81.8	78.9
33. Purchasing	20	100	100	100	100	100	86.7	96.2
32. Supply Chain Management and Logistics	100	69	100	70	78	64	80.2	74.3
31. Procurement	100	100	100	100	100	100	100.0	100.0
30. Information Management	100	27	100	100	32	56	69.2	45.9
29. Configuration Management and Change Control	60	72	100	80	78	72	77.0	75.4
28. Performance Measurement	100	21	75	80	29	68	62.2	43.4
27. Project Monitoring and Control	100	69	75	100	78	76	83.0	77.8
26. Project Organisation	100	82	100	100	88	92	93.7	89.1
25. Safety, Health and Environment	80	100	100	100	100	100	96.7	99.0
24. Quality Management	100	69	100	100	82	96	91.2	84.3
23. Value Improvement	100	69	100	100	62	80	85.2	73.1
22. Risk Management	100	90	100	100	97	92	96.5	94.7
21. Cost Management	100	72	100	100	67	72	85.2	74.3
20. Resources Management	100	82	100	100	66	76	87.3	77.1
19. Schedule Management	100	100	100	100	92	80	95.3	92.8
18. Work Management	100	63	100	90	76	60	81.5	72.6
17. Project Launch	100	69	100	80	74	80	83.8	76.6
16. Success Criteria	100	30	100	90	30	40	65.0	42.0
15. Project Management Plan	100	72	100	100	80	80	88.7	81.1
14. Design Management	100	66	100	80	60	40	74.3	62.2
13. Requirements Management	60	27	100	50	22	32	48.5	31.9
12. Project Context	100	89	100	80	88	80	89.5	87.1
11. Integrative Management	40	24	75	40	30	36	40.8	32.6
10. Project Life Cycles	100	90	100	100	100	100	98.3	97.5
9. Programme Management	100	88	100	50	88	80	84.3	84.9
8. Project Management	100	68	100	100	78	80	87.7	79.3
7. Systems Management	80	33	75	20	32	36	46.0	36.2
6. Financial Management	100	93	100	100	92	96	96.8	94.3
5. Project Appraisal	100	93	50	100	88	68	83.2	85.2
4. Strategic Implementation Plan	100	56	100	90	72	65	80.5	70.2
3. Goals, Objectives and Strategies	40	27	50	80	20	20	39.5	27.8
2. Marketing and Sales	100	48	75	90	40	40	65.5	49.5
1. Business Need and Case	100	87	50	100	92	88	86.2	89.3



## **List B.1: Definitions of the Strawman Topics, APMBok fourth edition research (CRMP: UMIST 1988)**

### **1. Business Need and Case**

The process of establishing the `what` and `why` for the project, including the initial objectives, timing, cost, funding requirements and financial return. The business case might also include information on competitive impact, quality, resource requirements, organisational impacts, deliverables, and critical success factors. The sponsor, the representative in the owner organisation who is responsible for defining the business case and the development of the project against the business case, should own this document.

### **2. Marketing and Sales**

Marketing is the process of matching the abilities of a company with the existing and future needs, of its customers to the greatest benefit of both parties. The result is an exchange in which the company receives income through the meeting of customers' needs and customers receive benefits which satisfy their expectations.

Sales is the process of getting someone to buy the product or service being offered by the company.

### **3. Goals, Objectives and Strategies**

The process of defining the project management's' intent in undertaking the project aspirations (i.e. goals), the quantified objectives required to meet those goals, and the strategies for achieving those objectives.

### **4. Strategic Implementation Plan**

The process of developing a clear, worked-out strategic plan. The plan should cover all the issues necessary for the successful implementation of the project. The plan might include, for example, clear identification of sponsor and project objectives, statements on how these are to be achieved, environmental issues and strategy, quality policy and programme, safety policy, owner's role and the role of third parties (e.g. consultants and contractor), financial/economic objectives, financial strategy, funding strategy, cost planning, legal and insurance issues and strategy, technical strategy, technical policy, design philosophy, project/work breakdown structure, milestone/high level schedule, risk management strategy, contracting/procurement strategy, logistics policy, employment and industrial relations strategy, communication policy, and information technology strategy.

Contingency plans should also be included to make sure that the project can be realised successfully even if there are significant changes.

The Strategic Implementation Plan should be established as early as possible in the development of the project. It should be regularly updated.

The Project Management Plan (Topic 15) is a more detailed and tactical representation of how the Strategic Implementation Plan will be implemented.

## **5. Project Appraisal**

Project Appraisal is the process of analysing the viability of the project. Normally it is carried out at the concept definition stage as part of the Business Case investment analysis process. It may be repeated several times at the front end however, and even during the

project once it is underway. Project viability is usually defined in largely economic or financial measures.

Several terms may be used to describe the Project Appraisal, for example Investment Appraisal or the Capital Expenditure Proposal. However, it is often extended to include issues such as environmental appraisal, health & safety, and business and operating performance. Health and safety issues may be treated separately. Risk may be treated in a similar way. Certain business factors, such as competitive position, may equally be considered as part of the Project Appraisal, or as part of the business case review along with financial and other data.

## **6. Financial Management**

The application of the principles and practice of financial management, including Corporate Finance and Project Finance, to the management of projects. (Project Finance is finance secured wholly or part against the repayment capability of a project. Corporate Finance is finance of statutory enterprises.) Financial Management requires knowledge of the theory and practice of structuring finance, raising funds, statutory and management accounting practices, bonding, legal requirements, cash management and the interdependency between corporate and project accounting and other matters relevant to the management of project finances.

## **7. Systems Management**

A system is an assemblage of interdependent elements that interact together in a discernible fashion. Sometimes this grouping may be quite loose, as in a weather system or a social system; sometimes however it may be quite hard edged, such as all the equipment,

personnel, management and support services, etc associated with a fighter bomber say or a new rail link, or an office move.

Systems Analysis is the activity of defining the system, its subsystems and their interrelationships. (The term Systems Thinking is also used to describe this activity in more general terms. Systems Analysis often has data management/ information systems connotations.)

Systems Engineering is the term used to manage the design of systems and subsystems. It is particularly relevant to complex systems and is a discipline that is common in areas such as software and electronics where the engineering design is often either intangible or best described in the generic high level terms.

Systems Management is the discipline of managing systems, generally large multi-faceted entities with a considerable degree of complexity and interaction at the subsystems level. It is a term common in defence/aerospace, for example to describe the management of a weapons system such as a submarine or an aircraft.

Systems Acquisition is another term frequently used in defence by the procurement agencies to describe the acquisition of systems.

## **8. Project Management**

Project Management is the process of planning, organising, monitoring and controlling all aspects of a project together with the management of all involved in achieving the project objectives safely and within agreed time, cost and performance criteria.

The simplest form of a project is a discrete undertaking with defined objectives, often including time, cost and quality goals. Projects are characterised by their evolution through standard life cycles (Topic 10).

## **9. Programme Management**

The process of managing a set or series of inter-related and tautology projects related to one or more common objectives. Common examples of programmes include development programmes and large single purpose undertakings consisting of interdependent projects.

Programme management is also often used to describe a broader service than ordinary project management. In this sense programme management covers the work needed to assure projects meet overall business (or other) objectives, project management being the accomplishment of the work needed to meet specific objectives within this programme.

## **10. Project Life Cycles**

The common process that **all** projects follow. Dividing the project into a sequence of phases is a process which assists, at the highest level, the project work process definition. One generic example of a project life cycle is conception, design and development, make/build, and completion, test, and hand-over. There are a variety of life cycle definitions used by different industry sectors.

## **11. Integrative Management**

Integrating all that needs to be done to achieve a successful project outcome is at the

centre of effective project management. Integrative management involves bringing people, resources, time, cost, quality, safety, health, and environmental matters etc together to perform effectively. Integration is co-ordination and control (control being used in its widest sense of planning, monitoring, comparing and adjusting). It requires organisational, managerial and people handling skills.

## **12. Project Context**

This incorporates the internal and external environments in which the project is carried out. The project environment can be characterised as political, environmental, economic, technological, regulatory or organisational. These environments, or contexts, could assist or restrict the attainment of the project objective.

## **13. Requirements Management**

This is the process of clearly and comprehensively defining the stakeholders' requirements for the product, preferably through stakeholder interviews. The Requirement Definition should be logically ordered and presented in such a way that at completion of the project its attainment can be accurately assessed.

## **14. Design Management**

Design is the activity of defining what is to be made. To a significant extent it will also influence how it will be made. It will obviously also determine extensively how it will be used.

Design management covers

- ensuring the design team properly understands the design requirements (brief). (Topic 13)
- Design to Cost. (Topic 27)
- Value Engineering. (Topic 23)
- Design Reviews.
- safety, health and environmental reviews (e.g. Via CDM, HAZOP, EIA studies). (Topic 25)
- timing of overall project times (Topic 19) phasing and overlapping design and its relationships with other aspects of the project, such as procurement and manufacturing or construction. (Terms such as Simultaneous Engineering and Fast Track have been used to capture these ideas.)
- composition of the design team, the way the design team works and the way information is managed amongst team members. (Concurrent Engineering is a practice that addresses all these needs.)
- documentation and information on the design of the product, and information of related activities and functions. (Topic 30)
- Change Control and Configuration Management: the discipline of version control management for the project, encompassing both change control and documentation/information management. (Topic 29)

## **15. Project Management Plan**

The processes of preparing a comprehensive implementation plan which states how a project is to be managed. The document should state clearly how the project is to be managed. Contents should cover Project Definition (including Requirement Definition and Project Brief), Organisation and Resourcing, Cost Plan, Project Programme,

Contracting and Procurement, Safety, Health and Environment, Quality Plan, Systems and Procedures, Commissioning and Testing, Close Out Report. The Project Management Plan should clearly spell out authorities and responsibilities. The Project Management Plan must be fully worked out before the project's final Authorisation for Expenditure and should be kept up to date as the project evolves: it will develop and change with time and circumstances. It should represent the current and overall project management-operating plan.

## **16. Success Criteria**

This is the process of defining the factors which will determine whether the project is a success. Different measures may pertain for owners/sponsors and suppliers. Measure should be defined in terms of Key Performance Indicators and Critical Success Factors.

## **17. Project Launch**

The process of managing the initial set up of a project, its team(s), organisations, etc. This could include agreement on the Project Management Plan, project induction courses, group development exercises and basic project and management planning sessions, focusing on project procedures, organisation structure, systems, schedules and budgets.

## **18. Work Management**

The processes of breaking the project into manageable pieces of work. This can be achieved by first breaking the project into a product orientated family tree i.e. a Product Breakdown Structure (PBS) and then breaking the project into a task orientated family tree i.e. a Work Breakdown Structure (WBS).



The PBS is a product orientated hierarchical breakdown of the project into its constituent end items or deliverables without the work packaging/ activities attached. It stops with the product end item definitions.

The WBS is the PBS with the principal work packages and activities needed to produce this. The WBS should depict a product in a manner in which technical accomplishment can be incrementally verified and measured and provide the conceptual framework for all integrated planning and control of the work.

The WBS initiates the development of the Organisational Breakdown Structure, and the Cost Breakdown Structure (CBS). It also provides the foundation for determining Earned Value (Topic 28) and activity networks (Topic 19).

## **19. Schedule Management**

The processes required to ensure timely completion of the project. It consists of activity definition, activity sequencing, activity duration estimating, schedule development, and schedule control.

Activities are normally scheduled using techniques such as Bar charts (Gantt Charts, Milestone [Slip] charts) or networks (Precedence, Activity on Arrow). Critical Path Analysis (CPA) and Programme Evaluation and Review Technique (PERT) are also relevant techniques, as are those for the management of project resources. The concept of critical path central to network scheduling. Resource Management (Topic 20) also affects significantly on this item.

## **20. Resources Management**

The process of planning, allocating and scheduling resources to tasks, generally including manpower, machine (plant and equipment), materials, and money. Resource Management involves optimising the impact of resources on schedules and budgets (allocating resources to tasks, aggregation, and resource levelling and smoothing).

## **21. Cost Management**

The process of understanding how and why costs occur and the necessary response so that decisions on controlling costs are taken promptly. Typically this includes the preparation and management of budgets (including estimating), based on a work breakdown structure or code of accounts, allocating commitments and accruals, measurement of work accomplished and earned value, valuation of work, treatment of changes and claims, cash management, forecasting out-turn costs, and settlement of final accounts.

## **22. Risk Management**

The process of identification, assessment, allocation, and management of all project risks. Risks are present in all projects, whatever their size or complexity and whatever industry or business sector. Risks exist as a consequence of uncertainty. In project management terms, a risk is considered those factors that may cause a failure to meet the project success criteria. Risk is the product of the probability of an occurrence, the impact of the occurrence, and the attitude of key stakeholders to that impact. Project risk management recognises a formal approach to the process as opposed to an intuitive approach.

Risks once identified, assessed and allocated should be managed in order to minimise or mitigate their effect on a project. This may be achieved by developing either immediate or

contingency responses to the identified risks. Such responses may include removing, reducing, avoiding, transferring, accepting risks, or the abandonment of the project.

### **23. Value Improvement**

The processes used to improve value during the concept investigation, design and development, and making/building of the project. Value Improvement may contribute to improved performance through Value Management, Value Planning, Value Engineering and Value Analysis.

Value may be defined as something which gives worth. Alternatively, a particular expression of value is the quotient:  $\text{Functionality} \div \text{Cost}$ .

Value Management in its broadest sense may be defined as a structured means of improving business effectiveness in line with broad business goals. It refers to the overall process of identifying the key issues and setting targets; identifying the teams and processes necessary to achieve these; and implementing these to obtain successful results. Other management techniques such as training, team building, market research etc. will also be required in building up value management system which allows Value Engineering to achieve maximum benefits. As the name implies, Value Management is concerned with value not costs.

Value Engineering is the structured application of a series of proven techniques during the concept and design stages of a project, which has not yet been implemented. The key to success is a structured approach, thorough preparation, emphasis on functionality, and arriving at results by teamwork in a workshop environment, resulting in ownership of the

proposals by the project team.

Value Analysis is the application of similar series of techniques to an existing product, process or organisation.

## **24. Quality Management**

Quality Management is the process of establishing a Quality Plan, Quality Control Systems and Quality Assurance programme.

Quality Planning is the preparation of the comprehensive plan to show how quality is to be achieved to the standard of product or service that the customer and legislation needs.

Quality Control is a set of processes for planning and monitoring to ensure that quality is achieved.

Quality Assurance is a set of processes and procedures required to demonstrate that the work has been performed according to the Quality Plan.

Total Quality Management is a much broader and more ambitious. It is a way of working: a philosophy that concentrates on identifying what the client really wants, defining the organisation's mission, continuous improvement, and measuring, throughout the total production process, how well performance meets the required standards.

## **25. Safety, Health and Environment**

Safety, Health, and Environment is the process of determining standards and methods which minimise to a level considered acceptable by the public, the legal system, operators

and others, the likelihood of accident or damage to people, equipment, property, or the environment. This involves ensuring that these standards are respected in operation, and reviewing them to ensure their continued validity. It also entails proper appreciation of the legal and corporate environmental control and reporting procedures required for the project.

## **26. Project Organisation**

The process of organising the structure, processes, and systems and procedures of a project. Issues typically important in the structuring of a project include the degree of project/functional orientation, the extent of the project management (office) authority, collocation of project members, work packaging and interface management, and control, authorisation and reporting procedures and systems.

There are three basic kinds of organisation structure: functional, project and matrix. The choice of structure should take account of cultural and environmental influences and may change as the project evolves through the project life cycle and because of different types and conditions of contract.

## **27. Project Monitoring and Control**

The process of capture, analysis and reporting of actual performance (physical progress, cost, cash, quality, safety, health etc.), re-planning and adjusting the remaining work for a project, and analysing the results for planning future projects. The project management professional should monitor the project against the project's appropriate performance indicators. The heart of monitoring and control systems is prediction and trend analysis based on reliable performance information.

## **28. Performance Measurement**

Performance Measurement is the process of representing physical and cost progress achieved on the project in terms of a common measure. Usually this is money. Cash measures of cost or quantity measures of progress alone are not sufficient. Serious distortions can arise if physical progress of `value earned` is not represented in monetary terms. Various rules and techniques are used to do this. At one level construction Bills of Quantities can be considered as a form of Performance Measurement since physical progress is measured in value earned terms. In many industries Cost/Schedule Control Systems Criteria (also known as C-SPEC) is used.

The term Earned Value is also used as a generic performance measurement term for the concept of representing physical work accomplished in terms of financial worth accrued.

Performance Measurement is also used to produce structured cost estimates-to- complete, which include or are based upon cost performance to date.

## **29. Configuration Management and Change Control**

Change Control is the process of registering all potential improvements and other changes (in scope, specification, cost or schedule) and submitting these for analysis of the project consequences should they be approved. Change Control may also be referred to as Variation Control.

Configuration Management is the system of managing the information which describes the technical configuration of the project and in particular the proposed and approved

changes in configuration. The Configuration Manger should ensure that all parties are working off the correct version of the information and that there is a clear audit trail of all changes.

### **30. Information Management**

The function of managing data, information, information flows, and systems effectively in a project. This usually involves Information Technology (i.e. computers and telecom).

The project should have a comprehensive IT plan developed as part of its Strategic Implementation Plan and Project Management Plan. Typical issues to be covered would include common operating systems, telecommunications, use of CAD, Video conferencing, digital cameras, Computer Supported Work Sharing, and shared filing. In some projects Knowledge Management could also be an issue.

Information Management also covers paper-based information. Document Management is another function commonly found in projects in the past and as such interacts with Configuration Management. (Topic 29)

### **31. Procurement**

Procurement is the process of acquiring new services or resources. It covers financial appraisal into the options available, development of the procurement or acquisition strategy, preparation of contract documentation, acquisition, selection of suppliers, pricing, purchasing, administration of contracts and storage, logistics, inspection, expediting, transportation, and handling of materials and equipment.

### **32. Supply Chain Management and Logistics**

The process of sourcing, order, delivery, receipt, payment and incorporating goods or services for a project. Supply Chain Management covers the roles and responsibilities of members of the supply chain. Logistics covers the planning of the physical movement and accommodation of goods, equipment and people.

(Note: Integrated Logistics Support is a much broader topic referring to the management of the supply chain involved in the operations and maintenance phase of the product during its "in service" phase of operation.)

### **33. Purchasing**

Purchasing is the process of buying materials or services. This includes defining user demand, supplier selection, order preparation, supplier receipt, expediting, delivery, inspection of goods, and stores receipt.

### **34. Contract Planning and Administration**

The process of planning and administrating contracts. This stems from the procurement strategy and covers planning a contract or purchase order, defining scope, risks and terms of payment, preparing specifications and the scope of work, conditions of contract, invitation for bids, bid assessment, agreeing the contract, and contract supervision, co-ordination and administrative procedures.

### **35. Legal Awareness**

The understanding of relevant legal duties, rights, and processes which govern in a project situation. There are several different categories of law. The most important



include national legal systems, such as the criminal law, but particularly company and commercial law, employment laws, contract law, health and safety and other regulatory requirements such as planning law, data protection, sexual and racial discrimination building regulations, etc.

### **36. Teamwork**

The process of forming a group of people into a project team working together for the benefit of the project. This can be achieved in a formal manner by use of start up meetings, seminars, workshops, and in an informal manner by getting the team to work well together. Motivating and resolving conflicts between individual members of the team are important topics of teamwork. High Performance Facilitation is increasingly being used to increase the performance of teams.

Integrated Project Development Teams comprising all key parties bearing on the potential success of the project are increasingly significant element of modern project management. The structure of these Integrated Project Development Teams is an important issue. Membership will comprise of key design/ research and design groups, manufacturing, sales and marketing, finance, etc. This idea interacts with Concurrent Engineering, the practice of overlapping activities where possible and having joint parallel work by core groups.

### **37. Leadership**

Management is defined as the art of getting others to do what one cannot necessarily do oneself, by organising, planning, controlling and directing resources. Leadership is

getting others to follow.

Leadership is about setting goals and objectives and generating enthusiasm and motivation amongst the project team and stakeholders to support and work towards those objectives.

Project leadership should be distinguished from the more particular roles of the Project Champion, who espouses the project and secures the necessary support and resources for it, and the Project Sponsor, who is pre-eminently concerned with defining the project objectives in the context of the sponsoring organisation's business and other objectives.

### **38. Conflict Management**

Conflict Management is the art of managing conflict creatively. Projects and contracts can all too readily engender conflict. Conflict can occur at all levels, largely because there may be many different parties working together with their own separate aims which at some point collide, or diverge. Also people often come together who barely know each other yet are asked to work together under considerable pressure. The act of conflict management is to channel these conflicts so that the result is positive, preferably synergistically so, rather than destructive. Potential means of resolving conflict are adoption, collaboration, compromise, prevention, or the use of power. Each depends on achieving a balance between one's own and other's interests.

### **39. Stress Management**

The process of controlling factors which cause stress which include, the under development of a reasonably consistent set of procedures and techniques with which to

manage work, under-delegation to the project team, a high need to achieve that is contagiously frustrated, and the organisation company being in the throes of major change.

#### **40. Personnel Management**

The management of personnel factors including training requirements, labour skill requirements, availability of required labour skills, worker reactions, change in size of labour force, issues in sex, age, or racial distribution of labour force, inter and intra group communication, local labour law requirements and working conditions.

#### **41. Industrial Relations**

Management of the work-force, including, but not limited to, statutory responsibilities and duties, negotiating terms and conditions of pay and employment, union and non-union relations, and manpower planning.

#### **42. Testing, Commissioning and Hand- Over/Acceptance**

The process, skill, and experience necessary to manage to implement testing and integration to ensure the product conforms to its requirements. This covers the test process for the system(s), the risk to be handled when testing, capture and organisation of verifiable test criteria associated with requirements and design, and, from a customer ensuring perspective, ensuring that the product conforms to the agreed product and development specifications.

#### **43. Project Close Out**

The process that provides for acceptance of the completed project by the project sponsor(s), completion of project records, final revision and hand-over of documentation to reflect 'as delivered' circumstances, agreement of service/ maintenance plans and retention for review of project documentation.

#### **44. (Post-) Project Evaluation Review**

The process of reviewing project performance and lessons that can be derived, and that are relevant to the organisations involved in the project. The evaluation should cover all topics of the Body of Knowledge. Often considered only after completion of the project, in fact Project Evaluation Review can and should be carried out periodically during the course of the project

## **Appendix C: A comparison of certification programmes**

This article shows comparisons of certification programmes and their baseline i.e. PMBoKs. All data is those which were available in 2000.

### **1. PMI's certification: Project Management Profession (PMP)**

The PMP certification programme began in 1984. In 2008 Nearly 110,000 have PMP in the world. Most of the members are from North America including Canada, others from many countries around the world. To get the certification, a candidate must satisfy the following prerequisites and pass a computer-based exam.

“Prior to the application, baccalaureate or university graduates with a minimum of 4500 hours of project management experience and at least five-years experience in project management within the six years.”

(Wearne, 2000)

The exam is computer-based, consist of 200 multiple-choice questions answered in four hours.

Other than PMP, PMI has introduced two different levels of certification programs. As a senior level, PMI has introduced Program Management Professional (PgMP). 8,826 individuals have applied PgMP in December 2007. PMI has also introduced Certified Associate in Project Management (CAPM) certification for students and practitioners in the early stages of professional carrier (PMI, 2008).

### **2. APM certifications and membership (APM, 2000; Wearne, 1999)**

#### **2.1 Certificated Project Manager (CPM)**

Begun as a Certification programme in 1992, CPM has 500 successful candidates. This certification represents experiences and knowledge to manage a certain scale of project.

“The certificated project manager is at the pinnacle of the profession, possessing extensive knowledge and having carried responsibility for the delivery of at least one significant project.”

(APM, cited in Lock, 2000; p.13)

Candidates with the minimum five-year experience need to have three steps to be certificated. This is to assess the candidate’s knowledge as a project manager (Morris 1999a).

Step 1, Submission of self-assessment checklist and written project ‘précis’.

Step 2, Submission of detailed written report with a maximum of 5000 words

Step 3, Professional interview from APM assessors.

## **2.2 Full Membership (MAPM)**

MAPM is just membership of APM without any examination. However, APM regards this membership as one of status (APM, 2000).<sup>1</sup> A 30-year old manager is the target for this status. Evidence of practical experience, at least five years as a project manager or having key roles in projects should be taken into account for the membership. Other criteria, such as research experience and non-holding of a degree would be considered.

## **2.3 APMP**

APMP is a certification to assess an individual’s knowledge in the management of projects at beginner level. No prior experience is required.

Step 1: A one-hour examination with 100 multiple-choice questions.

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<sup>1</sup> Interview with APM on telephone.

Step 2: A three-hour paper with two parts. The first part questions require written discussion. The second part consists of five questions that require basic mathematical knowledge.

“APMP is a professional qualification that recognises an individual’s baseline knowledge and experience in project management. It is regarded by the association as the benchmark qualification in the project management profession and is the first step towards certification.”

(Lock, 2000; p.12)

### **3. IPMA’s certification programmes (IPMA, 2000)**

IPMA has four levels of certification programmes, level A being the highest level and level D being the lowest (Figure.1).

#### **3.1 Levels A and B**

Level A is for programme/project director and Level B is for project manager. Candidates for these two levels should hand in an application form with a self-assessment and a project proposal and, at next stage, a project report is required. Finally, they are interviewed in detail.

#### **3.2 Level C**

Level C is for a project management professional certification equivalent to PMP<sup>2</sup>. Candidates are supposed to hand in an application, details of project experience, and a self-assessment. Then a formal examination with direct questions and intellectual tasks

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<sup>2</sup> PMP may be regarded between Levels C and D, because the exam for PMP is based only on a multiple-choice exam whereas PMP requires 3 – 5 years experience prior to the application.

would be required. Finally, they would have an interview.

**Figure 1; IPMA certification program, Source; IPMA, 2001, Home page,**

Level		Capabilities	Certification Process			Title	Validity
A	Programme or Projects Director	Competence = knowledge + experience + personal attitude	Stage 1	Stage 2	Stage 3	Certificated Project Director	3-5 years
B	Project Manager		<ul style="list-style-type: none"> <li>• Application</li> <li>• CV</li> <li>• Self assessment</li> <li>• References</li> <li>• Project list</li> </ul>	Optional	Interview	Certificated Project Manager	
C	Project Management Professional			Workshop or seminar		Exam	Registered Project Management Professional
D	Project Management Practitioner	Knowledge		Exam		Project Management Fachmann/ Professional	Not time limited

### 3.3 Level D

To attain Level D one is supposed to have a basic knowledge of PMBoK as a practitioner in project management. Candidates must sit an exam and submit an open essay.

## 4. Japanese certification programmes (PMCC, 2008)

Japanese certification programmes have started in 2002 by Project Management Certification Center (PMCC) now changed its name to Project Management Association Japan (PMAJ). The BoK for the certification programs was developed, led by Ohara at University of Chiba Institute of Science and Technology. The BoK is called Project and Program Management (P2M). Using P2M as a basic guideline, they run four levels of certification curriculum. As the entrance level, they started first certification program called the Project Management Specialist (PMS). Project Manager Registered (PMR), as the middle level, Program Management Architect (PMA) as the highest level. Adding to above the three levels, PMCC added fourth certification program that is called Project management coordinator (PMC). The PMC is created as the lowest level of all certification programs. Only PMC's certification program uses abbreviate version of



knowledge area that is limited to only traditional project control related topics, such as time, cost, and quality. By 2008, PMCC has awarded PMS to 000 people. 000 people were certified as PMA, 000 people have got PMA. PMS is assessed by paper test base. To get PMS, candidates need to take interview and paper exams. For PMA, candidate is required to attend the workshops as well as interview and paper exams.

### **5. GPM's Project Management-KANON**

Project Management-KANON (PM-KANON) was published in 1998 (GPM, 1998). The PM-KANON was originally made by modification of the APM 3<sup>rd</sup> version model. Figure 2.8 shows the first version of PM-KANON. In PM-KANON, there are four categories for competency of project managers. These are: Basic competency, Social competency, Method competency, and Organisational competency.

**Figure 2.8; PM ZERT; PROJECTMANAGEMENT-KANON**

<p><b>1. Basic Competency</b></p> <p>1.1 Management</p> <p>1.2 Project &amp; Project Management</p> <p>1.3 Project Environment</p> <p>1.4 System Thinking and Management</p> <p>1.5 Project Introduction</p> <p>1.7 Project Objective</p>	<p><b>2. Social Competency</b></p> <p>2.1 Social Perception</p> <p>2.2 Communication</p> <p>2.3 Motivation</p> <p>2.4 Social Structure, Group &amp; Team</p> <p>2.5 Learning Organisation</p> <p>2.6 Self Management</p> <p>2.7 Leadership</p>
<p><b>3 Method Competency</b></p> <p>3.1 Project Structuring</p> <p>3.2 Process/deadline Management</p> <p>3.3 Resource for Action</p> <p>3.4 Cost control</p> <p>3.5 Financial Management</p> <p>3.6 Evaluation of Project Performance</p> <p>3.7 Integrated project control</p> <p>3.8 Multi-Project Management</p>	<p><b>4 Organisational Competency</b></p> <p>4.1 Business and Project Organisation</p> <p>4.2 Quality Management</p> <p>4.3 Contract Management</p> <p>4.4 Configuration &amp; Change Management</p> <p>4.5 Documentation Management</p> <p>4.6 Project Start</p> <p>4.7 Risk Management</p>

## **6. The difference between PM-KANON and APM BoK (3<sup>rd</sup> version)**

American and English companies are trying to show what the project management profession is and knowledge the profession ought to have. These two focus on the generic nature of project management and describe them as knowledge. On the other hand, European versions of the Body of Competencies (BoCs) are concerned about the project manager's total competency. This difference directly reflects their objectives of having BoK/BoC and the contents of BoK/BoC.

As explained in a comparison of the project management certification programme, English-speaking countries try to describe the generic knowledge base. On the other hand, the European countries try to show project managers' competency: i.e. knowledge, skill, and behaviour, in actual situations. These approaches are entirely reflected in their BoKs/BoCs.

The PM-KANON is used as the National Competency Baseline in Germany. As we saw in a comparison of certification programmes, European countries focus more on a manager's skill to see the whole competency of managers. We will see this influence in the difference between the English version (APM PMBoK 3<sup>rd</sup> version) and the German version (PM-KANON)

The following elements are in PM-KANON and not in APM PMBoK 3<sup>rd</sup> version;

1. System thinking and management
2. Special communication situation
3. Method for problem solving
4. Learning organisation

## 5. Self management

Many of these are concerned with, as suggested, the project manager's skill.

Further, the following are some elements that PM-KANON does not have but the APM 3<sup>rd</sup> version does. These are:

1. Safety management
2. Value management.

Pannenbacker, one of the founders of GPM, explains about not including safety management. "Safety management is company's task, not project managers'."

(Pannenbacker, 2000)<sup>3</sup>

Safety management was eliminated because it is not the manager's role. This clearly shows that PM-KANON is entirely concentrated on how project managers can show their performance in project management alone. Hence, according to his perception, the BoC does not necessarily contain all elements that are required for managing projects. PM-KANON is focused on competency as a manager (whatever its level is), which includes skill and behaviour. Particularly, it does not have elements of organisational roles.

The idea of BoC is focused on the role of particular people in the organisation. It may be useful as a practical usage in an organisation to select people to assign as (so-called) 'project manager'. However, it can be adapted to only certain contexts. The context, say organisational structure, itself is also merely an artefact. This is an obvious pit-fall that we

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<sup>3</sup> Pannenbacker, K., interview, March 2000

discuss knowledge with assumption that we are under specific condition.

The knowledge should not be only for particular type of people who assigned as ‘project manager’ but also for people who actually need to ‘manage’ projects. To execute project works safely, concept of ‘safety’ is essential. If so, safety management should be included in a subset of knowledge for project management.

### **7. Competency or Knowledge**

Competency consists of knowledge, skill, and behaviour. To assess a project manager’s competency, it is necessary to know what:

- (1) knowledge that project managers ought to have,
- (2) skills that project manager should have,
- (3) behaviour the project managers exhibit.

To run assessment programmes, associations need to define what elements should be assessed.

There are two different ways to assess project managers. While the APM assess a candidate’s knowledge through a paper-based exam and interview, often European associations add some other ways to assess a manager’s skill and attitude. For instance, German association, member of the IPMA, uses a workshop to ‘observe’ candidates’ behaviour in level C-A exams.

European countries’ have the following perceptions of paper-based examinations:

“Nobody can manage project by only knowledge. Project managers need to apply knowledge, experience, and ability, for problem solving, decision making,

and to show his/her leadership.”

(Dutch certification board, Netherlands; PMI)<sup>4</sup>

“Knowledge is easy to exam but it is meaningless in actual job. We should see competency to evaluate a project manager.”

(Pannenbacker 2000)<sup>5</sup>

“The essence of project management is to execute real projects. Knowledge alone cannot be helpful for managing projects.”

(AFITEP, France, 2000)<sup>6</sup>

This difference in opinions of knowledge reminds us of the argument between Descartes and Locke<sup>7</sup> – continental rationalism and British empiricism. In continental rationalism, knowledge can be obtained only by rational thinking. On the other hand, in British empiricism, knowledge can be obtained through experience. Despite all efforts to bridge those two ideas by successors such as Kant, Hegel, and Marx this gap has not filled up (Nonaka and Takeuchi, 1994). English-speaking countries assess how knowledgeable the candidate is. Often European countries are interested more in actual the behaviour of candidates.

Whether above discussion adds value to the research of PMBOK or not, after all there is the difference in descriptions of project management language on two groups. The

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<sup>4</sup> ENAA (Japan) (2000) ditto. p.47

<sup>5</sup> Pannenbacker, K. Meeting with ENAA’s delegation on 7<sup>th</sup> march, 2000

<sup>6</sup> Interviewed by ENAA, 2000

<sup>7</sup> Nonaka 1994 et el. Ditto pp. 23-24.

difference is what project managers should ‘know’ and how project managers ‘act’. Consequently, as shall be seen later, this difference affects contents of Bodies of Knowledge and/or Bodies of Competence. Only this point seemed to be noted for the following description of PMBOKs.

### **8. AFITEP’s certification programmes (ENAA, 2000)**

Certification programmes have knowledge-based exams at a practitioner level, and competency-based<sup>8</sup> assessment at a higher level.

There are three exams to show knowledge in project management, which are cost control, estimation, and planning. Above those knowledge-based exams, AFITEP adopts IPMA’s four-level certification. Level D can be obtained automatically if the candidate passes the aforesaid three knowledge-based exams. Level C requires a project report and interview as well as the above three exams. In levels A and B, candidates are assessed through both project reports and interviews.

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<sup>8</sup> The concept of the Certification Programme in AFITEP is based on assessing knowledge and skill, not only knowledge. (ENAA, Japan 2000, ditto, p35)

## **Appendix D: A view to PMI PMBoK by a Japanese manager**

**Interviewee: Mr. Kamino (Obayashi-Gumi, Building, Project manager)**

**(Interviewed in November, 1999, London)**

(About PMI PMBoK) “We do not use any manual like PMI’s PMBoK. Manuals cannot work in actual works. Manuals make us inflexible. We cannot tell how to manage construction projects. It is impossible. These cannot be written down as a manual. Most of things written in PMI PMBoK are understandable as theories. We do not actually do such ways.

For instance, in risk management, we do not practically do like that explanation. We do by some different ways (but I cannot tell you that by manual or written expression). In construction projects many people have to cooperate and everybody does his/her best using their best knowledge. This is the most exciting thing of construction projects.”



## **Appendix E: Japan–U.S. construction trade talks**

The construction market in Japan has been criticised by the US since the 1980s. Whilst Japanese contractors enjoy business in the US, American contractors had hardly entered into the Japanese domestic market. In 1993, under legal act of ‘title 7’ (Omnibus Trade Act), the US government warned that it would enact trade sanctions against Japan, citing a barrier for American contractors wishing to enter the Japanese domestic construction market.

By this act, unless the Japanese government take any action to change the situation for American contractors in Japan, Japanese contractors would have been restricted in their business in the US. The Japanese government announced an ‘action plan’ to make it fair for American contractors to do business. Both governments agreed to have annual reviews to monitor and discuss the matter further.

Through six-year negotiations on this issue, the Japanese government proposed a new design contract system and reified the standard for foreign companies in design contracts. Whilst admitting some progress, the US government expressed disappointment that the amount of American contractor’s business in the Japanese market is still unsatisfactory. Their latest claim is (1) to enhance the chance for US’s consultants to get design-consultant contracts in Japan, (2) to increase the number of members in JV (Joint Venture) in construction projects, and (3) to introduce Construction Management contracts in the Japanese government’s procurements.

The Japanese construction market was categorised as a sector that needs to ‘watch out’ from the US government by the title 7. To respond to these claims was not easy for the

Japanese construction industry.

As for (1) the Japanese government endorsed that design-consultant contracts with propositions would be increased to enhance the chances of participation for foreign companies.

As for (2) the Japanese government has explained that to increase participations of JV members would make construction work inefficient. The contractor contract is based on a lump-sum with a single contractor. Even in the case of JV, there is a leader organisation in any JV that is usually called the ‘sponsor’ and almost all of them are under the control of the sponsor organisation.<sup>9</sup> Therefore, to increase in the number of participants of JVs is thought of as a possible cause of inefficiency.

As for (3), the Japanese construction custom has to be reviewed. The traditional contract is a design-build in lump-sum contract with a single company. Construction Management contracts divide so-called Japanese general contractors into a management part and a construction part. Even between contractors and sub-contractors, redundancy is prevalent and the separation of these two was thought of as enormous loss in profitability terms, corporative atmosphere and flexibility. Their relationship is based on long-term de facto contracts. In construction management contracts, unification of all participants is more difficult. This is thought to incur their teamwork.

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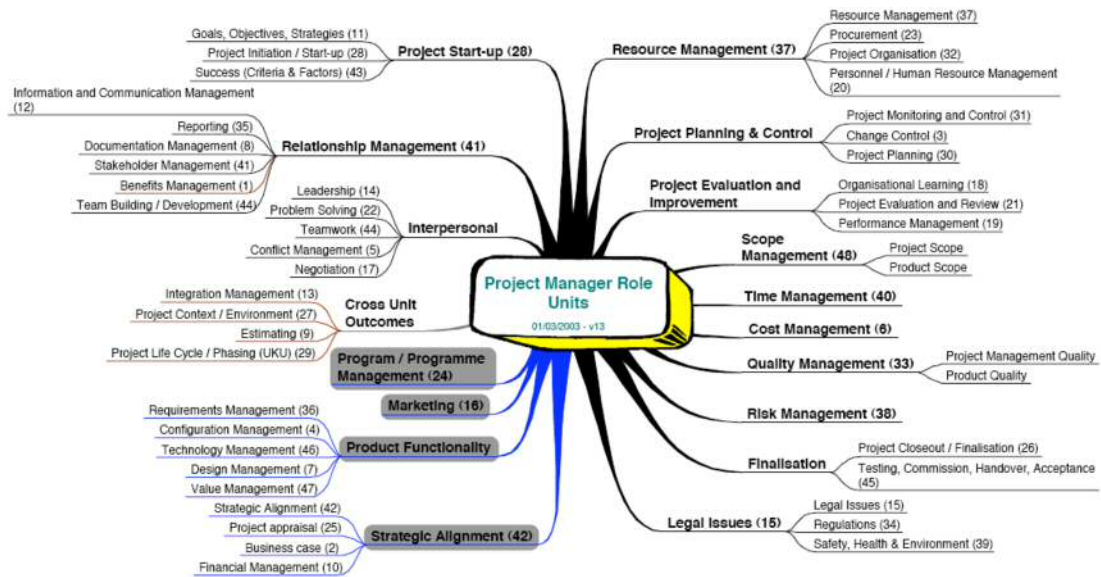
<sup>9</sup> Unofficial interviews from contractors’ engineers

## Appendix F: Selection of concepts by GAPPS

**Figure F.1 List of Concepts/Topics identified in Standards and Guides (GAPPS, 2005)**

1	Benefits Management	25	Project Appraisal
2	Business Case	26	Project Closeout / Finalisation
3	Change Control	27	Project Context / Environment
4	Configuration Management	28	Project Initiation / Start-up
5	Conflict Management	29	Project Life-cycle / Project Phases
6	Cost Management	30	Project Planning
7	Design Management	31	Project Monitoring and Control
8	Document Management	32	Project Organisation
9	Estimating	33	Quality Management
10	Financial Management	34	Regulations
11	Goals, Objectives and Strategies	35	Reporting
12	Information / Communication Management	36	Requirements Management
13	Integration Management	37	Resource Management
14	Leadership	38	Risk Management
15	Legal Issues	39	Safety, Health, and Environment
16	Marketing	40	Time Management / Scheduling / Phasing
17	Negotiation	41	Stakeholder / Relationship Management
18	Organisational Learning / Lessons Learned	42	Strategic Alignment
19	Performance Measurement	43	Success
20	Personnel / Human Resource Management	44	Team Building / Development / Teamwork
21	(Post-) Project Evaluation Review	45	Testing, Commissioning, and Handover
22	Problem Solving	46	Technology Management
23	Procurement	47	Value Management
24	Program Management	48	Work Content and Scope Management

**Figure F.2: Units developed from 48 Concepts/ Topics at workshop in Global Performance Standards for Project Management Personnel Initiative in 2002 (GAPPS, 2003, Crawford, 2004a)**



*Note: Units considered to be applicable only to some Project Managers in some contexts are shown shaded.*

**Appendix G: Table G Comparison of topics selection between Japan and the UK**

<b>Table G. Comparison between Japan and the UK, according to the order of agreement of the topics</b>				
	Japanese managers		English managers	
%	High-rated topics (over 85%)		%	
95	Schedule Management		Leadership	100
95	Quality		Legal Awareness	100
94	Communication*		Safety, Health and Environment	99
94	Leadership		Procurement (with Purchasing)	98
93	Cost Control		Project Life Cycles	98
93	Teamwork		Risk Management	95
92	Decision Making*		Financial Management	94
91	Performance Measurement		Industrial Relations	93
91	Negotiation*		Schedule Management	93
90	Project Plan		Business Need and Case	89
89	Goals. Objective/Success Criteria		Project Organisation	89
88	Programs and Project management		Project Context	87
87	Change Control		Programme Management	85
86	Ethics*			
	Topics in the middle level (65%-85%)			
84	Design Management		Quality Management	84
83	Law		Teamwork	84
83	Information Management		Personnel Management	82
83	Safety/Health		Project Management Plan	81
82	Stakeholder/ Political Environment		Project Management	79
80	Procurement		Contract Planning and Administration	79
79	Risk/Peril		Project Monitoring and Control	78
78	Inter-sectional Corporation		Resources Management	77
78	Conflict		Configuration Management and Change Control	75
78	Requirement Management		Supply Chain Management and Logistics	74
76	Contract Management		Cost Management	74
74	Systems Management		Work Management	73
74	Environmental/Sustainable Development		Value Improvement	73
74	Organisation Structure		Conflict Management	69
73	Work Content and Scope		Stress Management	68
73	Project Life Cycle			
72	Value Management			
72	Value Engineering			
72	Business Need and Case			
70	Personnel Management			
69	Financing			
69	Partnering Management			
67	Economical Environment/Impact			
	Topics in the bottom level (lower than 65%)			
63	Resource Management		Design Management	62
57	Marketing and Sales		Marketing and Sales	50
51	Risk/Uncertainty		Information Management	46
50	Industrial Relation		Performance Measurement	43
49	Stress Management		Systems Management	36
			Goals. Objective/Success, Failure	35
			Integrative Management	33
			Requirements Management	32

## Appendix G: Table G Comparison of topics selection between Japan and the UK

**Table G.1. Colour categories in Table G**

*	Only in Japanese straw man
X: Yellow	High-rated in the UK
X: Dark green	Low-rated in the UK (other than those high-rated in Japan)
X: Light blue	High-rated in Japan
X: Green	Low-rated in Japan (other than those high-rated in the UK)
X: No colour	Topics in the same level

Note for Table G.: Definition of each topic is shown in Appendix B for the UK and in Appendix H for the Japan.

## **Appendix H: Strawman to test the agreement of topics for Japanese Project Management Body of Knowledge (JC-PMBoK Strawman)**

Definition of each topic is described in both English and Japanese.

### **1. Project & Programme Management**

Project Management is an endeavour to achieve to the aim and objectives that are defined in projects, using corporate/management resource in reasonable ways. Project Management is widely regarded as the most efficient way of introducing unique change (aim in terms of quality and quantity) within agreed budget and time.

The most common definition is that a programme is a collection of projects related to some extent to a common objective. This could be a major project, a new business objective, a new product development, and so on. Programme Management is the effective management of that programme.

Portfolio Management on the other hand is the management of a number of projects that do not share a common objective. An operations manager of a company managing several different projects for different clients would be an example.

Both Programme Managers and Portfolio Managers share similar problems of resource allocation and management. “Learning from Experience” – Benefits Harvesting – from and across projects should be another important feature of Programme and Portfolio Management.

#### **1. プロジェクト&プログラムマネジメント**

プロジェクトマネジメントは経営資源を合理的に使い、プロジェクトで定義された目的を達しようとする試みである。プロジェクトとはそれぞれ異なる内容で（通常は）決められた予算と時間内で有益な変化（量的、質的目的）をもたらすものである。プロジェクトマネジメントはある一つの変化をもたらすのに最も効果的な方法である。

プログラムの最も一般的な定義は、ある共通の目的に関係する複数のプロジェクトの集合、である。プログラムはまた、ある主要プロジェクト、ある新ビジネス、ある新製品開発、等を指すこともある。（プロジェクト）ポートフォリオ・マネジメントは複数のそれぞれ目的が異なるプロジェクトのマネジメントである。

プログラムマネジメントとポートフォリオ・マネジメントは、どちらも経営資源の配分という共通の課題を持つ。過去のプロジェクトからの経験や、抱える複数プロジェクトでの経験からのフィードバックはプログラム/プロジェクトマネジメントの重要な側面である。

## **2. Project Goals, Objectives and Success Criteria**

It is essential that project's goals, objectives and success criteria be clearly defined and agreed before significant development is initiated. Project goals, objectives and success criteria should be determined at the beginning of the project, and reflect directly on the key objectives and aims of the project. Project goals, objectives and success criteria provide the basis for project management trade-off decisions during the course of the project.

### **2. プロジェクトの目的・成功基準**

プロジェクト目的・成功基準は明確に成されなければならない、それは主要なプロセスの開始前に関係者間で合意されるべきである。目的・成功基準はプロジェクトの初期で決定され、プロジェクトの目標、目的を直接的に表す。プロジェクト進行中のマネジメントで重要な意思決定を行う際の議論のベースとなる。

## **3. Business Needs and Cases**

The business case defines why the project is required and what the change is to be for each participant of the projects. The business case should include an outline of the project's objectives, deliverables, time, cost, technical, safety, quality and other performance requirements, and the major project risks and upside opportunities.

Upon completion of the project there should be a formal evaluation of whether the project achieved its stated business benefits.

### **3. ビジネス機会/経済性評価**

ビジネス機会/経済性評価では（プロジェクト各参加者にとって）プロジェクトが何故必要か、必要な変化は何か、を定義する。ビジネス機会/経済性評価はプロジェクトの概要を定義することも含み、時間、コスト、技術的、安全、品質そしてその他必要性能項目及びプロジェクトに潜む主な危険性とその危険を犯すことで得られうる便益について等を取り扱う。プロジェクトの完了と共に、定義されたビジネス上の利益にかなったか、期待した経済効果があったかどうかについて公式に評価が行われる。

## **4. Project Lifecycle**

The project life cycle describes the sequence of phases through which the project will evolve. It is absolutely fundamental to the management of projects. (The life cycle is the only thing that uniquely distinguishes projects from non-projects.)



The basic life cycle follows a common generic sequence: Concept, Design & Development, Execution, Operation and Maintenance, Abolition, Post-Project Evaluation, etc. –.

#### 4. プロジェクトライフサイクル

プロジェクトライフサイクルデザインはプロジェクトが進行してゆく各段階を時系列で表現するものである。プロジェクトのライフサイクルはプロジェクトのマネジメントを論ずる上で不可欠なものでありプロジェクトをそれ以外と区別する唯一の概念である。

基本的なライフサイクルは以下のようなプロジェクト固有の進展過程で表される。

①コンセプト策定、②デザイン（計画・設計）と開発、③計画の実行、④オペレーション(運転、供用、使用)&メンテナンス、⑤廃棄、⑥プロジェクト事後評価

### 5. Project Strategy / Project Management Plan

The Project Management Plan is the plan regarding how the project is managed. The Plan should include a definition of overall objectives, statements on how these should be achieved (and verified), estimates of the time required and the budget, quality policy, safety, health and environmental policies, and risk management strategy. Other items of a technical, commercial, organisational, personnel or control nature might also be included. How project performance is evaluated should also be planned. Together with aims and definitions of the project, all these plans should be written in the Project Management Plan. It should be reviewed periodically as the project goes through its formal review “gates”<sup>1</sup> and continuously updated at these points.

#### 5. プロジェクト戦略/プロジェクトマネジメント計画

プロジェクトマネジメント計画はプロジェクトが如何にマネジメントされるかについての計画である。責任、権限、予算、品質、期間、安全性と健康と環境に関わる方針、リスクマネジメント戦略が含まれる。さらにその他の技術的、営業的、組織的、人事または管理に関わる事項も大抵の場合は含まれる。途中プロジェクトがどのように評価されるかもここで計画される。これはプロジェクトの進行状況によって見直される。これらの計画が当初の目的、定義と共に『プロジェクト計画書』に示され、プロジェクトのマネジメントにおいて常時使用される。

### 6. Value Management

Value may be defined in terms of worth. Another definition is the quotient: performance divided by cost. Value Management is a structured means of improving effectiveness in line with the organisation’s goals. (Value Engineering is the structured approach to optimising project value through examination of the project's

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<sup>1</sup> The concept of review “gates” is discussed in the Management of the Project Life Cycle.

design.) Value Management is concerned with the broader optimisation of strategic issues whereas Value Engineering is concerned with optimising the design, engineering and configuration aspects of value. Value Management is considered as applying the Value Engineering/Value Management process at the strategic definition stage of a project. Generally within the pure definition of Value Management this is done via a structured workshop.

## 6. バリューマネジメント

バリューは価値と定義できる。もう一つの定義はコストあたりの性能、成績とされる。バリューマネジメントは組織の目標に沿って効率性向上を組織的に行う方法である。バリューマネジメントは、ブレインストーミング等の組織的共同作業にて行われ、プロジェクト戦略策定(初期)段階においてバリューエンジニアリング/バリューマネジメントの手順を実行することである。バリューエンジニアリングが最適設計や工学技術に関わるものであるのに対して、バリューマネジメントが幅広い意味での戦略事項の最適化に関わるものである。

## 7. Finance

Financing the project is normally the sponsor's responsibility. The project management team should know, and be sensitive to, the impact of how the project is financed and the particular requirements imposed on the project by its financing.

### 7. ファイナンス(資金調達)

プロジェクトへのファイナンス(資金調達)は通常スポンサー（組織）が行う。プロジェクトマネジメントチームはプロジェクトへの融資がどのように行われているか、その融資によって課せられる特別な要求事項があるか、について知り、またそのことに敏感でなければならない。

## 8. Legal Awareness

Project management professionals should have an awareness of the relevant legal duties, rights, and processes which govern in a particular project situation. Selectively there should be an awareness of the potential causes of disputes, liabilities, breaches of contract, means of resolving a dispute, and legal basics of industrial relations<sup>2</sup>.

### 8. 関連法律の認識

プロジェクトをマネジメントする者はプロジェクトの特有な条件で関係する法律上義務、権利、手続きに対する意識を持たなくてはならない。対立が起こる可能性、対立を処理する手段、産業構造を形成する基礎的法律や規制、契約違反や契約破棄、等への意識が必要である。

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<sup>2</sup> Statutory responsibilities, conditions of employment, and anti discrimination legislation etc.

## **9. Marketing**

Marketing is the process of matching the abilities of an organisation with the existing and future needs of its customers, to the greatest benefit of both parties. The result is an exchange in which the organisation receives income through the meeting of customers' needs and customers receive benefits that satisfy their expectations.

### **9. マーケティング／市場・顧客動向調査**

マーケティングは現在及び将来の顧客／発注者のニーズに組織の能力を適合させることであり、顧客／発注者とマーケティングを行う企業両者の利益になるものである。その取引の結果、組織は顧客／発注者の要求に合うことで収入を得ると同時に顧客は自ら期待する結果を得ることが出来る。

## **10. Resource Management**

Planning, allocating and scheduling resources to tasks, generally including manpower, machine (plant and equipment), money, and materials, is another fundamental requirement of effective project planning and management. Resource Management typically covers resource allocation and its impact on schedules and budgets, and resource levelling and smoothing.

### **10. 経営資源マネジメント**

経営資源は一般にマンパワー、機械・機器類、資金と資材等を指し、各作業においてそれらを計画、分配、そしてスケジューリングすることは、効果的なプロジェクト計画とマネジメントにおいて必要事項である。経営資源マネジメントは概して経営資源の分配とそのスケジュールと予算への影響、さらに経営資源稼働率の標準化、効率化を取り扱う。

## **11. Environmental/Sustainable Development**

Construction activities have a large impact on the environment. They consume huge amounts of energy. Therefore environmental issues should be considered with regard to construction activities. Preserving wildlife, and issues with regard to energy sources and the disposal of waste, etc., are pertinent to Sustainable Development.

### **11. 環境、循環型社会マネジメント**

プロジェクトによる活動は環境への影響を考慮せずに行う事は困難である。自然環境保護問題、エネルギー等天然資源枯渇問題、廃棄物処理問題は持続的な経済活動を行うのに避けられない事柄である。プロジェクトのマネジメントにおいてはこれらの問題を緩和、解消出来る方策や技術の採用、開発が不可欠である。

## **12. Economic Environment/Impact**

Project's activities usually need huge resource. Therefore, economic activities affect project activities, whereas project activities affect the economic environment.

Resource necessary for project's activities depends on Economic environment.

Economic environment has big impact on cost, schedule, and quality of projects.

Benefits as project's delivery become social stock, stimulating economic activities that led to needs of new projects. Aims and objectives, means, and other factors such as constraints are affected by Economic environment/impact.

### **12. 経済環境、経済効果**

プロジェクトによる活動はそこで使用する経営資源が多であり、経済環境との相互関係が深い。プロジェクトの活動に必要な経営資源の入手の難易はその時々の経済環境によって左右され、プロジェクトのコストやスケジュール、品質に大きな影響力を持つ。プロジェクトの活動によってもたらされた成果物から得られる恩恵（サービス、利益）は社会のストック（資本）となり経済効果としてプロジェクトを行う動機となる。経済環境の変化によりプロジェクトの目的、手段、その他の制約事項等が大きく影響を受ける。

## **13. Stakeholder/Political Environment**

There are many kinds of stakeholders, including residents, industry and politicians.

Stakeholders can have a considerable effect on the success of a project. Understanding their input to projects is very important.

### **13. 利害関係者、政治的環境、合意形成**

プロジェクトとその利害関係者との関係には近隣住民の理解度から産業界の利害、プロジェクト推進に対する民意や政治的環境等、多くのレベルの事柄があるが、それら様々な階層においてプロジェクトに対する理解を得ることは非常に大きな意味を持つ。

## **14. Safety, Health & Environment Management**

“Safety, Health, and Environment” involves determining the standards and methods required to minimise, to a level considered acceptable by the public, the legal system, users and operators, and others, the likelihood of accident or damage to people, equipment, property, or the environment.

### **14. 安全衛生及び環境管理**

安全、衛生、及び環境管理では、公衆上、法基準上、ユーザー、その他にとって必要と考えられる安全な環境を保つために行われる。人々、機材、財産、あるいは環境への損害や事故発生の可能性を最小限に留めるのに必要な水準と方法を定めることである。

## 15. Quality Management

Quality refers, obviously, to more than just technical performance. Quality applies to everything in Project Management: Commercial, Organisation, People, Control, Technical, etc. Quality Management identifies what the client really wants, defining the organisation's mission, measuring throughout the whole process how well performance meets the required standards, and involving the total organisation in the implementation of a deliberate policy of continuous improvement.

### 15. 品質管理

品質は技術力のみならず、プロジェクトマネジメントにおいて、経営、組織、人員、管理、技術、等全てのことに当てはめられる。顧客、利用者が真に必要としているものを見出し、そのために行う組織の課題を定め、性能が要求される水準を満たしているかを全体のプロセスを通じて測定し、そして継続的向上を目指して計画的戦略行動に組織全体で取り組むことである。

## 16. Budgeting & Cost Management

The completion of the project within its budget is a central objective of project management. Typical information/tasks needed for cost management includes that on:

- budgets (including estimating), generally based on work breakdown structure or [cost] code of accounts;
- obtaining and recording commitments/accruals;
- measurement of work accomplished and value earned/valuation of work, including treatment of changes (change control) and claims;
- cash flow;
- forecast out-turn costs;
- variance analysis of the trend in forecast versus previous out-turn cost.

### 16. 予算・コスト管理

プロジェクトを予算内で完遂することはプロジェクトマネジメントの基本的な目的である。コスト管理では一般に以下の事柄が必要となる。

①予算／予測コストの作成（適切な作業内容定義に基づく）、②完了した仕事の財務上価値とパフォーマンス評価（変更事項の考慮を含む）、③キャッシュフロー、④未終了作業のコスト予測、⑤当初見込コストと実際のコスト比較及び分析。

## 17. Schedule

The effective planning and accomplishment of activities' timing is a central skill of project management. Schedule comprises ordering the processes required to ensure timely completion of the project. Scheduling consists of activity definition, activity sequencing, activity duration estimating, schedule development, and schedule control. Resource Management also significantly affects Schedule.

### 17. スケジュール管理

効果的に各作業を完了するタイミングと時期を計画することはプロジェクトマネジメントにおいては主要な技術である。スケジューリングはプロジェクトが所定の期限に完遂されるようにプロセスの順番を決定することである。スケジュール管理では作業の定義、作業順序の決定、作業期間の見積もり、スケジュール改善、進行状況管理を行う。資源マネジメントとも深い関係を持つ。

## 18. Risk/Peril

Peril (risk) comes unexpectedly. Peril (risk) management should prepare for undesirable events. It tends to be ignored, owing to its unexpected nature. However, it is important to consider the damage that might be caused should it occur. The flexible response of staff to unexpected events should be something that is trained and educated for, rather than having to refer to manuals or systems. A plan is required to cope with extraordinary events.

### 18. 危機管理

危機管理は予期しないことが起こったときに対応するために行う準備である。危機管理は何が起こるか想定出来ないだけに困難で敬遠されがちであるが、予想しない危機が発生した際の影響を鑑みる必要がある。

## 19. Risk/Uncertainty

Uncertainty management is the management of uncertain things. Sometimes it brings us good things, and at other times bad things. Proper management of uncertainty brings huge benefits to a project. While uncertainty is inevitable to any project, ignoring uncertainty may lead to accepting bad luck.

### 19. 不確実性マネジメント

不確実とは確実でないこと、時には悪い結果を、時には良い結果を生むことである。不確実なことは適切にマネジメントされれば良い結果を生みプロジェクトにおいて利益をもたらす。不確実性を無視することは悪い結果を生むことをも許容することを意味する。

## 20. Research and Technology Management

Where technology development is likely to be an issue in the future, or where operation of the product or interfacing technology or support are likely to be important, there should be a clear technology plan prepared at an early stage of the project. Further, technology issue needs to be reconsidered and updated at any project phase.

Technology development should include the followings;

- 1) Setting of Objectives of Technology Development
- 2) Arrangement of places with creative environment
- 3) Knowledge sharing/exchange of technology development in an organization

### 20. 技術／技術開発マネジメント

技術開発が将来重要な要素であると考えられる場合、成果物の使用／供用中に技術が重要な問題である場合において、明確な将来技術計画／技術開発予測がプロジェクトの初期の段階から行われなければならない。また、プロジェクト進行中にも技術的要素についての見直しが必要である。技術開発のマネジメントは①明確な技術開発の目標の設定、②創造的環境の場の設定、③組織内での効果的な知識の共有・交換を行うことが重要である。

## 21. Modelling and Testing

There are considerable benefits in both modelling the design and the project deliverables as early in the project life cycle and as comprehensively as possible.

Techniques such as prototyping and rapid applications development can be deployed as ways of testing the design prior to full implementation authority being given.

The design and the evolving solution should be tested against the requirements as it develops. Testing can take a variety of forms and should be carried out effectively against the requirements definition.

### 21. モデル化、テスト

プロジェクトライフサイクルの早い時期で、可能な限り包括的に、デザインとプロジェクト成果物のモデル化、テストを行うことは相当な効果がある。モデル化・テストでは計画/設計の妥当性の確認、プロジェクトの内容について各関係者への効果的なデモンストレーション、或いは計画/設計・技術開発上の課題点抽出等を行うことによりプロジェクト活動から得られる成果の確認が出来る。

計画/設計（或いはある課題の解決方法）はプロジェクトの各段階で要求事項に照らされテストされなければならない。

## **22. Design Management**

Design is the activity of defining what is to be delivered. To a significant extent it will also influence how it will be made. It will obviously also determine extensively how it will be used. The design process needs to be effectively managed.

### **22. デザイン/計画・設計マネジメント**

デザイン/計画・設計はどのような物、サービスが提供されるべきかを定める作業である。デザイン/計画・設計はまた目的物がどのように製作されるかにかかなりの範囲に影響を及ぼし、それがどのように使用されるかも決定付ける。デザイン/計画・設計プロセスは効果的にマネジメントされなくてはならない。

## **23. Change Control**

Almost all projects suffer change to their current "definition" at some point in their evolution. Changes may be proposed by any of the stakeholders associated with the project. Change may be unavoidable or highly desirable; it may equally be unnecessary and not useful. It is essential that any proposed change to the project be formally controlled.

### **23. 変更管理**

ほとんど全てのプロジェクトにはその進行過程で当初の想定と異なる変更が様々な点で生じる。変更はプロジェクトの利害関係者の誰かに関することでもたらされることがある。変更は不可避であり、利益をもたらすこともあると同時に、不必要で面倒なこともある。生じた変更は適切にマネジメントされなければならない。

## **24. Phasing (Overlapping)**

Phasing is technique to overlap activities such as Concept, Design, and/or Construction stage of projects. Properly managed, Phasing can have a major impact on the performance of the project. Phasing is concerned with the strategic pacing of the project and the overlapping between different activities or blocks of activities. The phasing and overlapping of activities is also an important aspect of the project management team's skills.

### **24. フェーシング（複数工程同時期実施）**



企画、設計、施工等のフェーズリング（複数工程同時期実施）を認識し効果的にマネジメントすることはプロジェクトマネジメントにおいて決定的な影響を持つ。フェーズリングではプロジェクトの戦略的な時間管理や複数の異なる作業の同時遂行を扱う。フェーズリングはプロジェクトのマネジメントを行うチームとしての技術である。

## 25. Estimation

An estimate is a quantified assessment of the resources required to implement part or all of a project. The estimate usually begins as a quantification or measure of resource units required which can then be translated into a financial budget using rate tables or actual costs. The completion of the project within its budget is a central objective of project management. Process of estimating the proper cost that should be expected to be incurred should be managed. Estimated cost is used for evaluation against a clear baseline that is used for measurement of project performance.

### 25. 積算／見積

積算／見積はプロジェクトの全部または一部の施工における経営資源の数量査定（評価）である。そしてさらに単価表や実コストを参照し予算を算出するものである。積算/見積はプロジェクトコストの大部分を決定するだけでなく、プロジェクトの実行の是非、途中進行状況の判断にも頻繁に使用されることから、プロジェクトのマネジメント全体に与える影響はしばしば大きいものである。

## 26. Value Engineering

Value may be defined in terms of worth. Another definition is the quotient: performance divided by cost. Value Management is a structured means of improving effectiveness in line with the organisation's goals. Value Engineering is the structured approach to optimising the design, engineering and configuration aspects of value, generally done via a structured workshop.

While Value Management is considered as applying the Value Engineering/Value Management process at the strategic definition stage of a project, Value Engineering is concerned with optimising the design, engineering and configuration aspects of value.

### 26. バリューエンジニアリング (VE ; Value Engineering)

バリューは価値と定義できる。もう一つの定義はコストあたりの性能、成績とされる。バリューマネジメントは組織の目標に沿って効率性向上を組織的に行う方法である。バリューエン

エンジニアリングはプロジェクトで最適の設計が行われる段階での、一連の汎用技術の組織的応用である。バリューエンジニアリングはデザイン／設計変更を通じてバリュー(価値)を向上させるあらゆる可能性についてブレインストーミング等の組織的共同作業にて検討するものである。

これは総合的に以下のプロセスを示す。

1. 主要な課題の特定と目標の設定
2. これらを達成するのに必要なチームとプロセスの特定
3. プロセスの実行

バリューマネジメントが幅広い意味での戦略事項の最適化に関わるものであるのに対して、バリューエンジニアリングは最適設計や工学技術に関わるものである。

## 27. Industrial Relations

It is required to have knowledge of management of the work-force, statutory responsibilities and duties, negotiating terms and conditions of pay and employment, and manpower planning as well as inter-relationships between companies (such as KEIRETSU).

### 27. 業界構造

業界の社会的役割、労働者（労働者のマネジメント、労働者市場、法的義務、雇用条件、等）、業界構造（各会社相互関係等）、等について業界に関する知識を持つことが必要である。

## 28. Contract Management

Contract is to make promise with each other. By contract, each side to have the contract makes promise regarding each rights and duties. The promise has legal effects.

### 28. 請負・下請契約管理

契約とは約束することである。契約により、契約するもの同士が互いの権利と義務を約束し、その約束は法的拘束力を持つ。

契約マネジメントとは、契約で取り交わす事項を本来の目的を果たす為に適当なものにすること、契約により発生する法的義務が果たされているかの確認を行うこと、途中発生する変更事項により契約内容に問題がないかの確認をおこなうこと、及び契約の準備や執行等を取り扱う。これには契約の内容の理解そのものに加えて、リスク（未確定事項）の特定やその解決も伴う。

契約では契約時点でのリスク（未確定事項）の配分も必然的、或いは意図的に行われる。契約により適正なリスク配分が出来ているかも重要なことである。理想的には、最も良くマネジメント出来る方がその各々のリスクを負いそれに伴って発生する権利と義務を受け持つことである。

## 29. Bidding

Bidding in projects is a system to select companies that participate to projects. For project's owners, Bidding is to purchase good services by low cost/ reasonable cost. For contractors, Budding is to get chances to participate to projects. Bidding is a system for efficient project execution, and therefore, it should be managed properly.

### 29. 入札／応札

入札はプロジェクトに参加する企業の選別である。如何に良いサービスを低価格／適正価格で購入できるかが発注者の目的であり、他社との競争に勝ちプロジェクトに参加する機会を得るのが受注者の目的となる。入札はプロジェクトの効率的実行のために行われるシステムであり、適切にマネジメントされなくてはならない。

## 30. Partnering

On Partnering, relationships between clients and contractors are based on long-term relationships and both organizations are interdependent. This relationships is applied to from organizational level to personal level. It is needed to recognise merits and demerits of Partnering. Partnering should be managed properly.

### 30. パートナリングマネジメント

一般に発注者と受注者の関係は長期的で安定した付き合いを通じた相互依存的性格を持つ。この関係は両組織の個人レベルでのものから組織レベルまで同様なことが言える。パートナリングの得失を認識しマネジメントすることが必要である。受注者の目標は発注者の満足を得ることであり、発注者はプロジェクトの目的に沿うように柔軟な行動を取ることを受注者に期待する。発注者は可能な限り明確な自らの目標と、それを達成した時の報酬を受注者に示すことが重要である。両組織間の関係は契約上の関係をはるかに超えることが多いがそれらの条件を契約で極力表現することは両者の関係を透明にする上で重要となる。

## 31. Re-Engineering

Re-engineering is to review and radical restructure of existing processes, usually applying new technology or concepts. Although it is related to process improvement, Re-engineering treats not merely process improvement, but also restructuring of whole processes across entire industry. Therefore more holistic point of view is required for Re-engineering.

### 31. リ・エンジニアリング

リ・エンジニアリングは新たな技術またはコンセプトを用い現在あるプロセスを抜本的に見直し再構築することである。プロセス改善に近い用語であるが業界全体に渡るプロセスを見直すことも視野にあるという点でより広い視点を必要とする。

## 32. Procurement

Procurement is the process of acquiring new services or products. It covers the financial appraisal of the options available, development of the procurement or acquisition strategy, preparation of contract documentation, selection and acquisition of suppliers, pricing, purchasing, and administration of contracts. It may also extend to storage, logistics, inspection, expediting, transportation, and handling of materials and supplies. It may cover all members of the supply chain. Operations and maintenance, for example, needs to be supported through a supply chain management process.

### 3 2 . 調 達

調達とは新たなサービスや製品を購入することである。それは選択肢からの財政的査定、調達戦略や調達方法の開発、契約文書の準備、請負者やメーカーの選択、価格決定、購入、支払い、供給物(資源)の取り扱いを含む。これは一連のサプライチェーンに関わる全てのメンバー(組織)に関係することである。例えばオペレーションやメンテナンスは調達マネジメントの一環として組み込まれるべきであろう。

多くのプロジェクトでは調達はコストの大部分を占める。バリュー・フォー・マネー (value for money) が実戦されることが重要である。主要な調達は全て慎重な承認の基に行われるべきである。ビジネス機会/経済効果と照らし合わせ、実行可能な選択肢が全て考慮されるべきである。

調達戦略はプロジェクトの非常に早い段階で行われなくてはならない。これはしばしばプロジェクトの外的条件(例えばプロジェクトの緊急性等)から決定される方針に基づくものである。調達戦略ではプロジェクトの定義と調達市場を決定する役割を果たす事も多い。さらに調達戦略はプロジェクトの定義の契約条件、価格決定方法、下請やメーカーの選択方法を含む。

## 33. Inter sectional corporations

Various experts and sections participate to projects. To integrate such different participants and make corporative relations within them is necessary for proper promotion of projects.

Some of representative examples of sections that need to be integrated are:

- People who graduated from science course and other different courses such as business management (Technology Personals and Management Personals in Japan)
- Public sector and Commercial sector
- Different professional domains in Engineering (e.g. Electric Engineers, Structure Designers, Process Engineers, Machine Engineers, Civil Engineers, System Engineers,

### 33. 分野間協調

プロジェクトにおいては様々な分野の人々、様々な組織が参加する。これらを一体として動かすことはプロジェクト推進のために不可欠なことである。しかしながら個々の分野、個々の組織はそれぞれ異なる認識、異なる目的を持っていることが多いことから、互いのコミュニケーションは同分野、同組織内でのものと比較するとより難しいものである。これはプロジェクトの遂行に大きな妨げになる恐れがある。プロジェクトのマネジメントを行う者は分野間協調に対する意識を持たなければならない。それぞれを区分する背景(即ち、教育、仕事の性格、人事制度、組織文化、組織の目的、外的条件)を考慮し、強いリーダーシップにより同一の目標に向けて調和を図ることが重要だ。

分野間協調の妨げになっている枠組み、制度、システム等についてはプロジェクトの目的に添って見直されるべき場合もある。

分野間協調が必要な場合の例は以下に挙げられるもの等があろう。

文系(事務系、文官)、理系(技術系、技官)

公共分野、民間分野

専門技術別職分(例えば、電気、建築構造、意匠デザイン、エンジニアリング、機械、土木、情報技術、システムエンジニア等)

## 34. System Management

A system is a high level definition of the various elements, both concrete and less tangible, which comprise a viable entity. Systems management comprises the prime activities of Systems Analysis, Systems Design and Engineering and Systems Development. A system may be a small and simple such as a filing system, whereas it may be bigger and more complex such as a global information management system. Information management system, budget control system, estimation system, procurement system, decision support system are other examples.

### 34. システム構築・管理

システムとは実行可能な存在から成る、有形、無形両方の形をとる、様々な要素の、ハイレベルな定義である。システムは例えばファイリングシステム等のような、比較的小さく単純なものから、例えばグローバルマネジメント情報システム等のような、比較的大きく複雑なものまである。情報管理システム、予算管理システム、積算システム、資材調達システム、意思決定システムその他の例が挙げられる。

システムマネジメントはシステムで用いる技術的な、組織的なコスト、スケジュール、その他のパラメーターを綿密に作成し、そのシステムのコンセプトを実現させる為の、計画、設計、デザイン、調達、実行、及びテストのマネジメントである。

システムマネジメントはシステム解析、システム設計/工学、システム開発/改善の主要な活動部分を指す。

## 35. Requirement Management

Requirements management is to define the user/customer requirements and building the system requirements before going on to develop the performance specifications in

detail. Requirements should be comprehensive and clear, well structured, traceable and testable.

### 35. 要求事項マネジメント

要求事項マネジメントは利用者／顧客の要求と成果物の要求事項を、詳細な機能仕様を定義する前に確認、決定することである。要求事項は包括的で明らか、相互関係が構造的にはっきりとして、元の意味するところが分析可能かつ試行可能でなくてはならない。要求事項はプロジェクトの成果物供用時でのレベルまで具体的であるべきである。成果物供用が本来の一連の要求事項を満たすかをチェックしなければならない。当初の要求事項からのどのような変更も理由、経過がはっきりとしていなくてはならない（例えば文書化されているか、説明可能か等）。要求事項はプロジェクトの進展に伴い常に最新事情を反映したものにする必要がある。

## 36. Work content and Scope Management

A fundamental aspect of effective project planning, and therefore of effective project management, is to define the scope of the project and of breaking this into manageable pieces of work. This can be achieved by first producing a scope definition (via Requirements Capture etc), then breaking the project scope into a product orientated hierarchy, i.e. a Product Breakdown Structure (PBS), and finally into a task orientated hierarchy, i.e. a Work Breakdown Structure (WBS).

It also provides the foundation for determining Earned Value and activity networks.

### 36. 作業内容/スコープマネジメント

作業内容/スコープマネジメントは効果的なプロジェクトの基本はプロジェクトで行うべきことの定義とそれをマネジメント可能な（把握可能な）程の大きさの作業単位に分割することである。これは最初にプロジェクトで成される仕事を定義し（要求事項マネジメントを経て）、これを製品ごとに階層化を行い（=Product Breakdown Structure : PBS）、最終的には作業分担ごとの階層分けまでを行う（=ワーク・ブレイクダウン・ストラクチャー : WBS）。プロジェクトの影響範囲（スコープ）の定義はどのような物がプロジェクトの成果物となるかを示す。PBSは各作業単位に分割することなしに、プロジェクトを構成する生産物別で階層的分割を行うことである。WBSは作業単位の詳細な分割である。それは各作業を一纏りに出来る単位ごとで、ネットワークスケジュール上で定義されるレベルで表現できる。WBSから組織的ブレイクダウンス・トラクチャー（OBS）、やコスト・ブレイクダウン・ストラクチャー（CBS）へと発展させることが出来る。これらはまたアーンド・バリュー（Earned Value）と作業ネットワークを作るのに必要なものとなる。

## 37. Performance Measurement

Performance Measurement is to capture, analysis and reporting of actual performance, re-planning and adjusting the remaining work for a project, and analysing the results for planning future projects. The people who manage projects should monitor the project against the project's appropriate performance indicators.

### 37. プロジェクト進行状態分析／管理

プロジェクト進行状態分析、評価を行い、評価結果を基にプロジェクトでの残りの作業の再計画、調整等を行う。プロジェクトのマネジメントを行うものは適当と考えられる主要指標を用いてプロジェクトの進行状況を測ることが必要である。

アーンド・バリュー・マネジメント (Earned Value Management ;EVM) はプロジェクトでコストの見地 (金額等) から測られた代表的な物理的進行度を表現する方法である。プロジェクトにおける物理的進行度と財務上の支出価値が連動していることが必要となる。

## 38. Organizational Structure

The process of organising the structure, processes, and systems and procedures of a project. There are three basic kinds of organisation structure: functional, project and matrix. The choice of structure should take account of cultural and environmental influences and may change as the project evolves through the project life cycle and because of different types and conditions of contract.

### 38. 組織構造

プロジェクト組織の構造は指揮系統組織、プロセス、システム、及びプロジェクトの手順を明らかにするものである。通常、プロジェクトの全体構造を作る上で重要となるのはプロジェクトマネジメント実行者／組織の権限範囲、プロジェクトに従事する人員の確保、経営資源の配置、作業分担と組織間のマネジメント、管理の定義、手順とシステムの報告、等である。

以下のような3つの性格の組織構造がある。

機能的 (Functional) - 経営資源の管理が完全にそれぞれ機能単位ごとで行われる組織

プロジェクト型 (Project) - 経営資源がプロジェクト専従で配置される組織

マトリックス型 (Matrix) - 経営資源が機能本位上の権限者に機能的に管理され、同時にプロジェクト本位の視点からプロジェクトの要求事項上の管理も行われる。

組織の構造は文化と環境の影響が考慮されるべきで、途中プロジェクトライフサイクル中のプロジェクト進展に伴う変更、或いは契約の条件・種類による変更等が行われる。

## 39. Information Management

Projects generate and absorb significant quantities of information. It is important that the project has an effective information management system. Information management covers the management of the systems, activities, and data that allow information in a project to be effectively acquired, stored, processed, accessed, communicated, and archived.

### 39. 情報マネジメント

プロジェクトでは膨大な量の情報が生み出され、利用される。プロジェクトにおいて効果的な情報マネジメントシステムが構築されていることは重要である。情報マネジメントはシステム、諸作業、そしてデータのマネジメントで、プロジェクトにおいての情報を効果的に得て、

一時的に蓄え、処理し、吟味し、受け渡し、共有ファイル化するようにする為のものである。文書管理はプロジェクトにおいて頻繁に使われる用語で情報マネジメントと同じ意味を持つ。一般的に、現代の情報とコンピュータ技術は効果的な情報マネジメントに多大な影響力を持つ。プロジェクト全般に渡り、総合的に役立つ情報システムが活用出来るようにすることはプロジェクトのマネジメントにおいて重要な位置を占めうる。

情報の配信はプロジェクトの参加者、利害関係者へタイムリーに必要な情報を届けることである。これは、不意に特定の情報を使用する必要が出た場合に対応することだけでなく、コミュニケーションマネジメント計画の実施も含む。

## 40. Communication

Communications can cover several media: oral, body language, written (textural, numerical, graphic), paper, electronic, etc. Formal meetings are one important aspect of communication and can, if not correctly managed, result in the waste of time, money and energy

### 40. コミュニケーション

仮にプロジェクトのライフサイクルがプロジェクトマネジメント手法の基礎とするならば、コミュニケーションはそれをうまく働かせるための必須事項である。

コミュニケーションは様々な方法；口頭、顔の表情や身振り手振り、文書（文章、数字、グラフ）、書面、電子文書、等々で行われる。しかし、内容と表現方法や姿勢が、伝達手段そのものよりも重要であるだろう。公式な会議は主要なコミュニケーションの一つだが適切にマネジメントされないと時間と金とエネルギーの無駄に終わる恐れがある。

いくつかの会議はプロジェクト進捗や全体構成に重要な位置を占める。例えばプロジェクト開始ミーティングがプロジェクト開始時点で行われる。その他には設計評価、定期途中評価会議等がある。プロジェクトをマネジメントする為にはプロジェクトのどの時点でどのような会議が必要で、それらを如何にうまく運営すべきかを知っていなければならない。

情報マネジメントもまた効果的なコミュニケーションのために重要である。

## 41. Ethics

Activities in projects, such as use of technology, have a large impact on society.

Therefore technology must be used so that society can benefit from it. Project managers need to be careful to ensure that the goal of a project, its means of execution, and the effect of the project on society are socially beneficial.

### 41. 技術者倫理

技術の使用は社会に多大な影響を及ぼす。技術は社会的利益にかなう様に使われなければならない。プロジェクトのマネジメントを行うものはプロジェクトの目標／方法／社会への影響が社会の利益になっているかについて高い意識を持たなくてはならない。

倫理的意識がプロジェクトに関わるチーム間に醸成されているかについて注意を払わなければならない。組織の中に倫理を尊重する環境を作り出すことが重要である。



## 42. Personnel Management

The management of personnel factors including training requirements, labour skill requirements, availability of required labour skills, worker reactions, change in size of labour force, issues in sex, age, or racial distribution of labour force, inter and intra group communication, local labour law requirements and working conditions.

### 42. 人事マネジメント

個々人のマネジメントはプロジェクトマネジメントにおいてしばしば重要な要素となる。雇用、現場作業員や職員に能力と実戦性を見抜くこと、研修プログラムの向上や能力向上要件及び目標、従業員同士の論争や健康と福利厚生を取り扱う。これらの（大部分と言わないまでも）多くの事柄には専門技術と経験が必要であると同時にプロジェクトマネジメントを行う者はこれらの事項についての関連知識が必要である。

## 43. Leadership

Leadership is required in every management levels in all project phases. Leadership is about setting goals and objectives and generating enthusiasm and motivation amongst the project team and stakeholders to support and work towards those objectives.

### 43. リーダーシップ

リーダーシップはプロジェクトマネジメントにおいてきわめて重要である。リーダーシップはプロジェクトのあらゆる場面、あらゆる階層でのマネジメントにおいて必要となる。一般にその状況が困難である程、マネジメントの階層が上になる程、相当なリーダーシップの技術を身に付けなくてはならない。マネジメントは経営資源（人、物、資金、技術、情報）を組織化し、管理し、指揮することにより（大抵は個人の力では実行困難な）仕事を成させる技術であると定義できる。リーダーシップとは何をなすべきかを見出しそれに取り組むのに最適の人員を充てることの出来る能力である。そしてゴールと目的を提示し、それを達成する為に、プロジェクトチームと周辺関係者の熱意とやる気を引き出すことである。

## 44. Teamwork

Effective teamwork is generally at the heart of effective project management. The people who are dealing with project management should be familiar with the process of forming a group of people into a project team that is to work together for the benefit of the project. This can be achieved in a formal manner by use of start-up meetings, seminars, workshops, etc. and in an informal manner by getting the team to work well together. Motivating and resolving conflicts between individual members of the team are important elements of teamwork. Cultural characteristics of the team

members should be given full consideration: different cultures create different working needs.

#### 44. チームワーク

良いチームワークは効率の良いプロジェクトマネジメントに欠かせない。プロジェクトマネジメントに携わる技術者はプロジェクトの為に協力して取り組むチームを作り組織化する方法を知っているべきである。これはプロジェクトスタートミーティング、集会、打合せ等の公式な方法、或いは、単にチームを互いに協力し合いよく働くようにさせることである。やる気を高めチームメンバー間の問題を解決したりすることはチームワークに重要な要素である。チームがチームとして持つ性格は十分考慮する必要がある。チームの性格ごとにそれぞれ異なるマネジメントが必要になる。

#### 45. Decision-Making

It is important to have an understanding of Decision-Making. Understanding of the decision-making process is important for proper management. Collective decision-making in an organisation should also be recognised, as well as decisions by individuals.

#### 45. 意思決定

意思決定は物事を思慮し、選択、判断することである。多くの動機、目標、手段から一つを選択し、その実現を目指すものである。誰が、何時、どのようにして意思決定を行うか、決定を下す際に必然としてある不確定要素をどう取り扱うかも問題になる。比較的複雑な意思決定過程を持つ合議制についての知識も重要となる。合議制意思決定によってある案件が合意に至る過程を認識し適切にマネジメントを行うことが重要である。

#### 46. Conflict Management

Conflict can occur at all levels. The act of Conflict Management is to channel conflicts so that the result is positive, preferably synergistically so, rather than destructive.

#### 46. 利害・意見対立マネジメント

対立はプロジェクトのあらゆる場面で起こりえる。その多くはプロジェクトを構成する組織がそれぞれ異なった目的を持っていることによる。プロジェクトを行う中で、さらに組織と組織の契約関係の中から容易に対立は発生する。対立マネジメントは対立を創造的に、効果的に解決し、対立を発散の方向ではなく、前向きで協調的な結果へ方向づける技術である。

#### 47. Negotiation

All projects will involve the need for negotiation. The art of negotiation is in achieving to the greatest extent possible what you want from a transaction while leaving all parties sufficiently content that the relationship subsequently works well.

#### 47. 交渉

全てのプロジェクトで交渉の必要性が生じる。交渉の技術は参加者全てが満足を得てその後の関係がうまくいくような内容で、その取引で可能な限り望むべき成果を得ることである。

### 48. Stress Management

The process of controlling factors which cause stress which include, the under development of a reasonably consistent set of procedures and techniques with which to manage work, under-delegation to the project team, a high need to achieve that is contagiously frustrated, and the organisation company being in the throes of major change.

#### 48. ストレスマネジメント

人は適度なストレスを必要としているがそれが行き過ぎると重大な能率低下をもたらす。ストレスマネジメントは職場において過度なストレスがかかった状態で仕事が行われていないかに注意を払い、スタッフや作業員の仕事が適度な環境のもとに行われるようにすることである。

### 49. Behaviour and Influence

As a leader, it is important to ensure one's influence on team members. In addition, the leader's behaviour, i.e. actions and attitudes, affects the behaviour of others. The higher the management level, the more people are influenced.

### 50. Coaching

Coaching is a technique to teach one's knowledge/experience to someone else. To teach the fruits of one's experience is different to learning from experience. Learning in an organisation is a central means for an individual to develop their knowledge. Less-experienced people need help from more-experienced people. To make the most of organisational knowledge/experience, coaching skills are required for everybody working in project management.

## **Added topics to final proposal for a JC-PMBok**

### **01 Learning and Knowledge**

Project managers learn within projects. The performance of project managers on their current project depends on the knowledge that they gained by past experience.

Learning is essential to acquiring knowledge (Kolb, 2000). Therefore, current learning in management practice is closely linked with tomorrow's project management performance. Learning takes place or should take place all the time in project management. The effectiveness of learning determines the effectiveness of project management. Learning should be consciously managed.

Through learning, managers acquire knowledge. Knowledge is essential in the management of projects. Such knowledge is easily lost. Knowledge should also be consciously managed.

#### **01. 学習と知識マネジメント**

プロジェクトをマネジメントするにあたり知識・知恵は不可欠なものであり、知識・知恵を上手く使えるかどうかはプロジェクトのマネジメントを行う上での生産性に直結する。学習とは知識・知恵を得るプロセスであり、知識を得るのに不可欠なことであるから、今日の学習は明日の生産性に直結する。プロジェクトを通じて得られる経験から学習することは多く重要である。プロジェクトの中での学習が絶え間なく行われるようにするためには学習は常に意識のもとにあるべきである。個人或いは組織としての知識・知恵は脆く失われ易いので、知識・知恵も蓄え使うために意識的に扱われるべきである。

### **02 Social and Cultural Issues**

Social and Cultural Issues have close relationships with many important topics within project management. For instance, 'project needs' may be affected by cultural values. We may need to consider stakeholders' cultural backgrounds. Project teams and/or organisations have their own cultures. When people deal with risk, they may have a fear of taking on an uncertain project. Thus, project management is associated with people. Therefore, Social and Cultural Issues can be a major topic in the Japanese PMBoK.

社会と文化に関する事項はプロジェクトマネジメントの重要項目と深い関係がある。例えば、プロジェクトのニーズは文化的価値観によって影響を受ける。我々は利害関係者の文化的背景を考慮しなければならない。プロジェクトチームは各々独自の文化を持つ。チームメンバーがリスクを扱う際、不確実なことを恐れるかもしれない。このようにプロジェクトマネジ

メントは人間に関係し、社会、文化に関する事項は日本のプロジェクトマネジメント知識体系の主要項目である。

### 03 Trust

Trust forms the basis of Japanese management. Every relationship, including those of individuals, teams, organisations, and nations, are based on trust (Bennett, 2000). At first, the author thought that trust is so common in Japanese culture that it does not need to be considered and to be taught as a special type of knowledge in management (project management). However, the West has definitely been struggling to implement trust in business practices (Latham, 1994; Hartman, 2000). Trust may not exist in some environments. Relationships between Trust and other topics, such as Business Case, Contract Management, and Cost Control may be trade-offs. Japanese managers need to realise that Trust will have been established at some expense. We need to recognise the importance of trust as an explicit concept, in the same way as other topics in project management.

#### 03. 信頼

信頼はマネジメントにおいて基本的な要素である。個人、チーム、組織間の関係の基礎は互いの信頼関係によるところが大きい。信頼関係を築くには相応の努力が必要である。また信頼は他の様々な項目、例えばビジネス戦略、契約、調達、コスト管理等とトレード・オフの関係となる場合がある。

注) 本文の一部は CRMP (CENTER FOR RESEARCH IN THE MANAGEMENT OF PROJECTS), UMIST (UNIVERSITY OF INSTITUTE SCIENCE AND TECHNOLOGY), MANCHESTER, UK からの許可を得て、CRMP、PMBok を翻訳したものを使用しています。

\*\*\*\*\*知識経験体系の定義終り\*\*\*\*\*

## **References of Appendix**

Association of Project Management, 1998. Application for membership' brochure.

Germany Project Management, 1998. Project management-KANON GPM.

Project Management Institute. 2008. Project Management Institute 2007 Annual Report, PMI, <http://www.pmi.org/>

Wearne, S.H. 2000. Project management professional development programme report, Requirement and arrangement for APMP Certification and PMP Certification.

Internal report, UMIST