9.0 Other Policies Affecting the Growth of Construction Professional

9.1 Expectation in Professional Service Serving Construction Industry

Professional services serving the building industry provide designs and link fragmented building industrial production processes between manufacturing and services. Continuous improvement of this knowledge intensive workforce is consistent with Malaysia's aspiration to become a high income nation by 2020. There are pressures on the professionals to be able to compete in a bigger market.

These Professionals need to prepare themselves to achieve high level of competitiveness and to be able to compete in a bigger market base. Furthermore, with the availability of today's technology, the expectation of the service getters or the clients are very high in comparison to the clients' expectation 20 years ago. The clients expect these Professionals to deliver services in matter of days and weeks, no more months and years as it was before. Thus, it makes the construction industry Professionals depending so much on technology.

Since late 80's most of the professional serving building industry migrated from manual drawing to Computer Aided Design and Drafting (CAD) where computer software are widely used replacing the conventional drafting tables and typewriters. The CAD software has changed the way people do their works, where drawings can be easily transferred through diskettes or CD ROM, and today even easier with the flash drives and emails. Although CAD technology and computer spread sheet make working and sharing information became easier, it has a major setback where copying are beyond control, thus creates a new issue with intellectual copyright control.

CAD is the technology that are widely used in the practice of these Professionals, but soon it will be replaced with the new paradigm of technology which is known as Building Information Modelling (BIM). BIM provides a new integrated working platform where the planning, architecture, engineering, quantity surveying and land surveying function to be integrated in a single working file. This mean that all disciplines of the said Professional need to have the software and must know how to operate the software.

Larger corporations and government agencies insist on the use of Building Information Modelling (BIM) in their development projects. Although some architects and engineers have started using BIM in their offices, currently, the use of BIM is not regulated

and there is no national standard. Agencies and professionals use their own ways of implementing BIM or adopt some foreign BIM protocols. Unless a BIM standard for Malaysia is agreed, there is likely to be confusion and inconsistency, especially once local authorities impose compulsory use of BIM in building plan submissions.

The Geographic Information System (GIS) is another new technology in Land Surveying and Land Planning. Both BIM and GIS are the future potential information technologies with high potential for integration. How well these technologies are integrated will be have a significant influence on how construction professionals do their work in the future.

9.2 Investment in Technology

Among the major investment made by the said Professional is the investment in technology which include the computer hardware and software. The future professional services to building industry will be very much depending on technology and it will not be an option anymore. Currently, some professionals serving the building industry have reservation in the type of software to purchase as there are issues with inter-platform compatibility and in some cases the sale of the software are monopolised by certain dealer or supplier.

In this case the Government should play a role as an enabler to stimulate growth for the professional services, by creating a good policy and infrastructure to allow competition and development of open platform software to provide a good environment for the industry.

9.3 Demand in Professional Service Serving Building Industry

The expected demand in the said Professional services can be estimated by comparing the professional to population ratio in studied country.

There is clear evidence of a global skills shortage that is particularly acute in the developing world. In 2011, Manpower Group's annual Talent Shortage Survey found that 45% of Asia-Pacific employers had difficulty filling job vacancies due to a lack of available talent. About three-quarters of employers globally cited a lack of experience, skills or knowledge as the primary reason for this struggle to hire appropriate workers.

Figure 9.1 Professional to population ratio at selected countries.

Profession	Architect	Engineer	Quantity Surveyor	Town Planner	Land Surveyor
	Professional to population ratio				
Malaysia (Popl: 30.3m)	1 : 15,150	1 : 2,680	1 : 29,700	1 : 68,650	1 : 67,560
United Kingdom (Popl: 64.1 m)	1 : 1,880	1 : 340	1 : 1,600	1 : 2,790	1 : 20,810
Australia (Popl: 23.7 m)	1 : 1,975	1 : 430	1 : 8,620	1 : 4,940	1 : 7,557
New Zealand (Popl: 4.5 m)	1 : 2,467	1 : 280	1 : 2,580	1 : 2,250	1 : 2,250
USA (Popl: 318.8 m)	1 : 1,300	1 : 390	1 : 39,750	1 : 19, 870	1 : 69, 100
Singapore (Popl: 5.5 m)	1 : 3,734	1 : 1,510	1 : 7,590	-	1 : 51,890
Thailand (Popl: 64.8 m)	1 : 24,923	1 : 2,590	n/a	-	n/a

***Data source**: COAC, C. l. d. A. d. C. (2005). Architectural Practice Around the World. Catalunya: COAC International; UNESCO. (2010). Engineering: Issues Challenges and Opportunities for Development. Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO); Board of Architects Malaysia; Board of Engineers Malaysia; Board of Quantity Surveyors Malaysia; Malaysia Institute of Town Planners; Board of Land Surveyors Malaysia; European Engineering Report 2010; Australia Planning Institute; Australia Government Department of Employment; Australia Institute of Quantity Surveyors; Singapore Institute of Surveyors and Valuers, Royal Institute of Chartered Surveyors, UK; http://growingambitions.tes.co.uk/; New Zealand Institute Of Quantity Surveyors Annual Report 2015; http://www.planning.org.nz; American Association of Cost Engineering; American Planning Association.*

In Malaysia, PAM has reported that the ratio of architects to population is 1:15,000. This is far below the ratio of architects to population in most developed countries. Members of PAM have raised their concern about shortage of architects to serve the need of the growing population. The research commissioned by Union of International Architects (UIA)

shows that ratio of architects to population is between 1:500 to 1:2500 in European countries and close to 1:3000 in the US[26]. Some engineering professionals consider they face similar shortages in man power. Contrarily, during the interview with Board of Quantity Surveyors Malaysia and Board of Land Surveyors Malaysia, it was noted that the resources in quantity surveying and land surveying professions are not worrying the professions as the source of talents in both field of works are at the professions' comfort level[27].

Based on UNESCO's Engineering Report 2010, the demand for engineering talent is increasing and experts predict the global market for climate change solutions such as low carbon products and renewable energy systems will rapidly reach US$1 trillion dollars and continue to grow. At the same time, the shortage of engineers is marked in many countries.

Germany reports a serious shortage of engineers in most sectors, and in Denmark, a study showed that by 2020 the labour market will be lacking 14,000 engineers. And although in absolute numbers the population of engineering students is multiplying world-wide, percentages are dropping compared to enrolment in other disciplines. In Japan, the Netherlands, Norway and the Republic of Korea, for example, enrolment decreases of 5 to 10% have been recorded since the late 1990s[28].

UNESCO reported that in the past 150 years, engineering and technology have transformed the world, but the benefits they have brought are unevenly distributed throughout the world, nearly three billion people do not have safe water and nearly two billion people are without electricity.

Based on UNESCO global engineering report, the demand for engineering talent is increasing and is estimated that 2.5 million new engineers and technicians will be needed in sub-Saharan Africa alone if the region is to achieve the UN Millennium Development Goal of improved access to clean water and sanitation. Meanwhile experts predict the global market for climate change solutions such as low carbon products and renewable energy systems will rapidly reach US$1 trillion dollars and continue to grow.

26 COAC, C. l. d. A. d. C. (2005). *Architectural Practice Around the World*. Catalunya: COAC International.

27 UNESCO. (2010). *Engineering: Issues Challenges and Opportunities for Development*. Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO).

28 Ibid.

9.4 Time Limit for Professional Liability

Although the Limitation Act 1953 does impose a time limit for the plaintiff to carry out lawsuit against the defaulter, it does not provide specific time period to architects' and engineers' liabilities. Architects and engineers will be responsible for their design for the entire duration of the construction period and the 'building life span' period. Unfortunately, there is no specific definitions on building life span period. Several attempts to define a building life span ended inconclusive. Building life span varies on different building structural design and material used.

A research by Costmodelling Limited in UK revealed that different building components has different life expectancy period which can be summarised as follow:

Engineering:

Concrete Structure 81 years to 110 years.

Architecture:

Roof 21 years to 84 years
External Wall 25 years to 86 years
Internal Wall 29 years to 31 years
Stairs 59 years to 76 years

Hence, it reveals that it is not wise for the legislation system to impose unlimited time burden of liabilities on the Architects and Engineers. A list of building components such as roof and external wall will start giving way after twenty years. Some of the building materials such as waterproofing and weather seals may deteriorate as early as ten years. Architects and engineers should not be burdened with life-time liability on something that cannot last forever.

In some European countries, professional liabilities are limited to certain number of years. France for example, adopted the concept of decennial liability derived from the French Civil Code of 1804, where the liability for defects in a building is limited to ten years

from when the building is completed. The French Civil Code influences many other African, Middle Eastern and Far Eastern countries.

The provision of Article 880 of UAE Civil Codes allow for both architect and contractor to be jointly liable to compensate owner for the defect that affects the stability and safety of a building for the buildings which are to last for more than ten years. There are instances where the courts have construed the stated design life span of a structure as equating to the limitation period of the designer's liability.

In the US, American Institute of Architects (AIA) Statute of Repose revision January 2011 tabulates the limitation period allowed by each state for lawsuit against professional works which varies from 4 years in Tennessee to 15 years in Iowa, and most of the states imposed a limitation of 10 years period.

In many cases, architectural products have no estimated life span. There is a need to define a period of time after which the architect can no longer be held liable for personal injury or injury to property. The liability should be limited to the period when the architect has control of the property or until the potential deficiencies in the design would have been discovered.

Without legislation to protect design professionals from unlimited liability, an architect is exposed to litigation by any individual who might has suffered an injury in or around a building that was designed many years ago, even when the injury is a result of improper maintenance or other causes beyond the architect's control. Even where a plaintiff receives no damages, court costs and attorneys' fees alone will be substantial.

As a professional, architects and engineers' activities are bounded by code of professional ethics and also bounded by law. The Limitation Act 1953 is one of the many articles of law that is related to an architect's works and knowing what the Act entails is an advantage. Depending on situation, an architect could be a plaintiff or a defendant in a legal suit. The time period for an action to commence can differ or can be renewed, according to the knowledge of the law.

Concern 15: Architects and engineers will be responsible for their design for the entire duration of the construction period and the 'building life span' period. Unfortunately, there is no specific definitions on building life span period. Life-time responsibility of the architect and engineers are not justified in order to achieve accountability. There should be a time limit to professional liability.

Option 15A

i. A time limit to be imposed on the responsibility of architects and engineers based on 'building life span' period;

ii. A clear definition of 'building life span' has to be established;

iii. The Street Drainage and Building Act and UBBL need to be amended; and

iv. The public should be made aware of the changes and educated on avenues to take after such time limit has expired.

Option 15B

i. To impose a fixed time limitation similar to Statute of Repose proposed by American Institute of Architects which shall imposed a specific time limit e.g. 10 years for the Architects and Engineers, whereby the liability will be transferred to the building owner for the subsequent period; and

ii. The Street Drainage and Building Act and UBBL need to be amended.

Options 15C

i. The current practices is held whereby architects and engineers have life time responsibility; and

ii. Maintain the Act as it is.

Recommendations

Option C, maintaining the present Act will not address the concern raised by the affected professional. Hence, the architect and engineer will be responsible for their design for life. Consequently, this will impose a very high risk to these professionals which will cause high insurance premiums to cover the risk in their professional services. Maintaining status quo shall also give the misconception that the building owner is not responsible for the building, therefore, the building owner will not allocate sufficient budget for building maintenance. This will entail to premature building failure.

After considering suitable time limitation period subscribed by most European countries, UAE and the US, Option B is recommended where a suitable time limit between 10 years to 15 years to be imposed on architects' and engineers' professional responsibility after a building completes. Once a building is in operations after several years, many other aspect contributes to a building wellness such as maintenance and usage. Therefore, the building owner should be responsible for maintaining the building and to ensure the safety and health to its occupant and the property itself.