

DESIGNERS APPROACH IN MANAGING LEGAL DESIGN RISKS IN MALAYSIA

Zul Zakiyuddin Ahmad Rashid¹, Hamimah Adnan², Norazian Mohd Yusuwan²,
School of Housing, Building and Planning,
Universiti Sains Malaysia¹.
Faculty of Architecture, Planning and Surveying,
Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia².
Email: zakiphd@gmail.com, mimad856@gmail.com

Abstract

Design risk is one of various risk elements in a construction works. Exploring the understanding of Malaysian professional designers on design related risks, risk management, laws related to the management of such risks as well as the sufficiency of existing laws to the effect is the objective of the research. Quantitative research method was applied, where questionnaire survey was adopted to collect data from professional designers, consist of professional architects and engineers. The data were then analysed using SPSS software. The finding reveals that the respondents were in consensus in certain areas, such as the importance to understand the law, but were in mix of opinion with regards to some area such as the branches of law regulating their duty. It is concluded that, understanding of professional designers on design risks, risk management and the laws can be further improved.

Keywords: Risk Management, Design Works, Legal, Malaysia

INTRODUCTION

The construction industry is statistically one of the most hazardous industries in many countries (Gangoells, Casals, Forcada, Roca and Fuertes, 2010). One of the major risks in construction is the design risks, such as on design quality and communication framework (Dey, 2009). Risks may appear as a result of the competitiveness of the industry itself. While competing for business, it is not uncommon for designers to come with new and noble design. It must be noted that, while innovation may be applauded, there are risks associated with it. The common law has laid down a basic principle with regards to new and noble design. In *Turner v Garland and Christopher* (1853), Hudson's Building Contracts, 4th Edition, Vol. 2, page 1, a designer was asked to prepare plans for the erection of model lodging houses, using new patent concrete roofing which was cheaper than the alternatives available. The patent concrete roofing was not a success and had to be replaced. The owner claimed in negligence from the designer but the judge told the jury that, although failure in an ordinary building was evidence of want of competent skill, yet if, out of the ordinary course, a designer is employed in some novel concept in which he has no experience and which has not the test of experience, failure may be consistent with skill. Accordingly, this research is meant to explore the understanding of design risks by professional designer (architects and engineers), with emphasize on the role of Malaysian law towards better design risks management practice. The professional designer is limited to architect and engineer

PROBLEM STATEMENT

Design errors are a major factor in landslide and building failures in Malaysia. Gue, Liew and Tan (2006) have conducted 49 cases studies on building failures and landslides in Malaysia. According to them, the occurrence of building failures and landslide cases in Malaysia were due to the following factors:

Table 1 : Factors of landslide and building failures

| Factors | No of Incidents | Percentage |
|-------------------------|-----------------|------------|
| Design error | 29 | 60% |
| Design and construction | 10 | 20% |
| Construction error | 4 | 8% |
| Geology factors | 3 | 6% |
| Maintenance | 3 | 6% |
| TOTAL | 49 | 100% |

Gue, Liew and Tan (2006) concluded that common mistakes involving consultants in engineering project includes:

- 1) Inadequate engineering assessments for engineering design, such as evaluation of long term settlement and fill compression problems, long term slope stability at cut ground, negative downdrag on piles at filled ground and request for necessary subsurface investigation.
- 2) Mistakes or errors in the design without thorough checking and reviewing process.
- 3) Improper engineering specifications, which are not specifically tailored for the project.
- 4) Fails to highlight to the client or coordinate with other design engineers, who will take over the site for subsequent engineering design, such as the performance of the platform.
- 5) Fails to provide professional advice to the non-professional client on their commercial decisions, which has design implications subsequently.
- 6) Does not seek input for specialist works, which is beyond the field of his or her expertise. The civil and structural consultants only emphasize on the structural design.

Therefore, based on the above findings, it is obvious that design errors are the important risk factor to be managed. The issue is why design errors are the main factor for failure? Do the designers fail to understand the risks involved in their works? Is there any means for such matter to be improved?

It is important for the professional designers to be fully aware of the risks involved in their work. This research is meant to look at risks related to professional designers and design works, and how the law can improve the management of such risks. The role of the law in improving matters related to design risks by professional designers is in line with the suggestion by Gue and Wong (2008) on the role of policies and legislations in design risk management.

In particular, this research is meant to look at the risks associated with professional designer (architect and engineer) and design works, within the purview of the traditional procurement method, with reference be made to standard form of contract available in Malaysia (Pertubuhan Arkitek Malaysia (PAM) 2006 Form of Building Contract and Institutions of Engineers Malaysia (IEM) Standard Form of Contract).

The Malaysian construction industry is widely dominated by the traditional structure of contracting. Under the traditional procurement system, three distinctive parties are involved, namely the employer, consultant and contractor (Rosli, Ismail et. al, 2006). The traditional structure of contracting formed the backbone of the existing Malaysian building contract, such as the Pertubuhan Arkitek Malaysia (PAM) Form of Building Contract by Pertubuhan Arkitek Malaysia (PAM), Institutions of Engineers Malaysia (IEM) Conditions of Contract for Works Mainly of Civil Engineering Construction by Institution of Engineers Malaysia (IEM), the CIBD Standard Form of

Contract for Building Works (2000 edition) by Construction Industry Development Board and the PWD Forms by Jabatan Kerja Raya (Public Works Department).

The selection of PAM 2006 Form and the IEM Conditions of Contract as basic reference in reflecting the traditional method of contracting in Malaysia is based on the fact that both contract forms has been widely used throughout Malaysia. In addition to this, the selection of PAM 2006 Form and IEM Conditions of Contract is due to the fact that the both forms have been sanctioned by the respective professional bodies of architect and engineer in Malaysia.

AIM AND OBJECTIVES

The aim of this study is to explore the level of understanding of professional designers on design risks, risk management and the laws relevant in managing design related risks in Malaysia.

Malaysian legal provisions and the management of risks related to professional designers and design works

With reference to the role of law in establishing a framework for risk management practice, it can be looked from various angles.

Firstly, the role of law with regard to risk management is related to allocation of risk to the most appropriate parties to manage it. Accordingly, the parties with the highest capability will be able to manage the risk more sufficiently. According to Bunni (2003), the allocation should be based on a sound appraisal of the interplay between the parties and the risks. The most appropriate method may be to allocate the risks on the basis of control over their occurrence and the effect they cause when they eventuate. In the words of Edwards (1995), the responsibility for indemnifying the consequences of a risk event resulting from the activities of one of the contracting parties should ideally rest with the party who has control over that risk, such as:

- a) If the actions of client's staff, negligent or otherwise, result in damage to works being undertaken by a contractor, then that should be a risk indemnified by the client.
- b) If a contractor's employee or equipment damages a client's property, then those costs should be borne by the contractor.

In practice, it is usually best commercial policy that responsibility for such risks should rest with the party best able to manage them, such as the party with the relevant insurance cover. The actual sharing of risk, indemnities and provisions for supporting insurances will be determined by the wording of the relevant contract documents. For other areas of risk not caused by the actions of either party, standard forms of contract usually share the risk between them. Edwards (1995) further elaborate that risky activities can be transferred by:

- a) Contracts, subcontracts: such as having risky work undertaken by others. Residual vicarious liability by a principal for certain action of a subcontractor may remain, like the removal of support from adjacent land, the escape of fire or dangerous substances.
- b) Property, vehicle, machinery leases: such as the transfer of the repair/maintenance responsibility.

Transfer of financial consequences of risk, can be summarised as follows:

- a) Indemnities: agreements to pay costs of losses to property, damages for liability.
- b) 'Hold harmless' agreements: types of indemnity dealing with legal liability claims.
- c) Sureties: agreements by a third party within the framework of the main contract between the two parties to pay money in the event of non-performance by one of those main parties.
- d) Bonds: agreements to pay money if quality or fitness for purpose are not met.
- e) Guarantees: agreements to provide recompense for inadequate products or services. This is a separate contract wholly outside the main contract.
- f) Insurances
- g) Liquidated damages: agreement to provide recompense for the effects of delay.

Secondly, the law may directly impose certain duties and obligations upon the architect. The duties imposed by the law may well consist of requirement to exercise the basic element of risk management, consisting of risk identification, risk analysis and risk response. This is true based on the wordings of Yang Berhormat Dato' Fong Chan Onn in his opening remarks during a dialogue session between the Minister of Human Resource and the Chief Executive Officer of Construction Company in Malaysia on 7th March 2006:

“Department of Occupational Safety and Health (DOSH) is in the final stage of introducing a new set of regulations, which will require employers to manage safety and health at work sites systematically. One of the main elements in the regulations is the requirement for employers to conduct hazards identification, risk assessment and risk control at the construction sites.”

The construction industry has suffered through a decade of poor design and construction performance (CFMA, 2006; Simonson, 2006; Flores and Chase, 2005). Designers have been criticised for not being accountable to deliver designs on time, minimising construction change orders, and not giving contractors adequate design directives (CFMA, 2006; Chang, 2002; Rubin, 2004). Some construction industry participants have identified the professional designers as a major source of risk and inefficiency in the design-bid-build process resulting in the current poor delivery of construction services (Chang and Chiu, 2005; HC&O Editor, 2004).

In order to understand the perspective of risks related to design works, specifically in relation to professional designers and design, we have to look at the definition of risk. Risk is the potential for loss or gain: quantitative, qualitative, or both (Richardson, 2010). According to Raquib (2002), risk means uncertainty concerning the occurrences of losses and the term 'risk management' means scientific management having many effective tools to minimize, eliminate or control risk factors to protect human lives, businesses and properties.

Managing risks is one of the most important tasks for the construction industry as it affects the project outcomes (Dey, 2009). To avoid the occurrence of possible events that may jeopardize the project, it is important to manage the risk properly. It is achievable through risk management procedures. In addition, risk management is essential in ensuring that the project can be completed successfully. A project is considered successful when it is completed within budget, ahead of schedule, and meets or beats the objectives set out by the owner. And achieving those goals usually means that the project team was able to counteract, minimize, or eliminate risk (Adibi, 2007).

According to Amran, Rosli and Mohd Hassan (2009), risk management refers to the methods and processes used by organizations to manage risks (or seize opportunities) related to the achievement of their objectives. A risk management framework typically involves a few processes. Firstly, there is the careful identification, measurement, and assessment of risk types and contingencies that a company might face. Secondly, it involves the formulation of a response model or strategic action to tackle the risks (both threats and opportunities). This includes determining capacity for bearing risk, risk reduction or mitigation procedures and other strategies to benefit from the impact of the potential risk. Finally, it requires the monitoring and checking of the implementation of all the actions planned as proposed by the response model (Lajili and Zeghal, 2005). By identifying and proactively addressing risks and opportunities, the company protects and creates value for their stakeholders, including owners, employees, customers, regulators, and society overall (Amran et al., 2009). In general, risk management techniques can be classified into three different stages which include risk identification, risk analysis and risk response (Wood and Ellis, 2003).

METHODOLOGY

For the purpose of understanding the general perceptions of the critical issues related to the research problem, registered architects and engineers in Malaysia were selected as respondents for the questionnaire survey. The questionnaire was sent to 300 registered architects and 300 registered engineers in Malaysia. The list of respondents was obtained from the Pertubuhan Arkitek Malaysia (PAM) and Institute of Engineers Malaysia (IEM) registry. This is in line with the research objective, namely to gather the exploratory data from professional designers as one group on the problem statement. This will indicate the general overview of the problem statement involving professional

designers as a whole. Accordingly, there is no need to separate the data from respective sampling group.

With reference to the traditional procurement route and standard form of contract, the Malaysian PAM 1998 Form of Building Contract was selected as major reference in the questionnaire for architect respondents, since PAM forms has been widely used throughout Malaysia since 1969. In addition to this the selection of PAM 1998 Form is due to the fact that the Form has been sanctioned by the Pertubuhan Arkitek Malaysia (PAM), the Malaysian professional body of registered architect.

In addition to this, even though PAM 2006 was considered to be the replacement for PAM 1998, it was submitted that the structure and flow remains substantially unchanged from PAM 1998 (See Lian, 2010). The structure of the PAM 2006 Form remains in the form of traditional procurement system. Therefore, it is submitted that risks emanating from the structure of traditional procurement system underlying both PAM Forms remains the same.

With reference to engineers, the IEM Conditions of Contract for Works Mainly of Civil Engineering Construction was used for questionnaire survey questions drafted for engineer respondents. Accordingly, engineers can also be made lead designer, especially in projects where architect is not required. Examples for such projects are infrastructure projects such as bridges and dams. In line with the recognized role of an engineer, the engineer was also named qualified Principal Submitting Person under requirement of CCC (Certificate of Completion and Compliance) introduced by the government to replace the Certificate of Fitness for Occupation (CFO) previously issued by the local authority.

Questionnaire design

The questionnaire survey was drafted with four main constructs. The main constructs of the questionnaire are:

- Respondents **understanding** of design related risks
- Respondents **understanding** of risk management
- Respondents **understanding** of the law with regard to design risks management
- **Sufficiency** of the law

The first question is a general question on the respondent's experience, while the last 18 questions dealt with the research topic and were divided into 4 parts. All questions except the first one are in close-ended form, which requires the respondents to tick the appropriate boxes. The usage of this approach is intended to gather factual responses and to facilitate the respondents in answering the questionnaire, with the hope will increase the response rate.

The process on sending the questionnaire survey took nine (9) months to be completed, due to poor response rate. It has to be conducted in two rounds, as the replies were very low. The first round was conducted during the first four (4) months. Merely 21 architects and 33 engineers responded. As a result, the researcher has to conduct another round of questionnaire survey sending to improve the response rate, which requires another five (5) months. Within the period of 9 months, due reminder has been sent via reminder cards, emails and phone calls. Albeit two rounds of questionnaire survey being conducted and the sending of due reminders, merely 49 architects respondents and 65 engineer respondents replied.

All collected information from the survey were checked and verified for their correctness. Data cleaning was carried out by checking the frequency and descriptive statistics as well as coding and data entry. The cleaned data were then analyzed to obtain frequency, statistical descriptive analysis and variance, carried out using SPSS 120.

RESULTS AND DISCUSSION

The purpose of this question is to gather the respondents experience practicing as an architect or engineer in term of years.

Table 2: Respondent Experience

| | Year group | Architect | | Engineer | |
|----|--------------------|-----------|------------|----------|------------|
| | | Number | Percentage | Number | Percentage |
| 1) | Less than 10 years | 9 | 18% | 11 | 17% |
| 2) | More than 10 years | 38 | 78% | 53 | 82% |
| 3) | Missing | 2 | 4% | 1 | 1% |
| | Total | 49 | 100% | 65 | 100% |

From Table 2, seventy eight percent (78%) of the architect respondents consist of architects with experience of more than 10 years. Merely 9 respondents out of 49 or eighteen percent (18%) are architects with experience of 10 years and below. There are 2 missing data, or two percent of the total architect respondents. With reference to engineer respondents, 53 respondents or eighty two percent (82%) are having experience of more than 10 years. Out of 65 respondents, 11 or seventeen percent (17%) makes of the group of 1-10 years of experience. Accordingly, it is submitted that as a whole, the replies received are from experienced professional designers, as only eighteen percent (18%) of the architect respondents and seventeen percent (17%) of the engineer respondents were having less than 10 years of experience. In other words, seventy eight percent (78%) of the respondents architect and eighty two percent (82%) of engineer respondents are having more than 10 years of experience.

Part A: Risk Related To Designer and Design Works

Risk in Design

This question is aiming at identifying the general perception of the respondents on risks, especially risks related to design works. Ninety three percent (93%) of the respondents agreed that there are risks related to design works. Merely six percent (6%) were off the opinion that there is no risk related to design. It is submitted that majority of respondents agreed that there are risks related to design.

Effect of Risk

The aim of this question is to determine whether the respondents understand that risks involved in their works have significant impact on the project. Kashiwagi, Sullivan, Kashiwagi, Chong, and Pauli (2006) submitted that risks in construction can affect the proper performance of the project, in term of time, quality and cost.

Table 3: Respondent Understanding on Effect of Risks

| Total Respondents | Effect of Risk | Replies | Percentage (%) | Missing | Percentage (%) |
|-------------------|----------------|---------|----------------|---------|----------------|
| 114 | Time | 109 | 96 | 5 | 4 |
| 114 | Cost | 109 | 96 | 5 | 4 |
| 114 | Quality | 104 | 91 | 10 | 9 |

Table 3 indicated that ninety six percent (96%) agreed on the impact over time of completion, ninety six percent (96%) agreed on the risks effect over cost of project and ninety one percent (91%) agreed on impact of risk over quality. The replies gave an indication that the respondents understood the effect of risks over the project, in particular with regards to quality factor, time of completion and cost of project. The understandings of the respondents reflect the importance for the risks to be properly managed.

Sources of Risk

This question aims to gather the understanding of the respondents on the sources of risks. Risks in construction, in particular risks related to professional designers and design works can be originated from

- 1) The Standard Form of Contract (Taylor, 2000)
- 2) Execution of specific duties of the designer (Duncan, 1995)
- 3) Various stages involved in the traditional procurement route (as illustrated by Murdoch and Hughes, 1996).

The replies will give indications on the understanding of the respondents over sources of risks.

Table 4: Sources of Risks

| Total Respondents | Sources of Risk | Agreed | Percentage (%) | Unsure | Percentage (%) | Disagreed | Percentage (%) | Missing | Percentage (%) |
|-------------------|--------------------------------|--------|----------------|--------|----------------|-----------|----------------|---------|----------------|
| 114 | Building Contract | 82 | 72 | 11 | 10 | 20 | 18 | 1 | 1 |
| 114 | Traditional Procurement System | 84 | 74 | 16 | 14 | 13 | 11 | 1 | 1 |

Table 4 shows that the sources of risks listed to be evaluated by the respondents consist of the building contract, which include the Memorandum of Engagement/Agreement and Codes of Professional Conduct as well as risks emanating from the traditional procurement system. The respondents' replies on this matter can be summarized as follows:

Building contract

As part of the sources of risk, the building contract, which is read together with the Memorandum of Engagement/Agreement and Codes of Professional Conduct, was viewed by the respondents as follow. Seventy two percent (72%) of the respondents agreed that building contract as the sources of risks. Ten percent (10%) were unsure while eighteen percent (18%) disagreed.

Traditional Procurement System

Another source of risks viewed by the respondents is risks emanating from the traditional Procurement System. Accordingly, seventy four percent (74%) of the respondents agreed that risks can be the result of the traditional procurement structure, fourteen percent (14%) were unsure on this and eleven percent (11%) disagreed. The purpose of this question is to understand the respondents' perception over sources of risks. From the replies, it can be seen that mix of opinion existed among the respondents. Replies from the respondents indicated that the percentage of more than seventy percent agreed on sources of risks, while the rest of the respondents were unsure or disagreed on sources of risks listed. Giving the importance to understand the sources as a measure to manage the risk, the total percentage of more than twenty percent of respondents who was not sure or disagreed on building contract and traditional procurement as sources of risk is alarming.

Part B: Design Risk and Risk Management

Elements of Risk Management Practice

This question was drafted with the purpose of getting the respondents perception on stages required for efficient risk management practice.

Table 5: Element of Risk Management

| Total Respondents | Element of Risk Management | Agreed | Percentage (%) | Unsure | Percentage (%) | Disagreed | Percentage (%) | Missing | Percentage (%) |
|-------------------|----------------------------|--------|----------------|--------|----------------|-----------|----------------|---------|----------------|
| 114 | Risk Identification | 110 | 96 | - | - | 2 | 2 | 2 | 2 |
| 114 | Risk Analysis | 100 | 88 | 6 | 5 | 6 | 5 | 2 | 2 |
| 114 | Risk Response | 98 | 86 | 12 | 11 | 2 | 2 | 2 | 2 |

Table 5 shows that the respondents seem to agree that risk identification as an important risk management practice. Ninety six percent (96%) of the respondents agreed that risk identification is part of risk management practice. Two percent (2%) disagreed on risk identification as part of risk management. There were two (2) missing replies on this point, representing two percent (2%) of the total respondents. Eighty eight percent (88%) of the respondents agreed that risk analysis is an important risk management element. Five percent (5%) were unsure and another five percent (5%) disagreed. On this particular point, there were two (2) missing replies.

Eighty six percent (86%) of the respondents agreed that risk response as part of risk management stage, eleven percent (11%) were unsure and two percent (2%) disagreed. There were two (2) missing replies for risk response as part of risk management stage. Overall analysis of the respondents perception on risk management stages indicates that majority of the respondents (more than eighty six percent (86%) of the respondents) manage to identify the stages involved.

The respondents were asked about various methods available in risk response. List of ways to respond to risk were listed. The objective of this question is to gather the understanding of the respondents on various risks response strategies.

Risk Response Method

Table 6: Risk Response Method

| Total Respondents | Element of Risk Management | Agreed | Percentage (%) | Unsure | Percentage (%) | Disagreed | Percentage (%) | Missing | Percentage (%) |
|-------------------|----------------------------|--------|----------------|--------|----------------|-----------|----------------|---------|----------------|
| 114 | Risk Avoidance | 92 | 81 | 8 | 7 | 12 | 11 | 2 | 2 |
| 114 | Risk Reducement | 103 | 90 | 4 | 4 | 2 | 2 | 5 | 4 |
| 114 | Risk Transfer | 48 | 42 | 39 | 34 | 22 | 19 | 5 | 4 |
| 114 | Risk Absorbance | 38 | 33 | 42 | 37 | 29 | 25 | 5 | 4 |

Table 6 shows that eighty one percent (81%) of the respondents agreed that risk avoidance as part of risk response strategy. Seven percent (7%) were unsure and eleven percent (11%) disagreed. There were two (2) missing replies. Ninety percent (90%) of the respondents agreed that one of the ways pertaining to risk response is by risk reduction, four percent (4%) were unsure and two percent (2%) disagreed. On this point, there were five (5) missing replies.

With reference to risk transfer/allocation, only forty two percent (42%) of the respondents agreed that part of risk response strategy is by risk transfer. Thirty four percent (34%) were unsure and nineteen percent (19%) disagreed. Five (5) missing replies on risk transfer. Thirty three percent (33%) of the respondents agreed that risk absorbance is a part of risk response, thirty seven percent (37%) were unsure and twenty five (25%) disagreed. On risk absorbance, there were five (5) missing replies.

It was submitted by Mills (2001) that the most efficient response to risk is by allocating the risk to other parties who are in the best position to accept it. This question was drafted with the aim of getting the data from the respondents, whether they understand the importance and bearings of risk allocation.

Table 7: Risk Allocation as the Most Efficient Risk Response Strategy and risk allocation through contract

| Total Respondents | Risk Response Method | Agreed | Percentage (%) | Unsure | Percentage (%) | Disagreed | Percentage (%) | Missing | Percentage (%) |
|-------------------|----------------------------------|--------|----------------|--------|----------------|-----------|----------------|---------|----------------|
| 114 | Risk Allocation | 64 | 56 | 26 | 23 | 22 | 19 | 2 | 2 |
| 114 | Risk Allocation through Contract | 64 | 56 | 28 | 25 | 18 | 16 | 4 | 4 |

Table 7 shows that fifty six percent (56%) of the respondents agreed that risk allocation to party that is in the best position to accept it is an efficient risk response, twenty three percent (23%) were unsure and nineteen percent (19%) disagreed. There were two (2) missing replies on this particular point. The above findings indicate that the respondents were unclear on the importance of risk allocation. This is evidenced from the mix replies, where the figures split between those who agreed and those who unsure or disagreed are substantive. Having the contention by Mills (2001) on risk allocation as the most efficient risk response strategy, the respondents misunderstanding on this matter is a deep concern.

The findings indicated that the respondents did not really grasp the function of the contract in allocating the risks involved to the most appropriate party to handle it. Accordingly, fifty six percent (56%) of the respondents agreed with this point, while twenty five percent (25%) were unsure. Sixteen percent (16%) of the respondents disagreed. The above finding is in line with the earlier findings on the respondents' perception over risk allocation. Accordingly, the respondents were having major split of opinion on risk allocation as the most efficient risk management strategy, particularly via the application of the contractual provisions.

Mitigating Risk by Fulfilling Standard Required

General duties of professional designers can be traced down from list prepared by Duncan (1995) and duties originated from the standard form of contract as illustrated by Taylor (2000). According to the law, the duties have to be performed up to the reasonable standards before the designers can be absolved from liabilities as stated in *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582. In *Bolam's* case, standard duty to be performed by a designer is

measured with the performance of other designers with the same capacity. The question to be asked is whether other designers will act similar with the action of the designer is question. The replies will provide the researcher with data on the respondents understanding over areas requiring them to properly execute their duties.

Table 8: Respondents Understanding On Areas of Drawings Needed To Be Performed According To Required Standard

| Total Respondents | Aspect of drawings and specifications to be performed according to standards required | Agreed | Percentage (%) | Unsure | Percentage (%) | Disagreed | Percentage (%) | Missing | Percentage (%) |
|-------------------|---|--------|----------------|--------|----------------|-----------|----------------|---------|----------------|
| 114 | Meet the client's requirement | 98 | 86 | 6 | 5 | 8 | 7 | 2 | 2 |
| 114 | Define the scope of works completely | 105 | 92 | 4 | 4 | 3 | 3 | 2 | 2 |
| 114 | Comply with the Rules and regulations stipulated | 101 | 89 | 8 | 7 | 3 | 3 | 2 | 2 |
| 114 | Respect the project cost limit or budget | 90 | 79 | 4 | 4 | 15 | 13 | 5 | 4 |
| 114 | Are sufficient for tender purposes and unambiguous | 95 | 83 | 6 | 5 | 11 | 10 | 2 | 2 |
| 114 | Are practical and buildable | 94 | 82 | 9 | 8 | 9 | 8 | 2 | 2 |
| 114 | Are completed in the stated contract period | 89 | 78 | 9 | 8 | 14 | 12 | 2 | 2 |
| 114 | Ensure a safe working environment during and after construction | 99 | 87 | 11 | 10 | 2 | 2 | 2 | 2 |

Table 8 shows that most of the respondents agreed that the aspects of drawings and specifications listed have to be performed in accordance to the required standard, as a measure to absolve the designers from liability. In general, seventy eight percent (78%) and more of the respondents confirmed the areas listed as important to be properly executed in accordance to the required standard.

Part C: Risks under the Standard Form of Contract

According to Taylor (2000), risks in construction, which includes risks related to professional designers and design works can be the outcome of the Standard Form of Contract. Accordingly, this section is meant to deal with the respondents perception on risks related to the standard form available in the Malaysian construction industry, in particular PAM 1998 Form and BEM Form 2000 Edition. It must be noted that, the contract provisions on designers requires it to be read together with Memorandum of Engagement and Codes of Professional Conduct in providing a complete structure for architect and engineer. As such, the respondents' opinions on both texts were also solicited, together with the Standard Form.

Designers Responsibility Outlined by the Contract

This question is meant to gather the opinion of the respondents on the outlining of designers duty by the contract. The data will enable the researcher to understand the perceptions of the respondents on the sufficiency of the contract in outlining their responsibilities.

Table 9: Sufficiency of The Contract in Outlining the Designer's Responsibility

| Total Respondents | Sufficiency in outlining the designers' responsibility | Good | Percentage (%) | Average | Percentage (%) | Poor | Percentage (%) | Missing | Percentage (%) |
|-------------------|--|------|----------------|---------|----------------|------|----------------|---------|----------------|
| 114 | Standard Form of Building Contract | 85 | 75 | 18 | 16 | 8 | 7 | 3 | 3 |
| 114 | Memorandum of Engagement/Agreement | 71 | 62 | 34 | 30 | 6 | 5 | 3 | 3 |
| 114 | Codes of Professional Conduct | 76 | 67 | 29 | 25 | 6 | 5 | 3 | 3 |

Table 9 shows that generally the respondents gave split opinion on the effectiveness of the contracts in outlining the responsibilities. While many evaluated the contracts as good, quite a number ranked the contracts as average. By taking into consideration the replies that evaluated the contract as average/poor, it is submitted that there is a room for improvement, in relation to the contract document. With reference to this, it is important to understand the reason why some of the respondents regarded that the contract as average/poor in outlining the responsibility of a designer.

Risk Management by Proper Performance of the Contract Provisions

In this question, the respondents were asked to evaluate the contracts in term of proper performance of its provisions and efficient risk management practice. The replies will indicate whether proper performance of the contracts provisions is sufficient in avoiding risk occurrence, from the perspective of the respondents.

Table 10: Respondents Perception on Proper Performance of Contract Provision as Sufficient Risk Management Practice

| Total Respondents | Proper performance of the contracts provides sufficiently for risk management | Good | Percentage (%) | Average | Percentage (%) | Poor | Percentage (%) | Missing | Percentage (%) |
|-------------------|---|------|----------------|---------|----------------|------|----------------|---------|----------------|
| 114 | Building Contract | 61 | 54 | 35 | 31 | 13 | 11 | 5 | 4 |
| 114 | Memorandum of Engagement/Agreement | 54 | 47 | 38 | 33 | 17 | 15 | 5 | 4 |
| 114 | Codes of Professional Conduct | 62 | 54 | 34 | 30 | 11 | 10 | 7 | 6 |

Replies gathered shows that the respondents were having mix opinion on the point that performance of the contracts provision will provides sufficiently for managing risks. The percentages of respondents ranked it as good which consist of around half of the total replies. The rest split between average and poor. As such, for this percentage, merely executing the duties outlined by the contract provisions is not sufficient enough.

Protection against Risk under the Contract

The respondents were asked to give their opinion on the sufficiency of the contracts, in providing protections against risks related to professional designers and design works. The data will show the respondents opinion on the protection available to them under the contract.

Table 11: Respondents Perception on the Sufficiency of the Contract in Providing Protection against Risks

| Total Respondents | Sufficiency of the contracts, in providing protections against risks | Good | Percentage (%) | Average | Percentage (%) | Poor | Percentage (%) | Missing | Percentage (%) |
|-------------------|--|------|----------------|---------|----------------|------|----------------|---------|----------------|
| 114 | Building Contract | 45 | 39 | 44 | 39 | 20 | 18 | 5 | 4 |
| 114 | Memorandum of Engagement/Agreement | 39 | 34 | 50 | 44 | 22 | 19 | 3 | 3 |
| 114 | Codes of Professional Conduct | 41 | 36 | 45 | 39 | 23 | 20 | 5 | 4 |

The respondents were having mix opinion on the sufficiency of the contract, Memorandum of Engagement/Agreement and Codes of Professional Conduct in providing the necessary protections. Less than half of the total respondents ranked the contracts as good, while the rest consider it as average or poor. Accordingly, if the level of protection by the contract, Memorandum of Engagement/Agreement and Codes of Professional Conduct is not sufficient, the designers will have to take additional steps in protecting their works from risks.

Part D: Legal Framework on Design Risk Management

According to Raquib (2002), risk management is an area, which may be effectively thought of in the formulation of law and establishment of legal framework. Within this perspective, this section of the questionnaire survey is aiming at gathering information from the respondents on their understanding on the existing legal provisions, corresponding to efficient risk management measures of risks related to professional designers and design works.

Understanding the Law as Part of Risk Management

This question requires the respondents to indicate their opinion on the importance to understand the laws, as understanding of the laws is part risk management practice. Respondents’ replies on this question will give a better picture on their perceptions over the importance to understand the law.

Table 12: Understanding the Law as Part of Risk Management and Branches of Law Regulating Designers' Duty

| Total Respondents | Understanding the Law as Part of Risk Management | Agreed | Percentage (%) | Unsure | Percentage (%) | Disagreed | Percentage (%) | Missing | Percentage (%) |
|-------------------|--|--------|----------------|--------|----------------|-----------|----------------|---------|----------------|
| 114 | Law as part of risk management | 106 | 93 | 4 | 4 | - | - | 4 | 4 |
| 114 | Contract Law | 90 | 79 | 18 | 16 | 2 | 2 | 4 | 4 |
| 114 | Law of Tort | 70 | 61 | 34 | 30 | 4 | 4 | 6 | 5 |
| 114 | Statutory Provisions | 88 | 77 | 18 | 16 | 2 | 2 | 6 | 5 |

Table 12 shows that ninety three percent (93%) of the respondents agreed that it is important to understand the law, while four percent (4%) were unsure. Majority of the respondents perceived that it is important to understand the law, as part of risk management strategy. Ninety percent (90%) of the respondents agreed that their duties are regulated by the contract followed by law of contract and statutory provisions. The respondents seem to have split opinion on the branches of laws regulating their duties. Both respondents group were in mix opinion, especially on law of tort. Sixty one percent (61%) of the respondents agreed on tort as part of laws regulating their duties. This is alarming as law of tort plays an important role in regulating the designers' duties and liabilities.

Discussion on findings

It is important for the designer to understand and properly manage the risks related to their works. Risks resulted from the execution of the designers duty can be traced to the contractual terms, duties imposed upon the designers by the law of tort and statutory duty. In addition to the above, the structure of traditional procurement system also resulted into the possibility of risks occurrence. The traditional procurement arrangement consists of three different entities, namely the client, the contractor and the designer. Proper communication and coordination between the parties is essential in ensuring proper performance of the project. For instance, the client will have to convey completely the details required from the designer during briefing stage to ensure that sufficient design scheme can be prepared by the designer. Incomplete design by the designer as a result of insufficient information given by the client will increase the risks in relation to the design itself.

Accordingly, risk occurrence can bring catastrophic effect in various ways, such as financial disaster, damages to property and personal, even fatality. As such, it is submitted that it is critical for the designer to fully understand the risks and manage it properly to avoid its occurrence. Considering the effect of risks related to design works, it is important to have it properly managed. Professional designers need to better understand the risk and the importance of risk management. Risk management can be implemented out of the designer's own initiative, or by some other means, such as through legal provisions with risk management role incorporated in its implementation.

CONCLUSION

It was found that issues related to the identification of risks, its factors, risk management and its importance, understanding of the respondents on the laws, issues related to building contract on professional designers and the availability of proper legal provisions were identified as key points to be further explored. It was found that not even half of the total respondents evaluated the existing laws as imposing sufficient duties on the designer to observe basic risk management practice. Based on this perception, it is submitted that the law in general can be further improved to accommodate the needs in implementing the basic risk management duties to be observed by the designers. The perception of the respondents on the role of existing laws in risk allocation does not signify the importance of risk allocation through the application of law in Malaysia.

REFERENCES

- Adibi, S. (2007). Industry Should Embrace Risk Management Tools: Using Enterprise-Wide Risk Management Can Go a Long Way toward Successfully Completing Projects in the Building Industry, *New York Construction*.
- Amran, A., Rosli A. M. and Mohd Hassan C. H. (2009). Risk Reporting An Exploratory Study on Risk Management Disclosure in Malaysian Annual Reports, *Managerial Auditing Journal*, Vol. 24, No. 1, 2009, pp. 39-57.
- Bunni, N.G. (2003). *Risk and Insurance in Construction*, Spon Press, London.
- Dey, P. (2009). "Managing Risks of Large Scale Construction Projects", *Cost Engineering*, Vol. 51, No. 6, p. 23.
- Duncan Wallace (1995). *Hudson's Building and Engineering Contracts*, Sweet & Maxwell, London.
- Edwards, L. (1995). *Practical Risk Management in the Construction Industry*, Thomas Telford Publication, London.
- Gangolells, M., Casals, M., Forcada N., Roca, X. and Fuertes, A. (2010). Mitigating Construction Safety Risks Using Prevention Through Design, *Journal of Safety Research* 41
- Gue See-Sew and Tan Yean-Chin (2006). Landslides: Case Histories, Lessons Learned and Mitigation Measures, *Landslide, Sinkhole, Structure Failure: MYTH or SCIENCE ?*, Ipoh, Perak.
- Kululanga, G. and Kuotcha, W. (2010). Measuring Project Risk Management Process for Construction Contractors with Statement Indicators Linked to Numerical Scores, *Engineering, Construction and Architectural Management*, Vol. 17, No. 4.
- Hlaing, N.N, D. Singh, R.L.K. Tiong and M. Ehrlich (2008). Perceptions of Singapore Construction Contractors on Construction Risk Identification, *Journal of Financial Management of Property and Construction*, Vol. 13 No. 2 2008, pp. 85-95.
- Lajili, K. and Zeghal, D. (2005). A Content Analysis of Risk Management Disclosure in Canadian Annual Reports, *Canadian Journal of Administrative Sciences*, Vol. 22 No. 2, pp. 125-42.
- Malcolm Taylor (2000) *Avoiding Claims in Building Design: Risk Management in Practice*, Blackwell Science Ltd, London.
- Mills, A. (2001). A Systematic Approach to Risk Management for Construction, *Structural Survey*, Vol. 19, No. 5, pp. 245-252.
- Raquib, M.A. (2002). *Analyzing The Concept of Risk and Risk Management to the Formulation of Laws and Regulations and Establishment of a Legal Framework*, International Conference on Law and Commerce 2002, International Islamic University, Kuala Lumpur.
- Redhead v Midland Railway Co* (1869)
- Rosli, A. R., Ismail M. T., Wan Basiron W., Md. Asrul Nasid, Wan Nordiana W. A. & Zainab M. Z. (2006). Effect of procurement systems on the performance of construction projects. Department of Quantity Surveying, Faculty of Built Environment, Universiti Teknologi Malaysia
- Taylor, M (2000) *Avoiding Claims in Building Design: Risk Management in Practice*, Blackwell Science Ltd, London.

- Turner v Garland And Christopher* (1853) Cited in Hudson, *Building Contracts* (4th edn.) Vol. 2, p. 1, per Erle J.)
- Wood, G. D. & Ellis R.C.T (2003). Risk Management Practices of Leading UK Cost Consultants, *Engineering, Construction and Architectural Management*, Vol. 10/ No. 4.