

Public Sector Project Delay: The Malaysian Perspective and the Way Forward

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Abstract

Construction delay has been a protracted problem for the Malaysian construction industry. Recent report showed that 80% of public sector projects are behind schedule. This under-achieving time performance has led to many problems including public complaints, loss of reputation and revenue for the government and a slump in the industry's GDP contribution. Research in the area of project delay has mushroomed worldwide with attempts to place mitigation plans, but delay remains a global phenomenon. There is now an urgent need for revolutionizing construction practices and past research, backed up with few successful cases suggests that Supply Chain Management (SCM) could prove beneficial to reduce or eliminate delays in construction. SCM which originated from the automotive manufacturing industry promotes a more collaborative approach to construction management and has recently gained attention of the construction industry. However every country, including Malaysia, would certainly have disparities of their own compared to others being it from the cultural point of view, nature of problems, locality or improvements needed. Therefore, this paper will present part of a Ph.D. research which aims at illustrating the Malaysian construction industry experts' perception of the Malaysian public sector project delay, provide insight into these dilemmas, highlights the problems with current practices, its effects and the improvements needed. Subsequently, this paper would propose ratification to the problems using SCM. A semi-structured interview has been conducted to practitioners with at least 20 years' experience in the industry. The findings showed that Malaysia may be unique compared to other countries and that by considering a number of additional factors, SCM could prove beneficial to increase efficiency of the Malaysian public sector projects.

Keywords: Construction Projects, Construction Delay, Delay Mitigation, Supply Chain Management, Public Sector, Malaysia.

1. Introduction

Project success has always been highly sought. The inability to complete projects on time has been a very popular topic over the past decades. Recent reports showed that Malaysian construction industry as underachieving (CIDB 2009), as evidenced by the performance of public sector projects (Joshi 2009) and the time performance of government agency (Abdullah et al. 2010). Conventional practices still dominate the Malaysian construction

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industry (see Abd Shukor et al., 2011) and the urgent need for industry transformation has been reflected in the Malaysian Construction Industry Master Plan 2006-2015 (CIMP, 2007). Supply Chain Management (SCM) has been recognised as the potential saviour (Egan, 1998) while others acknowledge SCM as an important concept for the public sector (London & Chen, 2006).

An outcome of this research is to develop a conceptual guideline for the utilization of SCM tools and techniques towards mitigating/reducing delays in Malaysian public sector projects. This paper first provides an overview of the Malaysian construction industry scenario, followed by the results of a semi-structured interview conducted with industry experts. Based on the research findings, a conceptual SCM framework which aims at ratifying the problem is proposed. It is anticipated that the SCM framework can be used as a preliminary guideline towards understanding and strategizing solutions to address the problems of the industry.

2. Overview of Malaysian Construction Industry

Since the declaration of independence in 1957, Malaysia has started its development via the initial economic plan (1956-1960) towards achieving a developed nation by 2020. Given that most of the capital formation comes from construction works (Lewis, 1955), regular Malaysia Plans (published every 5 years) has been developed by the government towards a scheduled development of the nation. One recent government initiative responding to calls for improvement made worldwide is the Construction Industry Master Plan (CIMP) 2006-2015 aiming towards being world-class industry in 2015 (CIMP, 2007).

The industry was at its peak back in 1995 with a remarkable 17.3% GDP but since then, it kept slumping down to an average of 14% between 1994 to 1997, 5.2% between 1999 to 2004 (Ibrahim et al., 2010) while only recording an average 0.7% growth from 2000 to 2007 thus becoming the smallest contributing sector with an average input of only 3% to the GDP (CIMP, 2007). Being in the top three major economic sectors for the country (Ibrahim et al., 2010), sustainability of the construction sector is vital for the nation's survival.

3. Project Delay

Project success has been much desired by the industry. In general, project aims to achieve the best of the "Golden Triangle" – budget, schedule and quality (Chan and Chan, 2004). As such, timely completion stands as one of the main measures of success.

A common tenet for delay is the extension of time beyond the visible completion time planned by the contractor (Kaming et al., 1996). Project delay has been the subject of research in many countries such as Nigeria, Hong Kong, Lebanon and even Malaysia. Sambasivan and Soon (2007) reported that 17.3% of Malaysian public sector projects in 2005 are sick projects (more than 3 months delay or abandoned). A more recent report pointed out 80% of the government projects were delayed (Joshi, 2009) while Abdullah et al. (2010) indicated that 90% of MARA (government agency) projects exceeded scheduled completion dates. Meeting project schedule remains a challenge for Malaysia despite

approaching the end of CIMP 2006-2015. This suggests plans within CIMP have not been effective, thus signifying the need for major shift in practice.

4. Supply Chain Management (SCM) as the Way Forward

Traditional practices have been a subject of numerous criticisms. The industry has been described as adversarial in relationship, fragmented in nature, with lack of trust, full of conflict and disputes, poor customer/end-user focus and involvement; these have resulted in the industry to be resistant to improvement and innovation, shows poor time and cost performance, low quality, productivity and satisfaction level (Latham, 1994; Egan, 1998; Chan *et al.*, 2003). An urgent revolution is very much required towards improving the current practices, technology, mentality etc., to ensure an extra edge over old practices (Ibrahim *et al.*, 2010).

Past initiatives support SCM for better construction management (Egan, 1998) and a good idea for public sector governance (London and Chen, 2006). Numerous definitions have also been proposed by previous researchers (e.g. Abd Shukor *et al.*, 2009b). After further exploration, this research proposes the following as the definition for SCM:

“An innovative and revolutionary managerial approach which involves a working culture change and a voluntary initiated agreement for integration and synchronization of two or more inter-dependent members within variety organization level and boundaries as well as range of inter-linked construction life-cycle processes (initiation to handover). It promotes joint effort and strategy on all activities which are underpinned by mutual trust, responsibility, benefit and risk sharing based on a long-term perspective on relationship. Value is achieved through optimization and management of processes, resources, core competencies, talent, information, power and technology within the supply chain towards accomplishment of a set of shared objective and goals, enhance competitive advantage, breaking down any discontinuities and meeting distinctive client needs. Consequently, jointly agreed benchmarks, targets, expectation and values are put in place for continuous improvement efforts and are supported by aligned incentive schemes towards sustaining the endeavour.”

Within the local industry, SCM is still at its infancy (Rashid, 2002), as are “lean” practices (Abdullah *et al.*, 2009). Few collaborative initiatives have been attempted in the past. One of them is the Private Finance Initiative (PFI) which is still at an initial stage (Mehdi Riazi *et al.*, 2011). However, the Malaysian PFI is deviated from the international PFI framework in terms of risk transfer to the private sector (Jayaseelan and Tan, 2006). Other similar initiatives have also followed but only with partial uptake (Mehdi Riazi *et al.*, 2011). Ability of SCM to reduce delay has been well recorded. For instance - in the case of British Airport Authority (Brady *et al.*, 2006) and the Heathrow T5 project (Potts, 2009). Inspired by the previous success some, however, Abd Shukor (2011) stressed that effective construction supply chain integration practices need to be in line with the current trend in Malaysia in order to enhance its competitiveness and innovativeness.

5. Methodology

Towards proposing a conceptual guideline, this paper proposes solutions via SCM based on literature surveys and relevant past research reports. In the quest of getting an overview of the real world scenario in the Malaysian construction industry and public sector projects, an inside on the delay dilemma as well as identifying the much needed improvements, a semi-structured interview has been carried out with six experts (two consultants, two contractors and two from Public Works Department). All respondents had over 20 years of experience in the industry.

All respondents held high managerial positions in their respective organisations with vast experiences in government projects. This ensure everyone have considerable knowledge of the industry so that they can provide a good overview of the delay predicaments. Respondents from Public Works Department were randomly selected while contractors and consultants were selected based on recommendations from the Public Works respondents. This is important to obtain a general view and not project specific standpoints, thus avoiding possible biased answers. Interviews were recorded while confidentiality agreements were also made to protect the respondents.

Despite only having six respondents, it is sufficient to provide an overview of what is happening in the industry towards proposing a conceptual mitigation guideline. Scarcity of research in this area means that even a preliminary outcome would prove beneficial in providing a platform for a kick-start. The highly and relevant experienced respondents ensures that they have sufficient exposure to the industry, thus were able to provide a thorough and meaningful perspective of the sector.

6. Results

6.1 Project Delay

In terms of definition of project delay, all respondents shared similar opinion that delay means deviation from the originally planned period. Delay in public projects was also considered a serious problem, blaming mostly on conventional procurement practices. Respondents also pointed out the delay causes as well as Malaysia-specific factors based on their experiences in public sector projects and these factors have been grouped into distinctive root causes (Table 1) to ensure that problems are solved right from the roots of it. Identification of underlying latent conditions is a first step to achieve a degree of process stability in construction (Love et al., 2008) thus making problems more manageable and could be solved right from its core.

Malaysia, as a multi-racial country, multi-festivals are celebrated each year. This resulted in a high number of public holidays. These holidays can sometimes last for a week or two, or even more, depending on individual organisations. This situation affects projects as multiple organisations (consist of multiple races) are involved and they depend on each other to progress. If any of them is missing in action, it would certainly affect others. This situation, if not accounted for properly would lead to huge project delay.

Table 1: A summary of respondents' perception on delay causes and its root causes

Root Cause	Delay causes	Root Cause	Delay Causes
Planning	(1) Shortage of equipment, labour and important material (2) Unrealistic project planning, allocation and duration (3) Fluctuation in labour and material prices (4) Lack of proper planning (5) Owner initiated changes	Commitment	(1) Delay in handing over site to contractor (2) Delay in approval by local authority (3) Delay in submission by consultant (4) No involvement of user in planning stage (5) Payment delay by client (6) Delay in material and equipment delivery to site (7) Delay in decision making by consultant
Discrepancies	(1) Inconsistent project brief (2) Mistake in pricing by contractor during tender (3) Low quality of documentation (4) Wrong project implementation (5) Incomplete document and design	Ethics/Moral	(1) "Baba Ali" practice (2) "Ali Baba" practice (3) Corruption (4) Political influence, interference and interest in project (5) Prioritizing personal interest rather than the project
Policies	(1) Policy Changes due to changing political masters (2) "Bumiputra" quota (3) Dependence on foreign labour	Vicinity	(1) Too many public holidays due to Multi-racial factor of Malaysia (2) Inclement weather and locality factors
Resources	(1) Lack of expert in government organization (2) Too many unskilled labour (3) Financial difficulties	Investment	(1) Lack of investment for Research & Development (2) Lack of training of new technical government staff
Communication	(1) Lack of communication from within the organisation	Technical issues	(1) Technical factor such as unforeseen soil condition
Project team selection	(1) Wrong selection of project team	Social	(1) Problems dealing with aboriginal community (2) Social factor such as public interference/protests (3) Social unrest
Motivation	(1) Unfair contract terms (mostly favour the government)	Coordination	(1) Lack of coordination between project parties
Qualification	(1) Incompetent consultant, contractor and government team (2) Contractor planning problem (3) Inadequate contractors skill (4) Incompetent local authority technical staff (5) Contractors supervision problem (6) Lack of knowledge by project parties	Personality	(1) Blame game between project parties (2) Clients, Public Works Department and Consultant ego (3) Top Management not walking the talk (4) Malaysian attitude and mentality (5) Disrespect between project parties (6) Interference from client
Administration	(1) Government and local authority bureaucracy (2) Too many decision makers involved in government projects (3) The practice of continuously transferring government staffs (4) Many voice not heard (5) Poor site management (6) Land acquisition problem (7) Problems getting utility supply		

***Highlighted in grey: Factors specifically applicable to Malaysia only*

The placement of "Bumiputra" quota on government jobs is another unique Malaysian but crucial delay factor. "Bumiputra" refers to individuals with one of their parents being either Muslim Malay or indigenous native, except for the state of Sarawak which requires both parents to be indigenous native of Sarawak. Unfortunately, some less ethical instances has surfaced, sabotaging this system such as "Ali Baba" practice whereby a Bumiputra company tenders for a job and then totally sub-contract the job to a non-Bumiputra company in exchange of an agreed sum. Maintaining this quota therefore should be followed with suitable initiatives in order to achieve its intended objectives.

High dependence of foreign labour was among others highlighted with majority of them were said to be unskilled. Due to the shortage of labour (Rajagopal, 2012), contractors are left with limited choice but to hire foreigners. Unskilled labours would have to go through a new learning curve thus their initial productivity is usually below standard. While there is nothing wrong with foreign labours, it should not be in the expense of efficiency.

Political interference, influence and interest in public projects have also been accentuated which also raises suspect on corruption activities. Despite this problem may not be uncommon in developing countries, if left alone, may further damage the country. This sensitive but urgent matter cannot be ignored and requires proper attention.

On top of all the above problems, the authors have also identified many problems directly related to the government deficiencies (Table 1) such as ineffective bureaucracy as well as the involvement of multiple decision makers. When combining incompetent officers' with a lack of experts in organisation, this automatically exposes high possibility for mistakes and inefficiencies in projects. Other practices include the high frequency of staff transfers from one department to another which affect productivity as a new learning curve starts every time an employee is transferred to a new department. To make things worse, the lack of training as well as allocation for research and development means there is paucity on room for improvement. Therefore, much repair is indeed needed towards a better performance of the sector.

6.2 Effects of Delay

Amongst the common effect of delay mentioned by the respondents was extended project time frame which eventually leads to increased overhead. Increased overhead poses worse problem for contractors as they may be unable to complete the project due to financial shortage or bursting of budgets. Respondents also stressed on the loss of opportunity cost as delay could cause resources to be trapped in a project. Project delay also affects government especially in terms of their periodic budget management as well as plan executions. This situation affects the public dearly in terms of delayed infrastructure and services, shortage of employee placement spots (i.e. housemanship doctors, etc.) and so on. Project delay almost always lead to cost overrun, thus, in some cases, budget from other projects may need to be taken to cover the additional expenses incurred, subsequently, the other project may need to be cancelled due to fiscal shortage. Reputation is always at stake in delay cases and the government risks losing public confidence. In these depressing situations conflicts are not uncommon and in some cases lead to arbitration and litigation.

6.3 Delay Mitigation

When asked about their opinion on mitigation or elimination of public sector project delay, surprisingly many of the strategies were closely related to SCM. This showed that the experts in the industry have thought of SCM components despite their minimum knowledge of the concept. Amongst the strategies proposed was the need for improved transparency which according to Lee and Billington (1992) is one of the foundations of SCM. Other approaches pointed which also coincided with previous research on SCM were the adoption of risk/profit sharing strategy (see Philips et al., 2000), increase trust level (see Ali et al., 1997), proper project team selection (e.g. see Potts, 2009), promotion of innovation which greatly depends on collaboration (Soosay, 2008) as the "*key driver*" of SCM (Horvath, 2001), and also incentive schemes to motivate continuous improvements.

7. Proposing a Conceptual Guideline

Based on the research findings, a conceptual guideline has been developed. SCM tools and techniques were carefully identified from the literature, with the aim to reduce and perhaps eliminate delays in Malaysian public sector projects as presented in Table 2 below. For a nation that is still new to SCM, this guideline could benefit in terms of providing a general idea of what SCM is made up of, what tools are available as well as serving as a basic and starting route towards the proper adoption of SCM in the industry.

Table 2: Proposed Conceptual Guideline Mitigate Delay using SCM

Root Cause	Definition of Root Cause	Proposed Solution through SCM	Reference
Discrepancies	Arising from mistakes, missing information, errors, etc.	(1)Information sharing (2)Joint Risk Management (3)Early involvement of contractor and subcontractor (4)Building Information Modelling	(1)Ritchie and Brindley (2007); (2&3)Kumaraswamy et al. (2004); (4)Holness (2008)
Project team selection	Arising from the act of recruiting the right project team	(1)Performance-based contracting (2)Key Performance Indicators	(1)Kumaraswamy et al. (2000); (2)see e.g. Ugwu et al. (2006)
Planning	Arising from appropriateness and adequacy of planning different aspects of projects (i.e. design, procurement, etc.)	(1)Quality Circles (2)Collaborative logistics (3)Automated Material Tracking	(1)Salem et al. (2006); (2)Huang et al. (2001); (3)Rebolj et al. (2008)
Qualification	Arising from the qualification and competency level of selected project team	(1)Performance-based Contracting (2)Key Performance Indicators	(1)Kumaraswamy et al. (2000); (2)see e.g. Ugwu et al. (2006)
Resources	Arising from inadequate resources for the proper execution of project	(1)Collaborative Logistics	(1)Huang et al. (2001)
Communication	Arising from communication practices	(1)Project Management Information System	(1)Kumaraswamy et al. (2000)
Ethics	Arising from issues related to ethics, moral and integrity of individual or group of people that are directly or indirectly involved in projects	(1)Replace traditionally one person managing the whole job with teams for instance the use of multiple "delivery teams" in BAA which are in charge of separate project scope and a "coordination team" to liaise with the delivery teams (2)Risk Sharing	(1)Potts (2009); (2)Hammer and Champy (1994)
Social	Arising from the general public / community issues	(1)Quality circles (2)Joint Risk Management	(1)Salem et al. (2006); (2)Kumaraswamy et al. (2004)
Coordination	Arising from coordination practices	(1)Early involvement of contractor and subcontractor (2)Building Information Modelling (3)Automated Construction Activity Tracking System (4)Project Management Information System	(1)Kumaraswamy et al. (2004); (2)Holness (2008); (3)Rebolj et al. (2008); (4)Kumaraswamy et al. (2000)
Personality	Arising from personal character or attitude of project entities	(1)Introducing "No Dispute clause" in contracts (2)Introducing champion/driving personalities in project team	(1)Rowlinson and Cheung (2008); (2)Kumaraswamy et al. (2007)

Motivation	Arising from the act to motivate project participants	(1)Introducing champion/driving personalities in project team (2)Cross-firms Incentive System (3)Profit sharing (4)Risk sharing	(1)Kumaraswamy et al. (2007); (2)Cigolini et al. (2004); (3)Adani et al. (1998); (4)Hammer and Champy (1994)
Administration	Arising from the system, organization, management and decision making of projects	(1)Building Information Modelling (2)Project Management Information System (3)Quality Circles (4)Introducing champion/driving personalities in project team	(1)Holness (2008); (2)Kumaraswamy et al. (2000); (3)Salem et al. (2006); (4)Kumaraswamy et al. (2007)
Commitment	Arising from act of teamwork and solidarity	(1)Automated Construction Activity Tracking System (2)Automated Material Tracking (3)Last Planner System (4)Project Management Information System (5)Introducing champion/driving personalities in project team	(1&2)Rebolj et al. (2008); (3)Rimmer (2009); (4)Kumaraswamy et al. (2000); (5)Kumaraswamy et al. (2007)
Technical issues	Arising from technical issues relating to construction projects	(1)Joint Risk Management (2)Early involvement of contractor and subcontractor	(1&2)Kumaraswamy et al. (2004)
Policies	Arising from policies made by the government	(1)Collaborative Logistics (2)Benchmarking (3)Total Quality Management	(1)Huang et al. (2001); (2)Lema and Price (1995); (3)Cheng et al. (2001)
Vicinity	Arising from factors that are specifically associated to a nation / country / place / location	(1)Joint Risk Management (2)Quality Circles	(1)Kumaraswamy et al. (2004); (2)Salem et al. (2006)
Investment	Arising from improvement strategies and initiatives	(1)Total Quality Management (2)Continuous trainings (3)Enforcement of "training and development policies" in the team agenda	(1&3)Cheng et al. (2001); (2)Clarke and Wall (1998)

Table 2 above provides a general and basic guideline on how SCM could be utilized to mitigate delay. The root causes in Table 2 are an extension from Table 1 where by in Table 1 a group of multiple delay causes are grouped under distinctive root causes in order to make them more manageable. By identifying what the latent conditions are, a number of problems which are inter-related could be solved at once by tackling what initially leads to it. Therefore, this research selects this approach as to make the guideline more comprehensive and efficient. The authors propose a number of SCM initiatives suited to deal with each delay root cause with the aim of reducing or eliminating them. For instance, out of all the delay causes, it was identified that five of them were merely the problem of planning thus all of them were grouped under "Planning" root cause (Table 1). Then, a set of SCM tools were identified from the literature and proposed as possible solutions to address the planning problem (Table 2).

This guideline stands as a preliminary framework in this research. It provides a general awareness on how SCM can be beneficial and can prove effective for delay mitigation initiatives. As this research progresses, the delay root causes and SCM tools will be further validated to ensure its applicability specifically for Malaysian public sector construction environment. In the end, this PhD research strives to develop a comprehensive framework which proposes SCM tools that are beneficial to reduce delays in Malaysian public sector projects.

8. Conclusion

Construction project delay has been a major setback in the last decades and is an even more serious issue in developing nations. Awareness regarding this phenomenon seemed high while tremendous effort has been placed in identifying its contributors and mitigation plans but delay still remains an important topic within the industry. In Malaysia, delay is one of the most significant problems with major concern is given to public sector projects as it has a direct relationship with the public and the nation's socio-economic growth. Calls for improvement have been consistent worldwide with no exceptions made for Malaysia. Proven success of SCM in many countries suggests that Malaysia could also benefit from it. This paper has presented an outlook into the Malaysian construction industry with particular focus on public sector projects with respect to the industry's performance, delay dilemmas and government's effort to overcome this issue. A semi-structured interview has also been conducted on industry experts and the results have been tabulated to gain an insight to the industry as a whole. Their perceptions were summarized, delay causes identified and mitigation proposals made. Finally, a conceptual guideline is proposed (Table 2) with suggestion made on SCM tools and techniques that could be relevant and useful towards reducing or further eliminating project delays. It is anticipated that this guideline could provide a preliminary guide for the local industry practitioners, especially the public sector, towards starting the adoption of SCM as part of their improvement plans.

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