

Key Credit Factors for Public Private Partnership (PPP) Projects Financing in Malaysia

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Abstract: Public Private Partnership (PPP) has been implemented by many governments around the world as an innovative procurement for development of public infrastructure projects. Since the PPP projects involve large amounts of investment and long concession periods, the projects are associated with high credit risk. Usually, debt portion is between 70% and 95% of project costs. Hence, banks are exposed to credit risk when they are involved in lending to these large projects with long gestation periods. Banks evaluate the creditworthiness of the private company based on quantifiable financial indicators and qualitative elements of the company's strength. The private company that is lacking in financial capacity, inexperienced in construction, and weak in management capabilities, faces a high probability of failing to secure PPP financing. Therefore, this study aimed to identify and critically assess the key credit factors in PPP project financing. Data collected through literature review and case study investigation were analysed using computer-assisted ATLAS.ti. Five groups of key credit factors were identified consisting of the project's financial credit strength, strength of sponsor, contractual foundation, transaction characteristics, and security package. The findings contribute to the current knowledge of PPP financing that is to succeed in obtaining funding for PPP projects, it is imperative for the private company to understand the risk profile of the projects from debt-financing perspective.

Index Terms: Keywords Credit Factor, Financing, PPP Project.

I. INTRODUCTION

Public Private Partnership (PPP) has been implemented by many governments around the world as an innovative procurement for development of economic infrastructures, such as transport, utilities, communication and renewable energy, and social infrastructure such as schools, hospitals, defence buildings, prisons and stadiums (Inderst & Stewart, 2014). PPP approaches have benefited the government

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through the transfer of some of their duties to capable private sector actors to plan, design, finance, build, operate and maintain the project asset [1][2][3][4][5]. Securing project finance for PPP is a critical path towards successful project development. PPP projects demand large capital investment, particularly at the initial stage during project formulation, design and construction, before receiving payments as specified in contract agreement[6][7][8]. Insufficient financing will cause failure of projects to be completed on time, operations starting late and delay in receiving revenue (Demirag et al., 2015).

Typically, debt portion is between 70% and 95% of project costs [9]. Since the PPP projects involve a large amount of investment and long contractual concession periods, the projects are associated with high credit risk in which the likelihood is that the private company as a borrower fails to meet its obligations in debt services [10]. Borrowers will failure to make the payments of principal and interest on time. Even though, the payment may ultimately be made, but credit risk is a concern because the delay in receiving payments is costly. Hence, banks are exposed to credit risk when they are involved in lending to these large project sizes and long gestation periods. Banks evaluate the creditworthiness of the private company based on quantifiable financial indicators and qualitative elements of the company's strength [11][12][13]. The private company that is lacking in financial capacity, inexperienced in construction, and weak in management capabilities faces great probabilities of failing to secure PPP financing. Furthermore, in ensuring success in securing project financing, the projects must have economic viability which is being able to generate cash flow and pass the bankability test (Ngugi, 2014). A PPP project is considered bankable if lenders are willing to finance it. In the context of Malaysia, there are only a few banks that participate in PPP project financing due to inexperience and not being prepared to provide funding of large-scale and capital-intensive PPP projects for long-term contracts [14][15][16]. As reported by Abdullah et al. (2014), mostly PPP projects were financed by Bank Pembangunan Malaysia Berhad (BPMB) due to the commercial bank still not ready to provide loans for a long term of more than ten years. Therefore, the purpose of this study is to identify and critically assess the key credit factors that concern PPP project financing. In practicality, understanding of key credit factors of the projects from debt-financing perspective facilitates the private company to succeed in obtaining funding for PPP projects.



II. LITERATURE REVIEW

A. Credit Assessment Process

PPP project financing is based on project finance techniques. “Project finance” is not the same thing as “financing projects”, because projects may be financed in many different ways [17][18][49]. Project finance refers to a wide range of financing structures, which have one unique feature that the financing is not primarily dependent on the sponsors’ credit support or the value of the physical assets involved [19][20][22][21]. The character of project finance is primarily related to the future revenues of the project (Scannella, 2013). There are three key features of project financing. First, the borrower is a specific economic entity known as special purpose vehicle (SPV). Project financing involves an organisational decision to create the SPV that will assume the ownership of the project. Second, debt service depends upon the cash flows generated by the operation of the project by the SPV. This implies that all the relevant contracts are important to ensure the realisation of anticipated cash flows. Third, liquidation is limited to the assets of the economic unit and, thus, debt financing is based on a limited or non-recourse basis [24][25][26]. These can deduce that project finance is specifically designed to meet the requirements of a particular project and the objectives of its sponsors.

PPP approach is allowing a private sector to take the commitment to finance the public infrastructure development. The lenders are perceived to be responsible in financing these PPP projects. Prior to financial decision making, the lenders certainly conduct credit assessment of loan application. According to Chiang & Cheng (2011), in practice, the lenders use credit-scoring models to assess whether the loan application fulfils their requirements and for making the decision of either to grant the loan to the borrowers or not. This means that through credit scoring models, the lenders can evaluate the creditworthiness of the borrowers. The credit assessment probably becomes more difficult if the lenders do not have relationships with the borrowers before, which means there is no track record or information about borrowers.

Fig. 1 illustrates that the model bank’s assessment of project financing entails four steps [27][8][29]. In the bank’s risk assessment process, there is measurement using qualitative and quantitative calculation before the project financing is approved. Step 1: It is a qualitative risk assessment which involves face to interview with the applicant and available information, qualitative screening of the risk-return assessment based on the legal and regulatory environment, the reputation of the project, and lenders experience. The lender then makes a decision of whether to pursue further or not. Step 2: It is quantitative risk assessment in objective to evaluate the bankability of the project. The evaluation consists of detailed assessment on the applicant’s company and project potential, including licenses and permits, cash flow model, project life cycle, and agreement. Step 3: Lenders compute qualitative risk factors from step 1 and quantitative risk factors from step 2. The default risks are quantified and rated. The lenders assess whether the project, as well as the borrower, complies with the particular lenders’ policy.

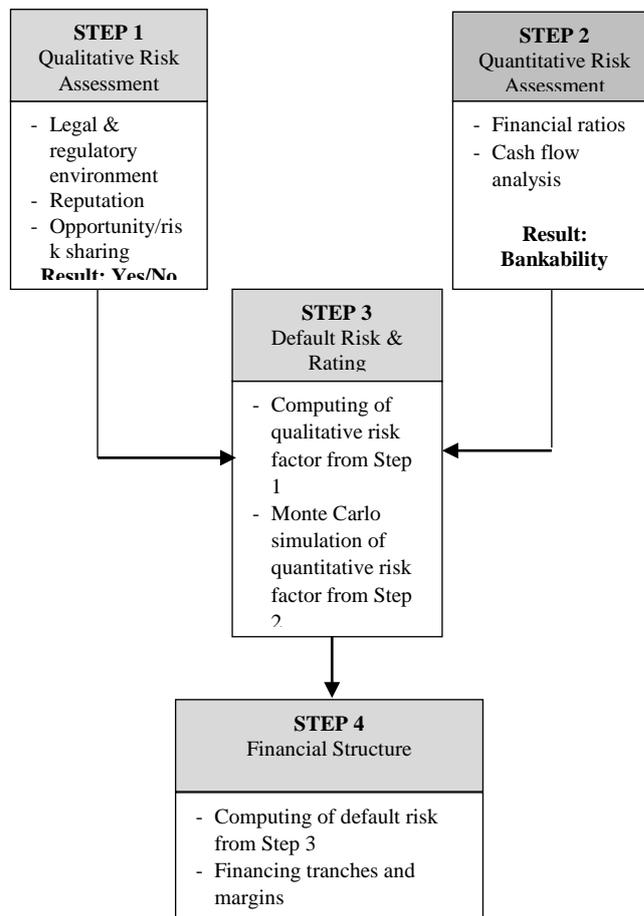


Fig. 1. A Model Bank’s Assessment of Project Financing Source: Adapted from Hampl et al. (2011)

Step 4: Computing of default risk from step 3 is executed. If all the lenders’ requirements are fulfilled, the loan is approved, and the financial structure and financing credit conditions are outlined.

B. Credit Rating Factor

Credit rating factors provide general guidance of key qualitative and quantitative risk characteristics that are likely to affect the creditworthiness of PPP projects. Srivastava (2014) has called credit rating factors as parameters in project financing. The credit rating agency provides a rating service which involves rating and grading the creditworthiness of the project based on their analytical framework or credit rating factor [36][37][38]. Globally, the Big Three credit rating agencies are Standard & Poor’s (2007); Moody’s (2015, 2016) and Fitch (2016). In Malaysian context, there are two rating agencies, which are and [39][40][41][42]. For this research, rating criteria from other agencies, including DBRS (2015); Basel Committee (2005) and Asian Development Bank (ADB, 2014) is also reviewed. The analytical framework utilised by a rating agency is intended to express the level of ability of the project to serve its debt obligations (Thompson, 2012) and an important variable in assessing the project credit quality (ADB, 2014). Hence, based on Srivastava (2014) rating parameters of project finance and synthesis from the above



eight (8) rating agencies has produced five groups of key credit factors in assessing creditworthiness for PPP projects as shown in Table 1 and are discussed in detail in this section.

1) Project's Financial Credit Strength

RAM (2015) and MARC (2015) stress that financial analysis on project viability is a key component in the project finance rating, in which areas of assessment are focused on cash flow, and financial flexibility and liquidity. Whilst Standard & Poor's (2007), there are three main attributes that measure the project's financial credit strength: (i) the ability of the project to generate sufficient cash on a consistent basis to pay its debt service obligations in full and on time; (ii) the capital structure and in particular debt pay down structure; and (iii) the liquidity of the project. Project's financial strength indicates its ability to generate sufficient revenues to cover the project expenditure, such as operation and maintenance expenses, taxes, insurance, and annual fixed charges of principal and interest. According to Thompson (2012), there is a correlation between project financial strength and project risks whereby a weak project finance has a correlation with high project risks. Consequently, many risks need to be analysed in order to derive an effective method in risk mitigating.

Project finance debt is different from corporate debt which is usually the only debt in the capital structure, and typically amortises to a schedule based on the project's whole lifetime. Thus, it is crucial in ensuring the level of certainty of debt repayment of principal and interest according to the terms of financing agreement (Standard & Poor's, 2007). As Switala (2015) emphasises that the chances of debt success are improved when the projected revenue to service debt is substantial, which is regularly measured in terms of a high Debt Service Cover Ratio (DSCR). DSCR is the primary quantitative measure of project's financial credit strength which designates to the ability of debt service[30][31][32][33][34][35]. The strong value ratio of DSCR must be above 1.0 time (Standard & Poor's, 2007). Besides the minimum DSCR requirement, financial risk assessment also focuses on debt structure or debt-equity ratio (RAM, 2011). Similarly Pieters et al. (2014), highlight that lender's appetite on project financing is influenced by DSCR and debt-equity ratio.

2) Strength of Sponsor

PPP projects are structured as SPV were set up and backed up by sponsors to implement the projects. The strength of SPV is derived from the strength of the sponsors (ADB, 2014). Sponsor strength has characteristics of high experience with a good track record; strong financial capacity; and proven expertise in project type (MARC, 2015; DBRS, 2015). According to Switala (2015), quality of the sponsor improves the probability of success in granting finances. Experienced sponsor benefits mitigate the execution and construction risks inherent in project implementation, which has a positive impact on the credit scoring that can raise the rating rate (ADB, 2014). It is not so much the size of the sponsor than the experience to complete and operate a project successfully that is of the essence. The sponsor has some experience of similar projects that have been developed to be able to demonstrate a sufficient level of technical expertise and management competence in

managing complex projects and the ability to resolve project level issues either at the construction or operational phases (ADB, 2014; MARC, 2015).

Infrastructure projects typically complex are exposed to delays and cost overruns. Sponsors with strong finance could support by funding any cost overruns or debt service shortfalls, particularly in the early phase of the project life cycle [46][45][44]. They can also inject additional equity to maintain the project company's leverage covenant (MARC, 2015). On the other hand, the sponsors' equity contribution demonstrated the level of commitment to the project and credit supports (Basel Committee, 2005; MARC, 2015; DBRS, 2015). In the context of credit rating, the intent and willingness of the sponsor to support the project are as important as its capacity to support project success.

Table I: Key Credit Factors from Published Literature

Key Credit Factor	Basel Committee (2005)	Standard & Poor's (2007)	RAM (2011, 2015)	ADB (2014)	MARC (2015)	DBRS (2015)	Moody's (2015, 2016)	Fitch (2016)
Project's Financial Credit Strength								
Debt structures (debt-equity ratio)		x	x	x	x	x		x
Credit quality	x					x	x	
Debt Service Coverage Ratio (DSCR)	x	x	x	x	x	x	x	x
Stress analysis	x	x		x				
Duration of the projects compared to duration of the credit	x			x				
Cash flow analysis		x	x	x	x			
Profit (revenue generated)				x			x	
Strength of Sponsor								
Track record	x		x	x	x	x	x	x
Financial strength	x			x	x			
Equity contribution	x				x	x		
Sponsor structure		x						x
Experience			x	x			x	x
Management capability				x				
Technical expertise				x				
Contractual Foundation								
Revenue and offtake agreement		x		x	x	x		x
Operating and maintenance agreement			x			x	x	x
Enforceability of contracts	x			x				
Concession and subcontract interface							x	
Transaction Characteristics								
Construction risks	x	x	x	x		x	x	x
Operation risks	x	x	x	x		x	x	x
Demand risks	x	x	x	x	x		x	
Supply risks	x	x		x				x
SPV structure		x						
Strength of the contractor			x	x			x	x
Performance of sub-contractor							x	
Security Provision								
Reserve funds	x		x			x	x	
Assignment to lenders	x	x	x					
Insurance coverage				x		x		
Guarantees	x			x				
Creditor controls			x		x		x	x
Termination payment			x	x				

3) Contractual Foundation

According to Standard & Poor's (2007), the project's contractual foundation should protect stakeholders' interest. The contract composition should encourage the related parties to execute project development satisfactorily and operated according to contract requirements. As Fitch (2016), comparison is to be made between the project complexity; the scale of contractor and the implementation plan with the contract terms. Fitch (2016) discovered that the stronger contract term attributes such as single primary contractor; fixed price contract; clear design and scope of work matching concession requirements; clear risk allocation with force majeure provisions matching concession agreement; clear dispute resolution and arbitration arrangements; detailed milestones, performance thresholds and completion tests; and liquidated damages could be keeping project whole in serve downside scenarios. In addition, the concession agreement is a legally binding document and could be enforceable through the stability regulatory system [47][48][50].

According to ADB (2014), a tight contractual agreement can overcome any damage caused by nonperformance or underperformance that each party contracted. The degree of tightness of the contract determines the level of risk transfer to the SPV, for instance in fixed price contract, if cost overruns it is to be borne by the SPV. Likewise, a provision of penalty in the contract in case of delay in completion of the project or nonperformance will avoid the chances of delay but may also protect the project against any adverse impact of delay, for example, increasing of interest rate during construction or late in receiving income payment. Thus, the tighter a contract is the better it is for the credit rating (ADB, 2014).

4) Transaction Characteristics

According to Basel Committee (2005), the characteristics of transaction are based on the industrial and operational features including factors that affect planning risks; construction and operation risks; credibility of contractor; and supply risks. The construction period is generally riskier than the operation period. The projects will be low-rated when the factors include not yet obtained key permit during construction; no concession contract; and no completion guarantee while during operation, the operator with weak track record and for suppliers have only a short-term supply contract with weak financial standing of suppliers. Whilst Moody's (2016), underlines all matters related to construction risks that are usually kept by the private sector for instance design, and obtain appropriate resources, materials and equipment, suppliers, and construction permits which are assessed for the rating.

Standard & Poor's (2007) focuses on a project's structural features assessment to determine how they support the project's ability to perform and serve debt obligations as projected. Key criteria assessment include assessing the structure of SPV, how cash flow is managed, and how the relationship of SPV connected to the project like sponsors, main contractor, sub-contractor and suppliers who could affect the expected revenue. In the DBRS (2015) assessing framework, there is legal consideration associated to SPV which evaluate the legal aspects of the creation and existence

of the SPV as well as the power, authority and capacity of the SPV to enter into various binding project agreements.

The strength of contractor appointed for project execution is crucial in causing a project to be successful (Moody's, 2016). The experience and track record of contractor with specific type and size of project are significant aspects considered in credit assessment. Moreover, the assessing activity may include the experience of key contractor personnel who will lead the project construction. Since most construction projects have some potential problems at certain phases that tend into a failed project or a project that is possibly abandoned, an experienced contractor ensures the project is on track. In the context of PPP projects, they require being handled differently from conventional projects.

5) Security Provision

Based on Table 1, key credit factors of security provision consist of reserve funds, assignment to lenders, insurance coverage, guarantees, credit controls and termination payment. According to Gatti (2008), a good security provision enables lenders to have total control over the project's asset and therefore lead to a higher rating. Reserve funds refer to funds available on the SPV's account for its creditor or lenders such as holding a debt service reserve account (Basel Committee, 2005). RAM (2015) impose strict requirements vis-à-vis the minimum volume to be reserved in the debt service reserve account which should cover at least six (6) months of principal and interest payments. This reserve funds as pre-funded must be enough to cover debt service during the construction period plus buffer if there is an event of delay in construction.

Meanwhile, assignment to lenders is a security that guaranteed the lenders have rights in the concession agreement such as interests, titles, and benefits in terms of unitary charges and other compensations (RAM, 2015). The lenders have to step in right to effectively replace the project's management if SPV fails completely with the project accordingly. According to Standard & Poor's (2007), the project gains higher rating by agreeing with assignment to lenders by means of security interest in all of the project's assets. Conversely, RAM (2015) states that securities are not the major rating criteria but they are a common characteristic of project finance that offers the lenders comfort in the event of a default.

Since the feature of project finance relies on single source of revenue from the project asset developed, insurance coverage could cover losses in event of disruption (ADB, 2014; DBRS, 2015). The project implementation exposes to distraction risks such as accidents, fire, business interruption, breakdown of construction equipment, or force majeure events like earthquakes or floods (ADB, 2014). Insurance coverage can mitigate these risks through insurance compensation.

III. RESEARCH METHOD

Research methods were employed including comprehensive literature review and case study to achieve the research objective. Literature review involved reviewing related articles on issues in PPP project financing and credit assessment process and credit factors



concerning PPP project finances. The data was collected from relevant published

literature including books, reports, working papers, journal articles and conference papers. For the key credit factor, a comprehensive review was conducted on credit rating criteria under rating agencies from Standard & Poor's, Moody's, Fitch Group, RAM, MARC, DBRS, Basel Committee and Asian Development Bank. The findings from the literature review could be designed up as a basis for the subsequent step, case study.

In the second stage, the case study investigation was employed. A case study strategy facilitates to gather a rich understanding of the research context in which exploration by details and in-depth data collection may involve multiple sources for instance interview, observation, documents analysis and questionnaires (Saunders et al., 2012). Sixteen (16) projects have been selected as case studies within the Malaysian PPP projects. In the context of this paper, each case study involved semi-structured interviews with informants from the PPP project stakeholders (government, special purpose vehicle and financier). A total of 22 interviews were conducted among 16 PPP projects due to the nature of the research question that demands the use of inquiries.

IV. RESULTS AND FINDINGS

All the data collected had been analysed using computer-assisted ATLAS.ti and interpreted in making them useful and meaningful. The data interview was reduced based on code obtained from the literature review. Following this, count frequency of codes was made to facilitate the conclusions as well in answering research objectives (Krippendorff, 2004). According to Takim (2005), Ismail (2012) and Mohd Nordin (2015) the score of 50% and above is considered as vital factors to be considered.

A. Participant Profile

Table II shows the profile, designation and work experience of interviewees involved in the case studies. The majority 72.7% of participants was from Special Purpose Vehicle, followed by bank and government with both at 13.6% respectively. As seen, among the participants, the highest proportion, 8 (36.4%), is comprised of the finance managing director followed by the second highest proportion which was the senior finance manager and credit officer, both at 4 (18.2%) respectively. The result indicates that 40.9% (9 out of 22) of participants had more than 20 years of experience, while the remaining 59.1% (13 out of 22) had less than 20 years of experience. This shows that the data was gathered from the most appropriate participants.

Table II. Information of Semi-structured Interview Respondents

Categorisation		Number	Percentage
Roles in the PPP Projects	Bank	3	13.6
	Government	3	13.6
	Special Purpose Vehicle	16	72.7
Designation in Organisation	Chief Executive Officer	2	09.1
	Finance Managing Director	8	36.4
	Senior Finance Manager	4	18.2
	Project Director	2	09.1
	Manager	2	09.1
	Credit Officer	4	18.2

Years of Work Experience	More than 20	9	40.9
	15-20	7	31.8
	Less than 15	6	27.3

B. Case Study Projects

As demonstrated in Table III, 16 Malaysian PPP projects were selected which consist of various types of projects including a teaching hospital, hostel building, highway, university campus and specialist hospital. A total of 13 projects are using the Build Lease Maintain Transfer (BLMT) model and the remaining three (3) projects are under the Build Operate Transfer (BOT) model. According to the BLMT model, a private company is granted a concession to finance, build, and maintain public facilities which are then leased to the government. Upon completion, the facilities will be used by the government and the company will be paid rental fees by the government. Payment to the concession company is contingent upon the SPV meeting service quality level agreed upon in the concession agreement. The facilities will be transferred to the government at the end of the concession period (UKAS, n.d.). Meanwhile, the BOT model is related to infrastructure and public work projects. A SPV will be granted a concession to undertake the financing and construction of a project and operate it for a designated period during which it is allowed to collect user charges. At the end of the concession period, under BOT, the facility will be transferred to the government at no cost.

There are six (6) different clients for PPP projects where four (4) of them are public universities: IIUM, UNIMAP, UiTM and UKM, while another two PPP clients are LLM and MOH. For the concession period of the PPP projects, it is from 20 to 59 years. It can be noticed that the contract period for the highway project is quite longer between 30 and 59 years.

Table III: Case Study Projects Information

No.	Projects	Type of Projects	Type of Model	Client (End User)	Concession Period (Years)
1	A	Teaching Hospital	BLMT	IIUM	25
2	B	Hostel Building	BLMT	UNIMAP	20
3	C	Highway	BOT	LLM	59
4	D	University Campus	BLMT	UiTM	20
5	E	Highway	BOT	LLM	50
6	F	Hostel Building	BLMT	UiTM	20
7	G	Specialist Hospital	BLMT	UKM	25.5
8	H	University Campus	BLMT	UiTM	20
9	I	University Campus	BLMT	UiTM	20
10	J	Highway	BOT	LLM	30
11	K	University Campus	BLMT		20
12	L	University Campus	BLMT		20
13	M	University Campus	BLMT	UiTM	20
14	N	University Campus	BLMT		20
15	O	Teaching Hospital	BLMT		22
16	P	Specialist Hospital	BLMT	MOH	27

IIUM = International Islamic University Malaysia; UNIMAP = Universiti Malaysia Perlis; LLM = Lembaga Lebuhraya Malaysia; UKM = Universiti Kebangsaan Malaysia; UiTM = Universiti Teknologi MARA; MOH: Ministry of Health

C. Discussion

1) Credit Assessment

Findings from semi-structured interview revealed that 27.3% (6 out of 22) participants agreed that the importance of SPV understands the procedure of bank credit assessment. Lenders usually execute rigorous due



diligence to determine the creditworthiness of potential borrowers (Akinyemi et al., 2009) and as a means to reduce credit risk [51]. Generally, in making a loan application, there are standard documents to be

filled and the list of supporting documents that can assess the strength of the company as mentioned by Bank 3 that, *“Basically we have a checklist for the information required. In totality we have rated our credit risks, we have our own scoring. From the documents that companies submit and banks run through. From the site visits and interviews, we can conclude whether this group of people have the experience or not. The normal valuation is based on the qualitative and quantitative method of assessment”*.

An understanding of how the lenders conduct an assessment of the loan proposal and a bank’s lending policy could enhance the likely success in obtaining project finance (Chiang & Cheng, 2011). As mentioned by credit officer of a commercial Bank 2 that, *“Banks will perform due diligence based on the checklist of documents that need to be furnished by the company being assessed. The bank’s philosophy is simple which is whatever the bank gives, it has to get back. The financing criteria is being assessed according to bank parameters. All the elements will be calculated where a score will be tabulated to arrive at a certain rating. From this rating, the bank will decide on the interest rate to be charged on the project”*.

According to Chiang & Cheng (2011), the credit assessment probably becomes more difficult if the lenders do not have relationships with the borrowers before, in which there is no track record or information about borrowers. As mentioned by Bank 1 that their bank is not a commercial bank, *“Commercial banks already have their client data, existing client accounts and they can determine whether the client has money or not. As for our bank, we do not have all that information”*. Hence, by having a relationship or a good record with the bank, this will simplify the credit assessment process. This is in line with Project B mentioned that, *“Malayan Banking Berhad is our bank which we have an account with the bank. However, we still negotiate about the terms and conditions that charged to us”*. Meanwhile, Project P further added that, *“We have a relationship with major banks like CIMB Bank Berhad, RHB Bank Berhad, Malayan Banking Berhad, and OCBC Bank. It helps because they have our record”*.

2) Project’s Financial Strength

Table IV presents the key credit factors of a project’s financial strength that are concerned in obtaining finance for PPP projects. From the interview, it can be deduced that *cash flow analysis* (77.3%), *debt-equity ratio* (72.7%), *DSCR* (63.6%) and *revenue generated* (59.1%) were the most important credit factors of a project’s financial strength in PPP project financing. On the other hand, the NPV (31.8%) was a less important credit factor in PPP project credit assessment.

This is line with previous research as according to Daube et al., (2008) and Scannella (2013), the project’s bankability depends on the project itself and its cash flows. Also, the stable cash flow shows the survival of the payback of the

long-term credit loan (Hampl et al., 2011). As Bank 2, Bank 3, Government Agency 1, Project F, Project I, Project J, Project M and Project N agreed that cash flow analysis is definitely an important credit criteria and SPV must maintain positive cash flow for the duration of the loan. Whereas Bank 3 has put forward that, *“We look at bankability and capability to repay the loan and the main importance is cash flow analysis because if cash is wrong, DSCR, NPV and others will be affected”*.

Table IV: Key credit factors of project’s financial strength

Project’s Financial Strength	Frequency (n = 22)			Percentage
	Bank	Government	SPV	
Cash flow analysis	3	2	12	77.3%
Debt-equity ratio	3	2	11	72.7%
Debt Services Coverage Ratio (DSCR)	3	2	9	63.6%
Revenue generated	2	2	9	59.1%
Net Present Value (NPV)	1	0	6	31.8%

Debt-equity ratio is as crucial in credit assessment because PPP is high risk from the highly leveraged and there is no guarantee the loan will be paid from the cash flows if the project fails (Yescombe, 2007; Engel et al., 2014). Majority of participants (72.7%) agreed that PPP projects have a huge debt from 80% to 90% of project cost in rationale that no party wants to use high equity due to high risks.

On the other hand, revenue generated and DSCR is interlinking. Switala (2015), emphasises the chances of debt success are improved when the projected revenue to service debt is substantial which is regularly measured in terms of a high DSCR. The DSCR determines the amount of capability of repayment and normally the value between 1.25 and 1.75. From the response regarding the generated revenue, all the participants of BLMT model strongly agreed that revenue via availability charges (AC) is fixed and banks are quite comfortable with it. In contrast, for the BOT model, the revenue generated is more crucial, such as a highway project due to performance of projected traffic flow. As mentioned by Government Agency 1 that, *“The toll collection is the most important as revenue”*. Whilst Government Agency 2 strongly stated that, *“We review the projected traffic flow and proposed toll rate. If the traffic flow was estimated to be low, the company will likely to propose higher toll rate. When the toll rate is high, sometimes there will be no traffic because the decreasing interest to use the highway will result in no toll collection or earned income. This shows that the project is not viable”*.

3) Sponsors’ Strength

Table V presents the responses regarding key credit factors of sponsor strength in Malaysian PPP projects financing. The findings show that five (5) most key credit factors are *sponsors’ financial strength* (90.1%), *track record* (86.4%), *experience* (72.7%), *management capability* (63.6%) and *equity contribution* (59.1%).

In PPP projects, the SPV is responsible to secure the funding. However, due to SPV being a newly created entity, the bank will evaluate the parent company of



the SPV, which is the sponsor (ADB, 2014). As mentioned by credit officer, Bank 3 that, “The SPV is just a coordinator. We look at who is behind the SPV, the shareholders, whether they have financial means, who they are backing, their track record to show whether have done any related projects or not”. This is further added by Project A that, “There is no financial

strength of the SPV event the financiers did not view the SPV cash flow for lending. The financiers look at sponsor cash flow”.

Table V: Key credit factors of strength of sponsor

Strength of Sponsor	Frequency (n = 22)			Percentage
	Bank	Government	SPV	
Financial strength	3	2	15	90.1%
Track record	3	2	14	86.4%
Experience	2	2	12	72.7%
Management capability	2	2	10	63.6%
Equity contribution	2	1	10	59.1%
Technical expertise	1	2	6	40.9%
Sponsor structure	1	0	6	31.8%

According to Switala (2015), strength of the sponsor improves the probability of success in granting finances. Sponsor strength has characteristics of high experience with good track record; strong financial capacity; and proven expertise in project type (MARC, 2015; DBRS, 2015). As for sponsor track record, Bank 1 emphasises that, “We will look at the parent company of the SPV, as well as at the type of business, if the company has the experience in the same business for let say 10 years, then it will relevant for them and we will look if the company has a project team or not to later manage the project. The bigger the company the better as it shows the ability of the company to execute projects with easily”.

This is in line with ADB (2014) that highlighted the sponsor has experience of similar projects with good technical expertise and management competence in managing complex projects and his ability to resolve project at all level issues. Furthermore, as mentioned by Bank 3, Project B, Project E and Project P that the SPV is backed by the public-listed company with a strong financial position and good track record will allow for good credit rating and ability granting financing from markets such as *sukuk* with lower profit rates. Project B further elaborated that, “Our sponsors are from public listed companies and they have a lot of subsidiaries. In addition, there is strong track record of the sponsors, in fact, a lot of experiences in various type of business including construction. They are from big company and have a lot of assets”.

Looking at the importance of equity contribution, Government Agency 1 and Project B have put forward that, “the sponsor must be able to contribute equity, as it shows a serious commitment to the project”. In relation to that, in Malaysia, as reported by RAM (2015) that the requirement of a debt-equity ratio of 85:15 or 80:20 is stipulated in the concession agreement which is signed in 2013 onward, which

was previously silent on the debt-to-equity ratio. A tighter debt-equity ratio requirement will ensure a reasonable level of equity participation. This is a sign of the sponsor’s commitment to the project.

4) Contractual Foundation

Table VI shows lists of key credit factors of contractual foundation group. Based on the findings, 68.2% of the participants agreed that concession agreement (CA) is the most important credit factor of contractual foundation in PPP project financing assessment. As stated by Government Agency 1 and Government Agency 2 that, “In order to secure the financing, CA is a must. CA is an important document, it will determine whether a company can make repayment or not and CA has to sign first”. This is parallel to Umar et al. (2011) who highlighted the concession agreements must be prepared clearly and verifiable prior to signing of contract. In addition, CA as a comprehensive agreement provides a regulatory framework to secure value for public money and cost-effective services to the users (Singh & Kalidindi, 2009).

Additionally, Bank 2 mentioned that, “CA must be bankable where the bank will look at the AC whether it is sufficient to serve the loan. Besides that, the terms in the CA will be reviewed. This includes matters such as whether the CA is one-sided and whether the bank will be given priority in the event of any default”. This can be further understood from the statement by credit officer of commercial Bank 3 that, “CA is the critical part of project financing. We look at the terms and conditions including the concession period; the AC conditions; a step in right and the condition precedent requirement that SPV must fulfil”.

Table VI: Key credit factors of contractual foundation

Contractual Documentation	Frequency (n = 22)			Percentage
	Bank	Government	SPV	
Concession agreement	3	2	10	68.2%
Operation and maintenance agreement	1	0	9	45.4%

The importance of terms and conditions of the CA is then further implied by Project J and Project K that, “The important thing in the agreement as far as financing is concerned, is the need to comply to the bank terms and conditions. Means can cover the bank interest and there is a clause regarding assignment to the bank as well as the CA being enforceable. Inside the CA is also stated how much the monthly AC is, what the maintenance charges are, how the maintenance charges were calculated, and also how to collect the maintenance reserve fund. Then, what are the terms after they receive the invoice, and who will pay”.

Meanwhile, participants from PPP projects such as Project I, Project J and Project K state that the bank is quite comfortable with the PPP project due to the CA being between SPV and Malaysian government. For example, as mentioned by project director of Project I that, “We make an agreement with the Malaysian government and not an agreement with a political party or government state. So whatever agreement signed on behalf of the government of Malaysia, the project is secure”.

Nevertheless, only 45.4% of the participants agreed that the



operation and maintenance agreement is important to credit factors in PPP project financing. According to Gardner & Wright (2012), the concession agreement should incorporate long-term maintenance agreements, typically with the original equipment manufacturers. The agreement should also include liquidated damages in case of poor performance. As Bank 3 stated that, “We have to look at every contract, including operational agreement and the

maintenance of equipment. In case of changes of supplier, who is involved and what are the terms of the contract, whether there is any risk involved and how to mitigate the risks and how to resolve the issues when the time comes. That’s why we have to think what are the consequences of situation from the start of financing until end of tenure”.

Transaction Characteristics

Table VII demonstrates the response concerning key credit factors of transaction characteristics that are important in PPP projects financing. The findings indicate that *strength of contractor* (77.3%), *construction risks* (72.7%) and *operation risks* (54.5%) are three key credit factors of transaction characteristics in project financing credit assessment since 50% of the participants have agreed to this.

Table VII: Key credit factors of transaction characteristics

Transaction Characteristic	Frequency (n = 22)			Percentage
	Bank	Government	SPV	
Strength of contractor	3	1	13	77.3%
Construction risks	3	1	12	72.7%
Operation risks	3	0	9	54.5%
Performance of sub-contractor	1	1	6	36.4%
SPV structure	1	1	4	27.3%
Supplier	1	0	3	18.2%

The previous research discovered that in a PPP project, the risk can arise either during the construction phase or during the operating phase (DBRS, 2015), even though the construction period is generally the riskiest portion of the project (Zhang, 2005). Hence, banks are concerned with contractors who have an appropriate level of experience and strong track record in carrying similar projects. This is a great indicator of the contractors’ reputation and could prove the capability of the contractor to deliver the PPP project successfully (Meng & McKeivitt, 2011; Ali et al., 2014).

In terms of contractor strength and construction risks, the response from Bank 1 and Bank 2 commented that the PPP projects demand a large amount of debt. The banks have to access the capability of the contractor and operator who will manage asset management during the operation period. The bank is really concerned with the construction phase due to high construction risks. If a contractor is capable, with experience in related works, technically the company would score high marks upon evaluation and the risk would be lower as compared to an unknown contractor, where the construction risk would be higher.

As for the project side, response from Project A mentioned

that, “SPV is a new entity. Thus, the banks look at the contractor. In our case, the contractor is a subsidiary wholly owned by our sponsor. We download the entire project to our contractor so the risks now are with the contractor whether they can perform or not. The strength of the main contractor is the most important”. Meanwhile, Project D further added that, “Before awarding to any main contractor, we have to propose the name of the contractor to the bank. Our contractor is quite a known contractor in Malaysia and had been awarded a big project. Therefore, the bank already knows who the contractor is and the track record. The bank is feeling comfortable to release a loan to us. If the company without a track record to carry out the construction, the chances of project failure are very high”.

Looking at operation risks, the participants agreed that the operation risks are also an important key credit factor. As mentioned by Project K that, “The operation period in PPP projects is long term. Hence, to ensure we can perform well for 20 years, we have a good team of operation and maintenance”. This is further agreed by Project L that, “The bank wants to look at the track record of operation and maintenance operator. For the period of 12 years of loan repayment, the asset actually belongs to the bank because they are the financiers, as our company only put in 10% but the other 90% is financed by the bank. Basically, the bank is the owner of the assets and the bank is very concerned as to who will maintain the property. Under CA, the government can terminate the concession if the maintenance is very bad, after having not achieved the stipulated Key Performance Indicator (KPI). When we submit the proposal for financing we also need to submit someone who is the operator for 20 years. Our operator’s track record in this maintenance works is almost 30 years. Consequently, one of the criteria, when you want to secure the financing, is the operator of the asset”.

These findings are parallel with Vasilescu et al. (2009); Gardner & Wright (2012) and (Agrawal, 2012) which emphasise that at the operation phase, there are risks including lower revenues than estimated; project not operating as projected performance level, equipment theft or damage and high maintenance cost or contractors failing to perform as per contract terms. However, by appointing experiences operator who has good track record of operating assets of a similar nature and size, as well as through a long-term maintenance agreements, typically with the original equipment manufacturers, these risks can be mitigated.

On the other hand, the findings show that SPV structure (27.3%) is less important as credit factor in PPP project financing in Malaysia. In the context of Malaysia, UKAS emphasises the eligibility criteria for SPV to implement the PPP project where the SPV must have a strong financial position with relevant management and technical expertise resources, and must prove that it is capable of not only establishing assets and manage risks but also maintaining the assets, and the SPV must exhibit innovation standard that is able to contribute to the quality of services provided and provide economic value to consumers (UKAS, 2009). Whilst in the DBRS (2015) credit assessing framework, there is legal consideration associated to SPV which evaluates the legal aspects of the creation and



existence of the SPV as well as the power, authority, and capacity of the SPV to enter into various binding project agreements.

Looking at the importance of the performance of sub-contractor and supplier, Project A and Project B indicated that, *“The supplier is all parcel to the main contractor, so when we parcel down to the main contractor, they will handle everything. That is why the financier is leverage on that matter. The financier said...you have been the contractor for 30 years, you have vast supplier base, and you have permanent sub-contractor. Hence, you have a strong team of project implementer and a strong business*

network. This means we can obtain a good price of construction material. Everything is established. It is comfort to the financier” (Project A).

“They have sub-contractors that have been following the main contractor all this while. We know them and they are very close to the contractor. It’s very easy to get the cooperation because they know we will pay them. So, almost 90% of the sub-contractors are friendly to both parties. For the supplier, we know them and will always deal with them” (Project B).

In contrast, Project K claimed that the sub-contractor is not an important credit factor, *“Normally, banks look at the main contractor, and won’t look at the sub-contractor and supplier. Sub-contractor is more towards the main contractor side who is responsible to ensure that there are good sub-contractors and suppliers for their project to proceed smoothly”*.

5) Security Provision

Table VIII presents the response regarding key credit factors of security provision in PPP project financing. A majority of participants (95.4%) agreed that insurance coverage is the most important credit factor followed by assignment to lenders (81.8%) as a second important factor.

Table VIII: Key credit factors for security provision

Security Provision	Literature	Frequency (n = 22)			Percentage
	Review (%)	Bank	Government	SPV	
Insurance coverage		3	2	16	95.4%
Assignment to lenders		3	2	13	81.8%
Reserve fund		3	0	6	40.9%
Undertaking letter		1	0	5	27.3%
Corporate guarantee		2	1	1	18.2%

The majority of the participants agreed that insurance coverage is the main credit factor of security provision in PPP project financing. This is in line with the opinion of the participants Bank 1, Project A and Project B who stated that, *“Insurance coverage is important and under the CA, which requires a minimum insurance. For construction projects, it refers to the insurance during construction such as Third Party Liability and Contractor’s All Risks”*. This is line with ADB (2014) and DBRS (2015) that project finance relies on single source of revenue from the project asset developed, as insurance coverage could cover losses in an event of

disruption.

Regarding assignment to lenders, Bank 2 asserted that, *“When the government signs a CA with a SPV, the SPV will have the power to implement and operate the project. For the bank, its top priority would be the right to step into the project in the event of default by the SPV. In the event of default, the bank may step in and get another party to replace the existing SPV and run the project for the bank to recover its money”*.

Whilst Project I further added how crucial assignment is to lenders, *“If the bank decides to give the loan the first thing they look on is the security side. During the construction, the bank knows there is no income but they know the value of the project. The bank realises that if they have to step in or what not, they know the value of profit from the project because there is CA. The bank can take over the project or appoint another main contractor to continue the construction until completion and the AC will go to them”*.

The above response is in line with RAM (2015) that an assignment to lenders is a security that guaranteed the lenders have rights in the PPP project. The lenders have a step in right to effectively replace the project’s management if SPV fails to complete the project accordingly[52].

Even though the response regarding corporate guarantees only 18.2%, the participants pointed out the importance of corporate guarantee for securing project financing. At the banker side as mentioned by Bank 1 that, *“Banks cannot claim from the company but bank needs corporate guarantor from them. The requirement for a corporate guarantor from a holding company is to make sure the applicant is from an established company”*. As Project F has put forward, *“The banks require a guarantee from all the directors or in other words, the directors’ guarantee. Completion guarantee which project sponsors’ guarantee to the project’s lenders, covers the construction phase which is the riskiest phase of a project. The guarantors undertake to complete the project within the specified time frame and to pay for the cost overruns if any”*. The purpose of corporate guarantee is to guarantee that if there is any problem during construction the sponsor will ensure the project be completed and top up any cost overrun.

V. CONCLUSIONS

This paper has looked into the key credit factors in credit assessment for PPP project financing in Malaysia. The key credit factors refer to the important qualitative and quantitative risk characteristics that are likely to affect the creditworthiness of PPP projects. PPP projects demand a great amount of debt and involve a long-term concession period. In addition, PPP project financing is based on a project finance technique which is fully dependent on the cash flow of the project to serve its debt obligations. This causes the PPP projects to be related to high credit risk, in which the probability of the private company fails to make the debt repayment. Banks evaluate the creditworthiness of the private company as well as the project viability, ensuring the ability of the project to pay its debt.

The analysing of interview data using ATLAS.ti revealed that five groups of key credit factors that are important in credit assessment for PPP project financing include



the project's financial credit strength, the strength of sponsor, contractual foundation, transaction characteristics and security provision. The important key credit factors of a project's financial strength were cash flow analysis, debt-equity ratio, DSCR, and revenue generated. Meanwhile, there were five most key credit factors of sponsor strength which are the sponsors' financial strength, track record, experience, management capability and equity contribution. As for contractual foundation group, only concession agreement is the most important credit factor. The fourth group of key credit factors is transaction characteristics and there were three key credit factors of transaction characteristics: the strength of contractor, construction risks and operational risks. Lastly, for security provision, the

insurance coverage is the most important credit factor followed by assignment to lenders as the second important key credit factor. The findings add to the current knowledge that understanding of key credit factors of the projects from debt-financing perspective facilitates the private company to succeed in obtaining funding for PPP projects. In future studies, a procedure framework to determine success in obtaining PPP projects financing can be developed, which considers the identified key credit factors in this paper. The area of investigation should cover the sources of financing, financing capacity, duration of financing and interest charges.

VI. REFERENCES

- [1] Abdullah, N., Sufian, A., Asenova, D., & Bailey, S. J. (2014). PPP/PFI in Malaysian Development Plans: Purpose, Structure, Implementation, Financing and Risk Transfer. In *Proceedings of 5th Asia-Pacific Business Research Conference* (pp. 1–14). Kuala Lumpur, Malaysia.
- [2] ADB. (2014). *Credit Rating Methods for Public Private Partnership Infrastructure Projects and Small and Medium-Sized Enterprises in South Asia*. Asian Development Bank, Manila, Philippines.
- [3] Agrawal, A. (2012). Risk Mitigation Strategies for Renewable Energy Project Financing. *Strategic Planning for Energy and the Environment*, 32(January 2015), 9–20. <http://doi.org/10.1080/10485236.2012.10554231>
- [4] Akbiyikli, R., Eaton, D., & Turner, A. (2006). Project Finance and the Private Finance Initiative (PFI). *The Journal of Structured Finance*, 12(2), 67–75. <http://doi.org/10.3905/jsf.2006.644162>
- [5] Akintoye, A., Hardcastle, C., Beck, M., Chinyio, E., & Asenova, D. (2003). Achieving best value in private finance initiative project procurement. *Construction Management and Economics*, 21(5), 461–470. <http://doi.org/10.1080/0144619032000087285>
- [6] Akinyemi, B., Ojiako, U., Maguire, S., Steel, G., & Anyaegbunam, A. (2009). Nigerian Banks and the Perception of Risk in PPP Project Delivery. *Journal of Finance and Management*, 8(2), 1–20.
- [7] Ali, M., Beheiry, S., Labban, T., & Obied, M. (2014). Contractor Accountability Matrix (CAM). *Journal of Modern Science and Technology*, 2(1), 100–107.
- [8] Basel Committee. (2005). *International Convergence of Capital Measurement and Capital Standards: A revised Framework*. Switzerland: Bank for International Settlements.
- [9] Cheng, E. W. L., Chiang, Y. H., & Tang, B. S. (2007). Alternative approach to credit scoring by DEA: Evaluating borrowers with respect to PFI projects. *Building and Environment*, 42(4), 1752–1760. <http://doi.org/10.1016/j.buildenv.2006.02.012>
- [10] Chiang, Y. H., & Cheng, E. W. L. (2009). Perception of Financial Institutions toward Financing PFI Projects in Hong Kong. *Journal of Construction Engineering and Management*, 135(9), 833–840.
- [11] Chiang, Y. H., & Cheng, E. W. L. (2011). Revealing bank lending decisions for contractors in Hong Kong. *International Journal of Project Management*, 29(2), 137–145. <http://doi.org/10.1016/j.ijproman.2010.02.003>
- [12] Daube, D., Vollrath, S., & Alfen, H. W. (2008). A comparison of Project Finance and the Forfeiting Model as financing forms for PPP projects in Germany. *International Journal of Project Management*, 26(4), 376–387. <http://doi.org/10.1016/j.ijproman.2007.07.001>
- [13] DBRS. (2015). *Rating Project Finance*.
- [14] Demirag, I., Khadaroo, I., & Stapleton, P. (2015). A changing market for PFI financing: Evidence from the financiers. *Accounting Forum*, 39, 188–200. <http://doi.org/10.1016/j.accfor.2015.05.001>
- [15] Engel, E., Fischer, R., & Galetovic, A. (2010). The economics of infrastructure finance: Public-Private Partnerships versus public provision. *European Investment Bank*, 15(1), 40–70.
- [16] Engel, E., Fischer, R., & Galetovic, A. (2014). Finance and Public-Private Partnerships. In *Financial Flows and Infrastructure Financing*. Sydney.
- [17] Fitch. (2016). *Rating Criteria for Infrastructure and Project Finance*.
- [18] Gardner, D., & Wright, J. (2012). Project Finance. In *Encyclopedia of Debt Finance* (2nd ed., pp. 1–13). London: Euromoney Learning Solution. Retrieved from <https://www.hsbcnet.com/gbm/attachments/products-services/financing/project-finance>
- [19] Gatti, S. (2008). *Project Finance in Theory and Practice - Designing, Structuring, and Financing Private and Public Projects*. Academic Press. <http://doi.org/10.1017/CBO9781107415324.004>
- [20] Hampl, N., Florian, L.-F., Christoph, F., Sebastian, O., & Valentin, A. (2011). *The Myth of Bankability*. Germany.
- [21] Inderst, G., & Stewart, F. (2014). *Institutional Investment in Infrastructure in Emerging Markets and Developing Economies*. Washington, USA.
- [22] Ismail, K. (2012). *Value for Money (VFM) Assessment Framework for Public Private Partnership (PPP) Approach*. Universiti Teknologi MARA.
- [23] Krippendorff, K. (2004). *Content Analysis: An Introduction to Its Methodology*. Education (Vol. 79). <http://doi.org/10.2307/2288384>
- [24] MARC. (2015). *Rating Methodology Infrastructure and Project Finance*. Kuala Lumpur, Malaysia.
- [25] Meng, X., & McKeivitt, N. J. (2011). Improving the Bankability of a PFI Financing Application. *The Journal of Structured Finance*, 17(3), 78–87.
- [26] Merna, T., & Njiru, C. (2002). *Financing Infrastructure Projects* (First Edit). London, UK: Thomas Telford Limited.
- [27] Mohd Nordin, R. (2015). *A Framework of Transparency Initiative (TI) to Fight Corruption for Public Construction Projects*. Universiti Teknologi MARA.
- [28] Moody's. (2015). *Operational Privately Financed Public Infrastructure (PFI/PPP/P3) Projects*.
- [29] Moody's. (2016). *Construction Risk in Privately-Financed Public Infrastructure (PFI/PPP/P3) Projects*. Methodology.
- [30] Ngugi, P. K. (2014). Bankable Geothermal Project Documents. In *Short Course VI on Utilization of Low- and Medium-Enthalpy Geothermal Resources and Financial Aspects of Utilization* (pp. 1–8).
- [31] Pieters, I. J., Lotz, M., & Brent, A. C. (2014). Investigating the Financial Close of Projects Within the South African. *South African Journal of Industrial Engineering*, 25(3), 57–68.
- [32] RAM. (2011). *Rating Approach for Companies with Private-Finance-Initiative or Public-Private-Partnership (PFI/PPP) Projects*. Kuala Lumpur, Malaysia.
- [33] RAM. (2015). *Criteria Update for Companies with Private-Finance-Initiative (PFI) or Public-Private-Partnership (PPP) Projects*. Kuala Lumpur, Malaysia.
- [34] Saidan Khaderi, S., & Abdul Aziz, A. R. (2009). The Acceptability of The Private Finance Initiative (PFI) in Malaysian Construction Industry. In *International Symposium on Construction in Developing Economies*.
- [35] Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research Methods for Business Students* (Sixth). England: Pearson Education Limited.
- [36] Scannella, E. (2013). Bank Lending in Project Finance: The New Regulatory Capital Framework. *International Journal of Economics and Finance*, 5(1), 218–228. <http://doi.org/10.5539/ijef.v5n1p218>
- [37] Sharma, R. (2013). The Potential of Private Institutional Investors for Financing Transport Infrastructure. In *International Transport Forum at the OECD, Paris, France*.
- [38] Singh, L. B., & Kalidindi, S. N. (2009). Criteria influencing debt financing of Indian PPP road projects: a case study. *Journal of Financial Management of Property and Construction*, 14(1), 34–60.



<http://doi.org/10.1108/13664380910942635>

- [39] Srivastava, V. (2014). Project Finance Default in India: Implications for Bank Loans to the Infrastructure Sector. *The Journal of Structured Finance*, (Summer), 81–92.
- [40] Standard & Poor's. (2007). *Updated Project Finance Summary Debt Rating Criteria. Rating Direct*.
- [41] Switala, H. (2015). Project finance and obtaining sufficient funding for the successful completion of your project. Retrieved October 31, 2016, from http://www.dbsa.org/EN/About-Us/Publications/Documents/Project_finance_and_obtaining_sufficient_funding_for_the_successful_completion_of_your_project.pdf
- [42] Takim, R. (2005). *A Framework for Successful Construction Project Performance*. Glasgow Caledonian University.
- [43] Takim, R., Abdul-Rahman, R., Ismail, K., & Egbu, C. . (2008). The Acceptability of Private Finance Initiative (PFI) Scheme in Malaysia. *Asian Social Science*, 4(12), 71–82.
- [44] Thompson, S. (2012). Credit rating and project finance default: An important risk management instrument. *Public Infrastructure Bulletin*, 1(8).
- [45] UKAS. (n.d.). Projek Utama PPP. Retrieved May 10, 2016, from <http://www.ukas.gov.my>
- [46] UKAS. (2009). *Garis Panduan Kerjasama Awam-Swasta (Public Private Partnership - PPP)*. Malaysia: Jabatan Perdana Menteri, Putrajaya.
- [47] Umar, A. A., Idrus, A., & Khamidi, M. F. (2011). Barriers to the use of Public-Private Partnerships for provision of Public Infrastructure in Developing countries: A review. In *National Postgraduate Conference, 19 September 2011* (pp. 1–7). IEEE.
- [48] Vasilescu, A. M., Dima, A. M., & Vasilache, S. (2009). Credit Analysis Policies in Construction Project Finance, 4(2), 79–94.
- [49] Ye, S. (2009). Patterns of Financing PPP Projects. In A. Akintoye & M. Beck (Eds.), *Policy, Finance & Management for Public-Private Partnerships* (pp. 181–197). Blackwell Publishing Ltd.
- [50] Yescombe, E. R. (2002). *Principles of Project Finance*. London, UK: Academic Press.
- [51] Yescombe, E. R. (2007). Private Sector Financing-Sources and Procedures. In *Private-Sector Financing-Sources and Procedures* (pp. 124–142). <http://doi.org/10.1016/B978-075068054-7.50033-2>
- [52] Zhang, X. (2005). Concessionaire ' s Financial Capability in Developing Build-Operate-Transfer Type Infrastructure Projects. *Journal of Construction Engineering and Management*, 131(10), 1054–1064.

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