UNDERSTANDING THE USE OF KAIKAKU PROJECT MANAGEMENT IN CONSTRUCTION INDUSTRY: A PLANNED BEHAVIOUR APPROACH

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Abstract
The project management method used in every project plays a vital role in determining the success of a project. Kaikaku Project Management (KPM) is beneficial in many ways, however, the implementation of the method in the construction industry in Malaysia is not common. To address the issue above, the aim of this study is to (1) identify the relationship between attitude, subjective norm, perceived behavioural control towards the use of Kaikaku project management, 2) elicit behavioural, normative and control beliefs with regards to the use of Kaikaku project management, 3) examine the influence between behavioural, normative and control beliefs towards attitude, subjective norms and perceived behavioural control. This study uses the mixed-methods approach in which Belief Elicitation Study (BES) is used to identify salient beliefs that is thematically analysed and reclassified into nine constructs to form the Theory of Planned Behaviour (TPB) survey. Nineteen (19) professionals from the construction industry took part in the Belief Elicitation Study (BES) while ninety-five (95) contractors from G5, G6 and G7 took part in the Theory of Planned Behaviour (TPB) survey. The PLS-SEM analysed data showed that the professional institute, government and client have no significant effect on the subjective norms towards KPM and the perceived behavioural control (PBC) has no significant effect toward the intention to use KPM. The perceived usefulness, perceived ease of use, project management team, self-efficacy and facilitating conditions are significant factors towards attitude towards KPM, subjective norms with regards to KPM and perceived behavioural control in KPM. The attitude towards KPM and subjective norms with regards to KPM are significant factors that affects the intention to use KPM.

Keywords: *Kaikaku Project Management; Japanese Project Management; Theory of Planned Behaviour (TPB); Belief Elicitation Study (BES); Construction Industry*

INTRODUCTION

The construction industry has made many significant contributions to the country in terms of Gross Domestic Products (GDP), job opportunities, government revenues and benefits of investment (Ika et al., 2020; Nawi et al., 2011; Riazi et al., 2018). According to Barbosa et al. (2020); Ghimire and Biswakarma (2017) , the probability of a project success can be increased by selecting proper project management approaches at the beginning of projects. The organization implementing project management methods may also benefit from the implementation as it affects every functional unit of an organization (Badewi, 2016; Kerzner, 2017). The Kaikaku Project Management (KPM) is an upgraded version of Project and Program Management (P2M) consisting of 3 key elements which are Kakusin (Innovation), Kaihatsu (Development) and Kaizen (Improvement) (Ahmet & Yildiz, 2020). KPM is an alternative sought by the Japanese after experiencing their deflationary downfall in the 90s. This alternative was used to regain their competitive advantage and to maintain in the industry (Siang & Yih, 2012).

In Malaysia, the traditional project management method is commonly applied in the construction industry, whereas KPM has not been much implemented. The construction industry has been rapidly expanding, with construction work totalling up to RM146.4 billion

in 2019, up 0.6% from RM145.5 billion in 2018 (Department of Statistics, 2019). Therefore, many organizations have to step up their standards in order to stay in the market.

Recently, there are many studies that have been conducted regarding the Japanese management principles and practices, and the models and methods to address the need and importance of Kaikaku Project Management (F. S. Low, 2015; Yamamoto, 2010). However, no studies have been undertaken to provide light on how to intervene the usage of Kaikaku Project Management in Malaysian construction projects using the Theory of Planned Behaviour. To fill this need, a research on how to intervene the usage of Kaikaku Project Management in Malaysian construction projects is done by utilising the Belief Elicitation Study (BES) and Theory of Planned Behavior (TPB). The Theory of Planned Behaviour (TPB) is often used in explaining one's intention and behaviour, and its prediction is well-established (Downs & Hausenblas, 2005; Hegner, Fenko, & Teravest, 2017). In order to develop the foundation of one's salient exercise beliefs, the Belief Elicitation Study (BES) is suggested as TPB is in use. The BES is needed as the behavioural, normative and control beliefs of an individual contribute to interpreting one's attitude, subjective norm and perceived behavioural control.

At the end of the study, the relationship between attitude, subjective norm, perceived behavioural control towards the use of Kaikaku project management is identified, while the behavioural, normative and control beliefs with regards to the use of Kaikaku project management is elicited and the influence between behavioural, normative and control beliefs towards attitude, subjective norms and perceived behavioural control is examined. By conducting this study, the TPB model is extended, and practitioners may understand how to intervene in improving behavioural intention as the factors affecting the intention to use Kaikaku Project Management are identified. The outcome of the study would be beneficial to many parties as these factors can be used as reference to implement the use of KPM and also conduct in-depth studies related to KPM.

LITERATURE REVIEW

According to F. Low, Chong, and Lee (2013), Kaikaku Project Management (KPM) is implemented at management level which involves reformation or innovation in general. Kaikaku Project Management (KPM) is large scale and involves a wide range of activities which aims to achieve radical improvement in an organization. Kaikaku Project Management (KPM) consists of three (3) key elements which are Kakusin (Innovation), Kaihatsu (Development) and Kaizen (Improvement). Kakusin (innovation) has the target of having a drastic change in performance which relates with the combination of all knowledge and wisdom. Kaihatsu (development) is the challenges that an organization faces to obtain new knowledge and information in order to help achieve competitive advantage in the industry (Ohara, 2009). Kaizen (improvement) is a continual effort for improvement at work-floor level and can be carried out throughout the project.

In this study, the Theory of Planned Behaviour (TPB) is implemented and this theory has been used to forecast and alter human behaviour through many years of study in social psychology (Myers et al., 2019; Silvius & Schipper, 2020). There are three (3) antecedents to intention which are attitude, subjective norms and perceived behavioural control (PBC). TPB proposes that one's expectations and principles on conducting a behaviour form their

behavioural, normative and control beliefs. These beliefs influence one's attitude, subjective norms and perceived behavioural control towards their intention, and eventually, their behaviour (Downs & Hausenblas, 2005).

The behavioural belief of an individual has an influence on the attitude towards one's specific behaviour. The likelihood of conducting a behaviour depends on how an individual's attitude is towards the behaviour. If the behaviour if favourable, the likelihood would increase. Therefore, it is hypothesized in this study that:

H1: Behavioural beliefs have an impact on attitude towards KPM.

According Fang et al. (2017), internal and external factors influence the normative beliefs of an individual. Normative beliefs occur when an individual solely decides on an action. The society surrounding an individual, specifically their expectation on the individual has an influence on one's normative beliefs. The normative beliefs would affect the subjective norm in which is essential in making the decision of conducting the behaviour. In this study, it is hypothesized as:

H2: Normative beliefs has an impact towards subjective norms with regards to KPM.

An individual's control beliefs influences his or her perceived behavioural control (Ahmed & Ward, 2016; Schifter & Ajzen, 1985). The action of an individual will be affected by the control beliefs. The control factors can be seen individually as the perception of power of one factor may differ from the power of another control factor. If the probability of the presence of a powerful control factor is high, the individual is very likely to perform the action due to the powerful factor. This is hypothesized in the study as:

H3: Control beliefs has an impact on perceived behavioural control in KPM.

According to Oteng-Peprah, de Vries, and Acheampong (2020), a person's attitude toward a behaviour is described as the person's favourable or negative sentiments about the behaviour. Every individual has different attitudes which would have an impact towards the intentions of the individuals towards specific behaviours. According to Ashidiqi and Arundina (2017), attitude is one of the most crucial elements determining an individual's intention. In this case, the intention studied is the intention to use Kaikaku Project Management in the construction industry. Hence, it is hypothesized that:

H4: Attitude has an impact on the intention to use KPM.

The viewpoint of an individual regarding social pressure to portray a certain behaviour is referred to as subjective norm (LaMorte, 2019). For example, if the society shows a positive feeling towards a behaviour, it is highly likely that other individuals would think the same, this is due to the approval of the intention by the society or anyone that is trusted. The subjective norms tested is with regards to Kaikaku Project Management (KPM). Hence, it is hypothesized that:

H5: Subjective norms have an impact to the intention to use KPM.

The ability of an individual understanding the capability of performing a certain behaviour is referred to as perceived behavioural control (Warsame & Ireri, 2016). Perceived behavioural control has two aspects which are the internal control and the external control. The internal control is usually when the individual has control to the situation itself. The external control is usually based on external parties controlling the attitude of the individual towards a specific behaviour (Luenendonk, 2017). The perceived behavioural control in KPM is measured. Hence, it is hypothesized as:

H6: Perceived behavioural control has an impact towards the intention to use KPM.

The behavioural intention of an individual is impacted by the attitude, subjective norm and perceived behavioural control of an individual itself. According to Schifter and Ajzen (1985), the degree of willingness of an individual to endeavour and give out a certain amount of effort to conduct a specific behaviour is called behavioural intention.

METHODOLOGY

Data Collection

The mixed-methods approach was used in this study, in which the qualitative data obtained from the open-ended questionnaire survey related to the Belief Elicitation Study (BES) was used to develop the main questionnaire survey related to the Theory of Planned Behaviour (TPB), which produced the quantitative data.

For the qualitative approach, the online open-ended questionnaire survey comprised of three major sections which are: Section A (General Information), Section B (Eliciting Salient Beliefs) and Section C (Implementation of Kaikaku Project Management Activities). Respondents are given choices of answers to select from in Section A. Section B are open-ended questions in which respondents are able to provide answers based on their personal opinion. The questions for Section C were designated based on a seven-point Likert scale (Georgalas et al., 2020; Lee, 2017).

For the quantitative approach, the main survey consisted of three major sections which are Section A, Section B and Section C. Section A consisted of questions regarding the general information of respondents, while section B are questions regarding the implementation of Kaikaku Project Management (KPM) activities. Section C are questions related to the Theory of Planned Behaviour (TPB). The inputs from the Belief Elicitation Study (BES) are used to develop the questionnaire. The questions were also designated based on a seven-point Likert scale (Georgalas et al., 2020; Lee, 2017).

Survey Procedure

Three (3) experts from building and civil engineering contracting firms pre-tested the questionnaire survey. It was then pilot tested by ten (10) construction professionals. The feedback obtained from the tests were used to revise on the questionnaire. The questionnaire survey was then completed and sent out to respondents for the main survey.

The study was conducted in Kuala Lumpur and the contractors chosen for this study is from G5, G6 and G7. The minimum sample size of this study was obtained based on the rule of thumb provided by Cohen (1992) for multiple regression models. As there are is a maximum of four arrows pointing at the latent variables, the sample size for the study is 65. This is based on the recommended sample size for a PLS-SEM research with an 80 percent statistical power (Hair, 2014; Kock & Hadaya, 2018).

The survey was sent by email and LinkedIn invites to a total of 1800 Construction Industry Development Board (CIDB) contractors from G5, G6 and G7. Simple random sampling is used during the survey (Al Ghayab et al., 2016).

RESULTS

The results below are based on the qualitative data analysis and quantitative data analysis. The qualitative approach used the thematic analysis to analyse the data. SmartPLS 3.0 is used to analyse the data obtained from the quantitative approach. The data collected were presented in the form of tables and other statistical representations.

Demographic Results (Qualitative Analysis)

For Belief Elicitation Study (BES), there were 19 respondents who responded to the online open-ended questionnaire survey. 16 of them are male (84.21%) and 3 of them are female (15.79%). The majority of respondents are aged 21-25 years which accounts for 7 respondents (36.84%), whereas the least number of respondent (1 respondent) is from the age group 26-30 years which is 5.26% of the total number of respondents.

In terms of the respondents' years of experience, majority of respondents have the experience of 1-5 years (n=10, 52.63%), while there is only 1 respondent (5.26%) who has 21-25 years of experience. The majority of respondents are from G7 (n=12, 63.16%), followed by G2 (n=3, 15.79%) and G1 (n=2, 10.53%). There are 1 respondent (5.26%) from G4 and G6 respectively.

There are seventeen (17) respondents (89.47%) who are main contractors, while 2 respondents (10.53%) are sub-contractors. The top three positions in the organization are Project Manager (n=7, 36.84%), Project Engineer (n=2, 10.53%) and Engineer (n=2, 10.53%). The rest of the respondents hold different positions respectively (n=1, 5.26%). The top three positions in current projects are Project Manager (n=7, 36.84%), Project Engineer (n=3, 15.79%) and Site Manager (n=2, 10.53%). The rest of the respondents hold different positions respectively (n=1, 5.26%).

Project Details (Qualitative Analysis)

There are four (4) types of projects among the respondents. The highest number of respondents are involved in industrial projects which are 7 respondents (36.84%). The civil & infrastructure and residential projects have 5 respondents (26.32%) each. The least number of respondents are respondents who are involved with commercial projects at 10.53% (2 respondents).

The location of project varies, and the majority of projects are currently being carried out in Johor (n=8, 41.11%). The second highest number of respondents are respondents with projects in Kuala Lumpur (n=5, 26.32%). Projects in Negeri Sembilan, Terengganu and Kedah, Putrajaya have respondents of 2 respondents (10.53%) and 1 respondent (5.26%) respectively. In terms of project funding, majority of projects are private funded (n=16, 84.21%) while 2 respondents (10.53%) stated that their projects are both government and private funded. Only 1 respondent (5.26%) stated that the project is government funded.

There are 7 respondents (36.84%) with contract sum less than 10 Million while 6 respondents (31.58%) have contract sum between 10 Million to 50 Million. For contract sum of 100 Million to 150 Million and more than 250 Million, there are 2 respondents (10.53%) respectively for both categories. The contract sums of 150 Million to 200 Million and 200 Million to 250 Million, both have 1 respondent (5.26%) each. For the year of project commencement, year 2020 has the majority of respondents (n=14, 73.68%) followed by year 2019 (n=4, 21.05%) and then 2018 (n=1, 5.26%).

Implementation of Kaikaku Project Management Activities (Qualitative Analysis)

The Kaikaku Project Management activities were adopted from Bredillet (2007). The implementation of the activities was rated based on the 7-points Likert scale. From this study, it can be seen that most contractors implement the activities from Kaikaku Project Management. The activities are such as taking into consideration of detailed content, follow the organization mission, consider overall goal, provide integration management model, utilize resources in the company, utilize reformed projects, applying human perceptive ability in decision making and promote development of human resource.

Frequency of Elicited Beliefs

As Fishbein et al. (1980); C. K. Lee, T. W. Yiu, and S. O. Cheung (2018) indicated, not all elicited beliefs were included in this study. The modal salient beliefs were chosen using a 10% frequency cut-off in this study (C. K. Lee et al., 2018). The elicited beliefs were then analysed by using the thematic analysis. The beliefs that produce comparable results are grouped together, and the frequency of each response is determined. The process has no clear guidance and requires common sense (Fishbein et al., 1980; Chia Kuang Lee, Tak Wing Yiu, & Sai On Cheung, 2018). The respondents' results are reported in Table 1.

The salient behavioural beliefs are evaluations of the consequences of KPM implementation. The study yielded beliefs such as better work environment, improve project, increase innovation, beneficial to project, difficult to implement and lack of knowledge. The salient normative beliefs consist of beliefs on the viewpoint of important parties such as project management team, general workers, contractors, professional institute, government and client towards the implementation of KPM. Lastly, the salient control beliefs consist of beliefs on the factors facilitating the use of KPM. The beliefs obtained are support from management, resources and familiarity with KPM.

Table 1. Frequency of Elicited Beliefs

Item	Construct	Frequency	Percentage
Behavioural Beliefs			
Better work environment	Perceived Usefulness	3	16%
Improve project		12	63%
Increase innovation		2	11%
Beneficial to project	Perceived Ease of Use	9	47%
Difficult to implement		7	37%
Lack of knowledge		5	26%
Normative Beliefs			
PM team	PM Team	13	68%
General Workers		5	26%
Contractors		3	16%
Professional Institute	Professional Institute	2	11%
Government	Government	3	16%
Client	Client	3	16%
Control Beliefs			
Support from management	Facilitating Conditions	6	32%
Resources		8	42%
Familiarity with KPM	Self-Efficacy	3	16%

Revised Framework of Intention to Use KPM

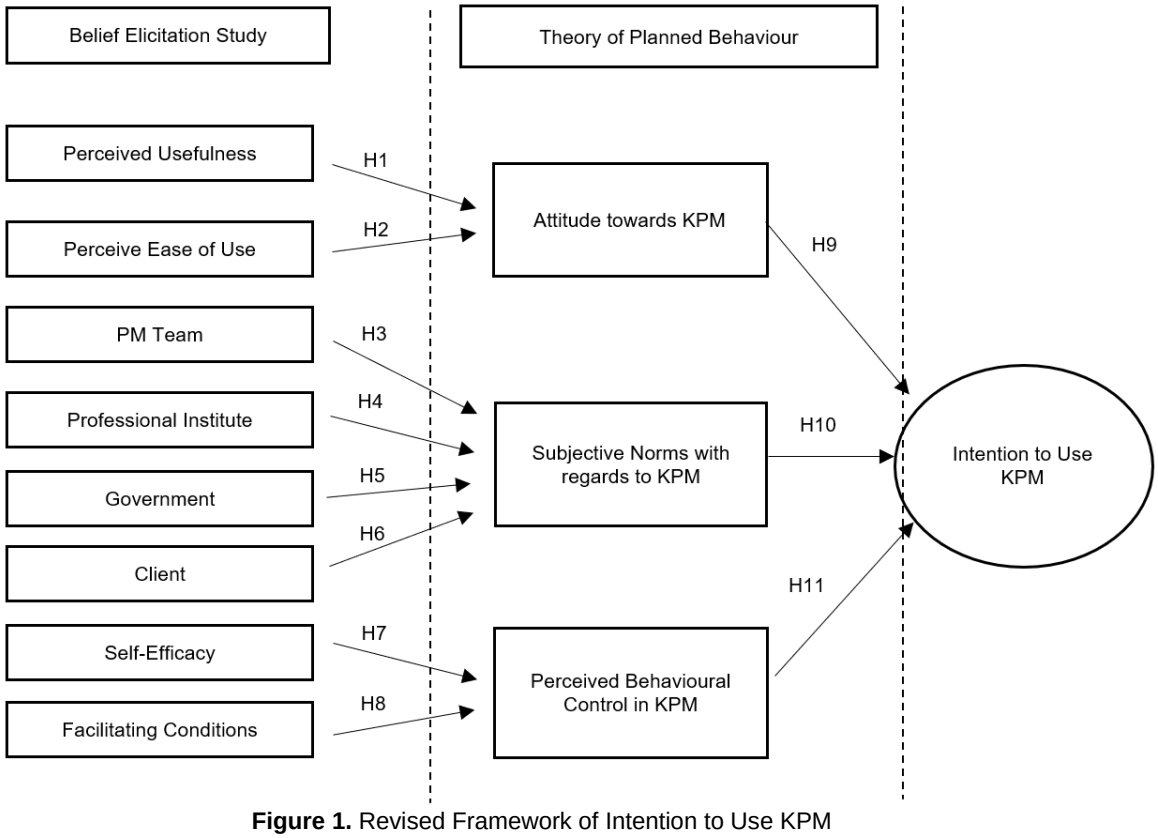

Figure 1. Revised Framework of Intention to Use KPM

Figure 1 shows the revised framework of this study as the original Theory of Planned Behaviour (TPB) model can be decomposed into smaller constructs and this would allow a better explanation on the behavioural intention of an individual (C. K. Lee et al., 2018; Taylor & Todd, 1995). In Figure 1, it can be seen that behavioural belief structures can be decomposed into perceived usefulness and perceived ease of use. The normative belief structures is decomposed into PM team, professional institute, government and client. Control belief structures can be decomposed into self-efficacy and facilitating conditions.

Decomposition of Behavioural Beliefs

In this study, the behavioural belief structures is decomposed into perceived usefulness and perceived ease of use. Perceived usefulness is defined by Davis (1989) as the degree to which an individual feels that implementing a given approach will improve the work performance. It may be stated that when an individual feels that a system will provide a favourable result, the individual's performance will improve. The degree to which a person believes utilising a certain technology will be easy is known as perceived ease of use. It may be stated that the easier it is to use, the more likely other individuals will adopt it.

Decomposition of Normative Beliefs

In this study, the normative belief structures is decomposed into PM team, professional institute, government and client. According to Taylor and Todd (1995), different groups of people have different viewpoints. In this case, the PM team, professional institute, the government and client may have different perspective on the implementation of KPM. Some level of organization may be supportive, and some may not even consider the implementation. Therefore, the decomposition of the normative beliefs is necessary to further understand the behavioural intention.

Decomposition of Control Beliefs

The control belief structures in this study is decomposed into self-efficacy and facilitating conditions. Self-efficacy can be related to the ability of an individual to implement KPM. The higher the self-efficacy, the higher the behavioural intention (Blomquist, Farashah, & Thomas, 2016; Compeau & Higgins, 1991). The facilitating condition is usually related to the availability of resources in terms of money and time and also the compatibility of an individual to technologies which may result in constraints. It can be said that the lesser the resources available, the lesser the compatibility of technologies, the lesser the behavioural intention (Taylor & Todd, 1995).

Revised Hypothesis

After the decomposing the salient beliefs obtained from the qualitative data, the salient beliefs were replaced into the hypothesis, resulting in an updated hypothesis which are:

Hypothesis 1 (H1): Perceived usefulness has an impact on attitude towards KPM

Hypothesis 2 (H2): Perceived ease of use has an impact on attitude towards KPM

Hypothesis 3 (H3): Project management team has an impact towards subjective norms with regards to KPM

Hypothesis 4 (H4): Professional institute has an impact towards subjective norms with regards to KPM

Hypothesis 5 (H5): Government has an impact towards subjective norms with regards to KPM

Hypothesis 6 (H6): Client has an impact towards subjective norms with regards to KPM

Hypothesis 7 (H7): Self-efficacy has an impact on perceived behavioural control in KPM

Hypothesis 8 (H8): Facilitating conditions has an impact on perceived behavioural control in KPM

Hypothesis 9 (H9): Attitude has an impact on the intention to use KPM

Hypothesis 10 (H10): Subjective norms has an impact to the intention to use KPM

Hypothesis 11 (H11): Perceived behavioural control has an impact towards the intention to use KPM

Response Rate

A 10% anticipated response rate was applied in the study. A total of 1800 invites were distributed, and a total of 95 respondents' data were used for the study. This indicates that the response rate for the study is 5.28% in which is acceptable as the minimum sample size (65 respondents) proposed by Kock and Hadaya (2018) has been achieved.

Demographic Results (Quantitative Analysis)

The demographic result of the main survey is explained in this section. The frequency of respondents is explained based on gender, age, years of experience, contractor grade, role of organization and the position of each respondent in the organization and the current project they are working on. For the main survey, a total of 95 respondents responded to the questionnaire survey. There are 80 male respondents (84.21%) and 15 female respondents (15.79%). In terms of the age of the respondents, majority of respondents are 31-35 years (n=24, 25.26%), followed by 26-30 years (n=21, 22.11%) and 21-25 years (n=18, 18.95%). There are 13 respondents (13.68%) who are 36-40 years and above 50 years are at 10.53% (10 respondents). The age group 41-45 years (n=5, 5.26%) and 46-49 years (n=4, 4.21%) are the least.

In terms of years of experience, 37 respondents (38.95%) have the experience of 1-5 years, while 20 respondents (21.05%) have 6-10 years of experience. There are 14 respondents (14.74%) with 11-15 years of experience and 10 respondents with 16-20 years of experience. For the category of 21-25 years, there are 5 respondents (5.26%), while 26-30 years have 6 respondents (6.32%). The least number of respondents (n=3, 3.16%) have experience of more than 30 years.

G7 grade had the highest number of respondents (n=83,87.37%), followed by G6 (n=8, 8.42%) and then G5 (n=4, 4.21%). Majority of the respondents are main contractors (n=76, 80.00%) for the current project they are working on, while the rest hold the role as sub-contractors (n=19, 20.00%).

The top three positions in the organization are Project Manager (n=24, 25.26%), Project Engineer (n=9, 9.47%) and General Manager (n=7, 7.37%). In terms of position in the current project the respondents are working on, the top three positions are also Project Manager (n=24, 25.26%), Project Engineer (n=7, 7.37%). and General Manager (n=6, 6.32%).

The respondents' understanding regarding KPM were also tested, in which the 5-point Likert scale was used. Majority of the respondents rated their understanding as good (n=38, 40.00%), followed by poor (n=19, 20.00%) and very good (n=16, 16.84%). The remaining respondents rated their understanding as fair (n=13, 13.68%) and excellent (n=9, 9.47%).

Project Details (Quantitative Analysis)

There are 6 types of projects which are civil & infrastructure, commercial, health-care, industrial, residential and sporting. There are 41 projects (43.16%) under the civil & infrastructure, while 26 projects (27.37%) under residential and 12 projects (12.63%) under commercial. The remaining projects are industrial (n=11, 11.58%), health-care (n=4, 4.21%) and sporting (n=1, 1.05%).

The top three location of projects are Kuala Lumpur (n=29, 30.53%), Selangor (n=24, 25.26%) and Johor (n=11, 11.58%). Most of the projects are private funded (n=50, 52.63%), while 30 projects (31.58%) are government funded and 15 projects (15.79%) are both government and private funded.

There are 44 projects (46.32%) with the contract sum of more than 250 Million, while 18 projects (18.95%) have contract sum of 10 Million to 50 Million. 14 projects (14.74%) have contract sum less than 10 Million, 6 projects (6.32%) have contract sum of 100 Million to 150 Million and 3 projects (3.16%) have contract sum of 200 Million to 250 Million. The contract sums of 50 Million to 100 Million and 150 Million to 200 Million have the same number of projects (n=5, 5.26%). For the year of commencement of construction activities, the top three years are 2019 (n=30, 31.58%), 2018 (n=24, 25.26%) and 2020 (n=23, 24.21%).

Implementation of Kaikaku Project Management Activities (Quantitative Analysis)

From this study, it can be seen that most contractors implement the activities from Kaikaku Project Management as majority of respondents rated most of the activities from somewhat agree, agree to strongly agree. There are a few respondents that rated the level of implementation from somewhat disagree, disagree to strongly disagree. However, the number of respondents were relatively small compared to the total number of respondents. The activities considered are such as taking into consideration of detailed content, follow the organization mission, consider overall goal, provide integration management model, utilize resources in the company, utilize reformed projects, applying human perceptive ability in decision making and promote development of human resource.

Descriptive Statistic and Normality Assessment

In this study, the normality assessment was conducted prior to the assessment of measurement model. The normality assessment was performed by analysing the excess

kurtosis and skewness data obtained from PLS 3.0. According to Al Azizah and Mulyono (2020), the accepted range for skewness is between -1 and 1, while the excess kurtosis range is between -2 and 2. The values in the table below shows that there is a normal distribution in the data.

Table 2. Descriptive Statistics and Normality Assessment

Construct	Item Code	No.	Min	Max	Mean	Std Deviation	Excess Kurtosis	Skewness
INT	INT_1	1	1	7	4.695	1.480	0.013	-0.428
	INT_2	2	1	7	4.863	1.374	0.596	-0.517
	INT_3	3	1	7	4.800	1.342	1.061	-0.714
SN	SN_1	4	1	7	4.663	1.448	0.238	-0.595
	SN_2	5	1	7	4.684	1.409	0.412	-0.591
	SN_3	6	1	7	4.811	1.300	0.880	-0.575
PBC	PBC_1	7	1	7	4.842	1.387	0.756	-0.626
	PBC_2	8	1	7	4.874	1.332	1.314	-0.824
	PBC_3	9	1	7	4.558	1.367	-0.049	-0.337
	PBC_4	10	1	7	4.453	1.457	-0.221	-0.476
ATT	ATT_1	11	1	7	5.032	1.293	1.181	-0.801
	ATT_2	12	1	7	4.537	1.527	0.020	-0.440
	ATT_3	13	1	7	4.832	1.397	0.262	-0.565
	ATT_4	14	1	7	4.758	1.351	0.490	-0.432
PU	PU_1	15	1	7	5.158	1.199	0.196	-0.385
	PU_2	16	1	7	5.168	1.211	0.181	-0.330
	PU_3	17	1	7	5.337	1.120	1.071	-0.564
	PU_4	18	1	7	5.189	1.136	0.610	-0.469
PEU	PEU_1	19	1	7	5.200	1.092	1.254	-0.606
	PEU_2	20	1	7	5.032	1.269	0.813	-0.689
	PEU_3	21	1	7	5.032	1.080	1.077	-0.420
	PEU_4	22	1	7	5.021	1.281	1.305	-0.803
PMT	PMT_1	23	1	7	4.716	1.279	0.518	-0.524
	PMT_2	24	1	7	4.811	1.284	0.423	-0.457
	PMT_3	25	1	7	4.758	1.359	-0.054	-0.316
PI	PI_1	26	1	7	5.011	1.261	0.586	-0.436
	PI_2	27	1	7	5.126	1.225	1.072	-0.630
	PI_3	28	1	7	5.053	1.251	0.647	-0.527
GOV	GOV_1	29	1	7	4.926	1.332	0.326	-0.515
	GOV_2	30	1	7	4.853	1.289	0.441	-0.528
	GOV_3	31	1	7	4.811	1.300	0.426	-0.399
CL	CL_1	32	1	7	4.800	1.202	0.930	-0.456
	CL_2	33	1	7	4.832	1.228	0.955	-0.503
	CL_3	34	1	7	4.779	1.224	0.961	-0.581
SE	SE_1	35	1	7	4.863	1.366	0.186	-0.504
	SE_2	36	1	7	4.389	1.725	-0.376	-0.460
	SE_3	37	1	7	5.326	1.090	1.261	-0.535
	SE_4	38	1	7	5.358	1.151	0.820	-0.487
FC	FC_1	39	1	7	4.684	1.332	0.387	-0.432
	FC_2	40	1	7	4.758	1.499	0.457	-0.758
	FC_3	41	1	7	4.495	1.500	0.263	-0.665
	FC_4	42	1	7	4.653	1.734	-0.390	-0.545

Common Method Bias Test (Harman's Single-Factor Test)

Harman's Single Factor Test was conducted to test the common method variance in the data. As shown in the table below, the value of the test is below 50%, which shows that this study had no common bias issue (Dupuis, Khadeer, & Huang, 2017).

Table 3. Common Method Bias Test

	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	24.270	41.844	41.844	24.270	41.844	41.844

Measurement Model Assessment

The convergent validity of the measurement model is first observed in order to evaluate it. As shown in the table below, the convergent validity is evident as all values are satisfactory (Hair Jr et al., 2017).

Items with code PEU_3, PEU 4, PBC_3 and PBC_4 were removed in order to ensure discriminant validity and to ensure that the data is acceptable. To demonstrate discriminant validity, the squared root of each construct's AVE should be larger than its greatest correlation with any other construct (Hair Jr et al., 2017).

Table 4. Convergent Validity

Construct	Item Code	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Attitude (ATT)	ATT_1	0.915	0.936	0.954	0.838
	ATT_2	0.888			
	ATT_3	0.921			
	ATT_4	0.938			
Client (CL)	CL_1	0.958	0.961	0.975	0.928
	CL_2	0.960			
	CL_3	0.972			
Facilitating Conditions (FC)	FC_1	0.891	0.869	0.910	0.718
	FC_2	0.801			
	FC_3	0.870			
	FC_4	0.824			
Government (GOV)	GOV_1	0.967	0.970	0.981	0.944
	GOV_2	0.981			
	GOV_3	0.968			
Intention (INT)	INT_1	0.962	0.964	0.977	0.933
	INT_2	0.963			
	INT_3	0.973			
Perceived Behavioural Control (PBC)	PBC_1	0.951	0.892	0.949	0.902
	PBC_2	0.948			
Perceived Ease of Use	PEU_1	0.941	0.880	0.943	0.893
	PEU_2	0.949			
Professional Institute (PI)	PI_1	0.938	0.946	0.965	0.902
	PI_2	0.955			
	PI_3	0.957			

Construct	Item Code	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Project Management Team (PMT)	PMT_1	0.950	0.945	0.964	0.900
	PMT_2	0.953			
	PMT_3	0.944			
Perceived Usefulness (PU)	PU_1	0.947	0.963	0.973	0.899
	PU_2	0.938			
	PU_3	0.952			
	PU_4	0.956			
Self-Efficacy (SE)	SE_1	0.861	0.815	0.876	0.639
	SE_2	0.762			
	SE_3	0.803			
	SE_4	0.766			
Subjective Norms (SN)	SN_1	0.901	0.907	0.942	0.844
	SN_2	0.927			
	SN_3	0.927			

Table 5. Discriminant Validity (Fornell & Larcker Criterion)

	ATT	CL	FC	GOV	INT	PBC	PEU	PI	PMT	PU	SE	SN
ATT	**0.916**											
CL	0.728	**0.963**										
FC	0.756	0.710	**0.847**									
GOV	0.648	0.840	0.654	**0.972**								
INT	0.894	0.745	0.759	0.703	**0.966**							
PBC	0.864	0.652	0.710	0.571	0.860	**0.950**						
PEU	0.852	0.666	0.735	0.631	0.816	0.792	**0.945**					
PI	0.623	0.760	0.573	0.852	0.649	0.590	0.619	**0.950**				
PMT	0.830	0.698	0.817	0.631	0.816	0.796	0.854	0.553	**0.949**			
PU	0.845	0.723	0.733	0.716	0.791	0.743	0.905	0.674	0.805	**0.948**		
SE	0.763	0.730	0.779	0.727	0.732	0.755	0.767	0.697	0.738	0.773	**0.799**	
SN	0.832	0.711	0.745	0.697	0.906	0.809	0.791	0.645	0.827	0.757	0.729	**0.918**

Note: Diagonal values (bolded) are square root of AVE, whereas off-diagonals are correlation coefficients
Square root of AVE > correlation coefficients

Structural Model Assessment

Before the structural model assessment is conducted, the collinearity test is done in order to avoid collinearity problems. Items CL_3, GOV_2, INT_3, PI_3, PMT_2 and PU_4 were removed in order to achieve the proposed values (Hair Jr, Howard, & Nitzl, 2020). The variance inflation factor (VIF) values are less than 5, as indicated in the table below, indicating that there are no collinearity concerns.

The research hypotheses were tested by using SmartPLS in which bootstrapping was conducted to identify standard error of estimates of the model parameter which enables significance testing (Hair Jr et al., 2017). The Coefficient of Determination, R^2, was also tested to measure the model's in-sample predictive power and the R^2 values considered substantial, moderate and weak are 0.75, 0.50 and 0.26 respectively. Blindfolding was done to obtain the Q^2 values in order to assess the model's capabilities to predict relevance. The f^2 value was also taken to measure the impact of a specific latent construct on an endogenous construct.

Table 6. Collinearity Test

Construct	Item Code	Outer VIF	Inner VIF
Attitude (ATT)	ATT_1	3.698	4.931
	ATT_2	3.137	
	ATT_3	3.887	
	ATT_4	4.609	
Client (CL)	CL_1	4.074	3.912
	CL_2	4.074	
Facilitating Conditions (FC)	FC_1	2.607	
	FC_2	2.068	2.545
	FC_3	2.644	
	FC_4	2.020	
Government (GOV)	GOV_1	4.881	
	GOV_3	4.881	4.261
Intention (INT)	INT_1	4.444	
	INT_2	4.444	
Perceived Behavioural Control (PBC)	PBC_1	2.833	4.399
	PBC_2	2.833	
Perceived Ease of Use	PEU_1	2.616	4.895
	PEU_2	2.616	
Professional Institute (PI)	PI_1	3.353	2.891
	PI_2	3.353	
Project Management Team (PMT)	PMT_1	3.262	1.986
	PMT_3	3.262	
Perceived Usefulness (PU)	PU_1	4.987	4.895
	PU_2	4.892	
	PU_3	4.509	
Self-Efficacy (SE)	SE_1	2.126	2.545
	SE_2	1.766	
	SE_3	3.774	
	SE_4	3.409	
Subjective Norms (SN)	SN_1	2.689	3.630
	SN_2	3.209	
	SN_3	3.166	

Based on Table 6, the results show that perceived usefulness has a significant impact on attitude towards KPM (β=0.375, t-value=2.76, p-value<0.05). It can be seen that perceived ease of use has a significant impact on attitude towards KPM (β=0.518, t-value=3.456, p-value<0.05). Based on the result (β=0.653, t-value=6.122, p-value<0.05), it can be seen that the project management team has a significant relationship towards subjective norms with regards to KPM. The result shows that there is no significant relationship between the professional institute and the subjective norms (β=0.118, t-value=1.195, p-value>0.05). There is no significant relationship between the government towards the subjective norms (β=0.165, t-value=1.459, p-value>0.05). The result shows that client has no impact towards subjective norms with regards to KPM (β=0.024, t-value=0.194, p-value>0.05). Self-efficacy can be seen to have an impact on perceived behavioural control in KPM (β=0.513, t-value=5.345, p-value<0.05). Based on the summarized table, it can be seen that the facilitating conditions have an impact on perceived behavioural control in KPM (β=0.311, t-value=2.740, p-value<0.05). It can also be seen that attitude has a significant impact on the intention to use KPM (β=0.373, t-value=3.950, p-value<0.05). The subjective norms has a direct impact to

the intention to use KPM (β=0.461, t-value=4.879, p-value<0.05). Perceived behavioural control does not have an impact towards the intention to use KPM (β=0.15, t-value=1.569, p-value>0.05). In this study, only H4, H5, H6 and H11 were not supported while the rest were supported.

Table 7. Summary of Hypotheses Testing

Hypothesis	Path	Std Beta	Std Error	t-Value	Bias	Confidence Interval		p-Value	Decision
						5.00%	95.00%		
H1	PU -> ATT	0.375	0.136	2.760	0.007	0.176	0.598	0.003	Supported
H2	PEU -> ATT	0.518	0.150	3.456	-0.005	0.253	0.735	0.000	Supported
H3	PMT -> SN	0.653	0.107	6.122	-0.014	0.470	0.823	0.000	Supported
H4	PI -> SN	0.118	0.099	1.195	0.003	-0.035	0.284	0.116	Not Supported
H5	GOV -> SN	0.165	0.113	1.459	0.022	-0.027	0.348	0.073	Not Supported
H6	CL -> SN	0.024	0.126	0.194	-0.012	-0.167	0.244	0.423	Not Supported
H7	SE -> PBC	0.513	0.096	5.345	0.000	0.339	0.656	0.000	Supported
H8	FC -> PBC	0.311	0.113	2.740	0.009	0.117	0.487	0.003	Supported
H9	ATT -> INT	0.373	0.094	3.950	0.009	0.219	0.538	0.000	Supported
H10	SN -> INT	0.461	0.094	4.879	0.000	0.314	0.618	0.000	Supported
H11	PBC -> INT	0.150	0.096	1.569	-0.011	0.003	0.317	0.059	Not Supported

Note: P < 0.05 (one-tail test)

As seen in the table below, the R^2 values for intention (0.868), attitude (0.755) and subjective norms (0.751) are considered substantial. While perceived behavioural control is considered as moderate as the value is 0.607. For Q^2, the values higher than 0, 0.25 and 0.50 represents small, medium and large predictive relevance of the model. From the table below, it can be seen that all the items have large predictive relevance of the PLS-path model.

Table 8. Results of R^2, Q^2

Construct	Item	R^2	Q^2
Intention (INT)	INT	0.868	0.805
Attitude (ATT)	ATT	0.755	0.623
Subjective Norms (SN)	SN	0.751	0.614
Perceived Behavioural Control (PBC)	PBC	0.607	0.529

From the table below, the f^2 effect size 0.019, 0.097, 0.026, 0.001, 0.117 and 0.039 represent small effect of the exogenous latent variable. The values 0.224, 0.263 and 0.215 represent medium effect while 0.862 and 0.444 represent large effect of the exogenous latent variable.

Table 9. Results of f^2

Path	f^2
PU -> ATT	0.117
PEU -> ATT	0.224
PMT -> SN	0.862
PI -> SN	0.019
GOV -> SN	0.026
CL -> SN	0.001
SE -> PBC	0.263
FC -> PBC	0.097
ATT -> INT	0.215

Path	f^2
SN -> INT	0.444
PBC -> INT	0.039

DISCUSSION

In the past decade, many researches have studied on the Japanese management principles and practices, however, none have conducted a study on how to intervene the use of Kaikaku Project Management (KPM) using the Theory of Planned Behaviour (TPB). From this study, the TPB model was extended as a Belief Elicitation Study (BES) was conducted to identify the salient beliefs underpinning the attitude, subjective norms and perceived behavioural control.

As the behavioural beliefs such as perceived usefulness (H1) and perceived ease of use (H2) showed significant effect towards attitude, it can be said that if the outcome of a behaviour is favourable, it is more likely for an individual to conduct the specific behaviour.

In terms of normative beliefs, this study shows that the project management team plays an important role towards influencing the subjective norms with regards to KPM. The project management team would influence the subjective norms as Hypothesis 3 was supported in this study. However, Hypothesis 4, Hypothesis 5 and Hypothesis 6 were not supported. It shows that the professional institute, government and client does not influence the subjective norms with regards to KPM. According to the results from this study, the decision of the implementation of KPM may be affected more significantly by the internal party as compared to the external parties.

The self-efficacy and facilitating conditions under control beliefs shows a positive influence towards the perceived behavioural control in KPM. This can be seen as Hypothesis 7 and Hypothesis 8 were supported in this study. It can be seen that if an individual has the availability of resources and the capability of handling technologies, the likeliness of the individual performing the behaviour would increase (Compeau & Higgins, 1991).

From this study, it can be seen that the attitude and subjective norm has a significant effect towards the use of KPM. The attitude of an individual can be affected by many factors as each individual has their own preferences in making decisions. The social pressure exerted would also affect the intention to carry out a certain behaviour. In this study, the perceived behavioural control shows no impact towards the use of KPM. This shows that the ability of understanding an individual's capability on performing a behaviour does not affect the intention (Warsame & Ireri, 2016). This can be supported by the hypothesis testing done in which Hypothesis 9 and 10 were supported while Hypothesis 11 was not supported.

According to Hegner et al. (2017), TPB is often used in predicting an individual's intention to conduct a certain behaviour. Hence, this study would help practitioners to understand how to intervene in improving behavioural intention as the factors affecting the intention to use KPM are identified. The TPB model would also be expanded, in which contributes theoretically to the industry.

CONCLUSION AND IMPLICATIONS

In Malaysia, the traditional project management method is commonly used in the construction industry. As compared to the traditional project management method, the Kaikaku Project Management (KPM) is rarely implemented as not many studies have been conducted to intervene the use of KPM. In order to address the research gap, this study was conducted. To achieve the research objectives of this study, a mixed-methods approach was implemented. The main questionnaire survey was distributed to 1800 construction contractors. The data from the study was analysed using SmartPLS 3.0 PLS-SEM. 11 hypotheses were tested in the quantitative approach.

This study identified the salient beliefs underpinning the Theory of Planned Behaviour (TPB) model related to the intention of using KPM. The TPB model was extended in which the factors affecting the attitude, subjective norms and perceived behavioural control towards using KPM were identified. The overall framework of TPB showed that the intention of an individual to use KPM is affected by attitude and subjective norms. The rejection of Hypothesis 11 is aligned with Ajzen (1991)'s claim that it is not necessary for all the predictors in the TPB model to contribute to the prediction of intention, in this case, to use KPM in projects. As the attitude towards the KPM and the subjective norms with regards to KPM would affect the intention of an individual to use KPM, organization should analyse the factors affecting the attitude and subjective norms in detail.

When conducting this study, there were limitations that were present in which the data for this study were collected only from contractors. For future studies, researchers may consider carrying out the study from a different perspective in terms of other project professionals and parties such as clients and consultants. Other than that, the studies may also be carried out across different projects and countries.

ACKNOWLEDGEMENT

The author would like to express utmost gratitude to all that has participated in this research study and the Faculty of Industrial Management of Universiti Malaysia Pahang for the opportunity given.

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