Measuring Performance to Engage the Extended Project Team in Construction

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Abstract: ***In construction, stakeholders of extended project team play a key role in the overall project performance. Successful integration of stakeholders demands for good management practices at strategic, operational and project levels. Targets and measures to improve the stakeholder performance encourage the creativity and willingness of stakeholders of extended project team to develop the better ways to achieve the project objectives. This paper presents a generic descriptive method, showing how stakeholder's ability and influence impacts on project performance in the construction sector. The findings of a series of interviews with key informants are presented and the following main conclusion is drawn: improving project performance through stakeholder's contribution and measuring their performance can strengthen the project performance. This innovative approach which redefines the process of improving the project performance in construction projects will be of interest to those who intend to manage the projects in practice as well as to those who interested in advancing theory.***

Keywords: Construction Project Management, Project Performance, Stakeholder Management, Key Performance Indicator (KPI), Stakeholder Performance Measurement, Risk Management and Continuous Improvement.

I. Introduction

Construction sector is regarded as one of the risky and challenging business sectors in the world. Poor waste management, conflicts and poor management of stakeholders' interest compelled with problems caused by myopic control [1, 2 and 3] are among the many reasons that contribute to poor construction project management. The complexity in a typical construction project arises from the fact that it consists of a number of stages that represent different processes and involve different stakeholders. In this new global economy, engaging these stakeholders is increasingly becoming a part of construction project practice to deliver excellent project outcomes. Number of the scholars emphasized on accommodating stakeholders input in to the project which is a crucial component in ensuring its success [4, 5, 6, 7, 8].

Measuring stakeholders' performance to improve the project performance is a relatively new approach in construction industry, though it has been demonstrated to expect the project outcomes. What needs to be done to improve the project performance has been voiced as a perennial and troublesome problem in construction [9] and the effect of project managers' competencies considered as one of the important factors to improve the project performance [10]. Engaging stakeholders is a critical component of the initial project scoping phase and should occur before the project plan is formulated and consultations begin. Stakeholder's commitment should be taken as a core element of construction project development plan.

A project is more likely to be successful - especially in the long-term, if it takes into consideration the expectations of the stakeholders and endeavors to meet their needs. Concerned with the fact that construction project performance is project specific and project oriented and depends on the different stakeholder's issues (predominantly "intangible" or "softer" issues) solely on the extent to which they meet client objectives and goals. They considered that one of the issues of measuring the project performance is contribution on achieving the project objectives and goals. Considering the stakeholders contribution to the project success and gap of measuring project performance the aim of this paper is to propose some key performance indicators that is considered necessary for successfully engaging stakeholders to measure the project performance. The paper is comprised of four main parts. The first part provided an introduction and rationale for the study. The second part gives an overview of project stakeholders and project performance and discusses contextual factors that contribute to improve the construction project performance. The third section introduces the research method. The fourth and final part will present and discus the results from the study.

II. The Need to Measure Project Performance

When a successful company invests its time, money and other resources in a project, its primary aim is to get return on its investment [11, 12]. Measuring project performance is an integral part of the project management. Evaluating the project performance provides a clear picture of the condition of the project and gives confidence to the project team. It thus provides the project manager with

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visibility to make sure he/she is operating the project within the approved time and cost constraints. It also helps the management to take action quickly and effectively to get the project back on track if a project begins to run over the budget or behind the schedule. A typical construction project is completed through a combination of many events and interactions, planned or unplanned, over the life of a facility, with changing participants and processes in a constantly changing environment [13, 12]. Hence, it's vital to measure the project performance to identify the project strengths and weaknesses and where the project management practices need to be improved.

Performance measurement in construction focuses on project performance in terms of time, cost and quality [14, 15 and 16]. In terms of maximizing the project performance different literatures have also recognized the theoretical importance of considering the interests of other stakeholders, besides the customer [17, 18, 19 and 20]. According to [21] 26.4 per cent of the leading UK construction firms adopted the Key Performance Indicator (KPI) related models as their performance measurement frameworks. In response to [22] Rethinking Construction report, Constructing Excellence (CE), UK construction industry launched the first set of Key Performance Indicator (KPIs) in 1999, addressing many other critical issues such as safety, productivity, profitability, predictability and client satisfaction [23]. According to [24] successful construction project performance is achieved, when stakeholders meet their requirements individually and collectively.

III. Measuring Stakeholder Performance

The conception of a "Stakeholder" has taken on greater importance due to the public interest, greater coverage by the media and concerns about corporative governance [25]. Freeman [26] defined stakeholder as any group or individual who can affect or is affected by the achievement of the organization's objectives. Stakeholders in a project team can be divided into internal and external stakeholders [27]. According to PMBOK, stakeholders are the people, groups, or organizations that could impact or be impacted by the decision, activity, or outcome of project, such as the sponsor, the primary customer, and the performing organization and so on [28]. Juliano [29] defined stakeholders as an individual, individuals, team or teams affected by the project. However, these internal and external stakeholders, project people are the players of the extended project team who has a diverse mix of expertise to keep a focus on what is important in the long term [30]. A project can also fail if the relative power or positions of the key stakeholders are not properly recognized and the stakeholder management activities are not appropriately aligned to reflect stakeholder salience (Power, Legitimacy and Urgency).

Stakeholders have the capability to influence the project, the extended project team. They also receive both the gain or lose from the success or failure of a system. Successful completion of the construction projects is therefore dependent on meeting the expectation of stakeholders [31]. Paprika et al. [32] and Cooper [33] mentioned that stakeholder's performance measurement and management practice in a project is a key supporting mechanism for project managerial decision making. Paprika et al. [32] also noted that stakeholder management of information systems, performance measurement and management practice and other management tools support to maintain and develop a good relationship among all the stakeholders. Accurate and efficient performance measurement not only forms the basis of an accurate performance review but also gives way to judge and measure the employee's potential [33]. Cooper [34] mentioned two approaches to measure the stakeholder's performance. Firstly, quantitatively measuring the stakeholders' performance but doing it in non-financial terms. Cooper [34] said, it is more consistent with the concept of multi-dimensional performance measurement that moves us away from the traditional financial statement. The second general approach of performance measurement is to translate the impact of a corporation's activities on stakeholders into financial or economic term [34]. These then can be incorporated into traditional financial statements. The principal reason for measuring stakeholder's performance is improving the quality and productivity which -

- ensure that customer requirements have been met,
- enable establishment of achievable business objectives and monitors compliance there to;
- provide standards for business comparisons;
- provide transparency and a scoreboard for individuals to monitor their own performance;
- identify quality problems and those requiring priority attentions;
- give an indication of the costs of poor quality;
- justify the use of resources; and provide feedback for driving the improvement effort.

Therefore, considering the importance of the project stakeholders in the extended project team, companies do need to measure and manage the team's performance to provide the best project value. In order to do that this research suggests some of the KPI's and their measurement processes. These are discussed in the 'Findings and Discussion' section of this paper.

IV. Research Method

In this research, author conducted an exploratory study involving in-depth interviews with the industry experts and academic researchers, which filtered some of the performance indicators and method of measuring KPI's for assessing the project performance. The research commenced with a literature review followed by initial interviews with the construction professionals to identify performance measurement perspective among the construction project stakeholders. An explorative

qualitative approach is normally better suited to study a nascent research field and gain valuable initial insights, rather than large-scale surveys [35]. Interviews conducted with UK-based practitioners representing some of the key stakeholders to the construction projects. Each interviewee had different specific roles in various construction projects. As this was an exploratory study, a small-scale and purposive sampling frame was constructed and from this sixteen participants involved in construction projects were selected (see Table 1). As illustrated in Table 1, the experience of interviewees ranged from maximum 40 years to minimum of 3 years. The reason for choosing these ranges of stakeholders was that they have high salience in terms of bringing benefit to the outcome of a project, by their ability to impact on budget, schedule and quality. Author pre-produced a list of questions that was used as a tool for face-to-face discussion. Participants were asked to express their experiences and their attitudes towards the importance and feasibility of involving stakeholders to improve the project performance in construction projects. Author transcribed the recorded interviews and analyzed the data converting raw narrative data (interview notes, audiotapes) into partially processed data (transcripts) which were then coded (with the aid of NVIVO software) to produce theme.

TABLE 1
Profile of the Interviewees

	Organization (UK)	Role of Interviewee	Experience in Construction	Classification
#1	Construction Company	Contractor A	40 years	DC
#2	Water and Waste Water Services	Project Manager	30 years	PM
#3	Social Housing Company	Client Project Manager	30 years	PM
#4	House Builder	Contractor B	38 years	DC
#5	Engineering, Construction and Technical Services Organization	Sustainability Consultant	7 years 6 months	EC
#6	Water and Waste Water Services	Environmental Engineer	8 years	EC
#7	Water and Waste Water Services	Contractor C	3 years	DC
#8	Construction Company	Civil Engineer	8 years	EC
#9	House Builders	Developer	15 years	DC
#10	Engineering, Construction and Technical Services Organization	Design Engineer	37 years	EC
#11	Gas Networks Company	Project Team Leader	3.5 years	PM
#12	Engineering, construction and technical services organization	Senior Engineer	3 years	EC
#13	Construction Consultancy Company	Project Director	26 years	PM
#14	Construction Company	Senior Project Services Manager	32 years	PM
#15	Construction Company	Supplier Project Manager	14 years	PM
#16	Construction Company	Project Director	35 years	PM

A list of interview questions is presented in table 2.

Table 2
List of Interview Questions

a)	Could you please explain what do you mean by stakeholders?
b)	Who are your main stakeholders?
c)	What influence does your stakeholder have with the concepts of sustainable construction?
d)	How much influence do your stakeholders have over sustainable design and specification decisions?
e)	How do you measure your performance in relation to achieving sustainability related targets? Do you use any KPI to measure the performance? And how?
f)	Why do you think that you need to engage your stakeholders for better project outcome? And why?
g)	What influence do your stakeholders have on your approach to sustainable construction?
h)	How do you asses your stakeholders' contribution to achieve the sustainability related target?
i)	How do you manage your relationships with the stakeholders? Do you have a formal process for stakeholder identification, analysis and management? If yes, could you please describe? If not, do you undertake any of these processes on an informal basis? If so, how?
j)	Do you use any criteria to prioritize your stakeholders such as according to their interests, attitude, power, impact and/or influence to the project?
k)	Do you measure your stakeholder's or project team performance? Do you use any KPI to measure the performance of your stakeholders? If yes, how?
l)	Have you faced any risk related with your stakeholders? What types of stakeholders risk usually do you face in your company?
m)	What type of risks do you face to manage your stakeholders in your company?
n)	Do you follow any risk management strategy in your company? What type of risk management strategy has been implemented?

The findings are presented below under the themes drawn from the analysis.

V. Findings and Discussion

This section presents a summary of the interview findings, with brief discussion, in relation to the interviewees' attitudes and experiences in engaging with different project stakeholders. From the content analysis of the interview findings two main themes are identified which are "KPI to Measure the Stakeholder Performance" and "Practices to Measuring the KPI's". The interview findings are presented in the form of KPI's and their measurement process, remarked by the interviewee's comments on the performance of extended project team –

Findings from the interviews are as follows -

A. KPI TO MEASURE THE STAKEHOLDER PERFORMANCE

(1) Productivity: In extended project team, the internal stakeholders could play a holistic role in improving the productivity through their skills, knowledge and hard work. This KPI is based on the measurement of amount of works done or services produced for a period of time. However, not all the project stakeholders have demonstrable influence on the shape of the project productivity. When the top management is mainly concerned with the operational efficiency of project outcome, it may be wise to measure productivity of the company (i.e. internal stakeholders) to determine if the employees are meeting the expectations and the project objectives. "Test of Productivity" gives the internal stakeholder's the level of understanding on how much to contribute to improve the revenues of the company. It also makes them feeling more accountable and responsible [36]. Productivity is an average measure of the efficiency of production. In construction projects, productivity is a ratio of construction output to the time period. Time includes the management, supervision and times set up for building [37].

Participant (15) mentioned that, *"……..we measure productivity to measure the employee's work output, while we assigned the job to our employees, so we select a period of time, such as six-hours a day and measures the total output of our employees".* Savery [38] proposed that stakeholder possess the most power to control the productivity and must be communicated and collaborated with each other to update the procedure for measuring and delivering the outcomes of the productivity.

(2) Energy Consumption: Energy Consumption could be considered as an indicator to measure the whole project team's performance to reduce the energy usage cost. Company's top management can make the employees aware of the efficient use of energy in their daily life and how they can contribute for the benefits of the site community and the environment.

Participant (15) mentioned that *"Our all employees and stakeholders are very serious about the energy reduction issue and we engage them in energy efficiency and carbon reduction program like seminars, meetings, campaign to help change behavior in the workplace, to reduce unnecessary energy consumption and cut the organization's carbon emissions".* According to the participant (12), *"The Company is reducing its carbon footprint mainly through energy savings and investing in renewable energy technologies".*

Stakeholder's who are aware of the energy conservation issue and involves in the development and implementation of the clean energy interventions which brings the socio-economic benefits to the users [39, 40]. By engaging stakeholders from the extended project team to cut the energy consumption, a construction project could potentially save huge of their bills and resources every year.

Interviewees also mentioned about the contribution of internal stakeholders in establishing the carbon emission reduction alternatives and hence to reduce the company's impact on the environment. Few of the companies have their comprehensive carbon reduction plans, though others are struggling with the issues on a smaller scale. In April 2010 the UK Government has introduced a new mandatory Carbon Reduction Commitment (CRC) energy efficiency scheme that aimed at improving the energy efficiency and cutting carbon emissions in large public and private sector organizations [41]. Recently Mott MacDonald has developed a new tool to measure the carbon emissions arising from the project related activities of its staff [42]. This tool allows the clients to visualize the full carbon impact of a project by taking account of not only the embodied carbon of materials but also the contribution of personnel.

Regarding to measure the environmental performance participant (7) mentioned that *"Well, we do have some key performance indicators, which we set them as an industry and we measure it against them. It might be that we goanna reduce that carbon footprint by whatever you know how much energy are we using in our head office."*

(3) Customer Satisfaction: Measurement of customer satisfaction could be done for the extended project team to quantify how the products and/or services manage to fulfill the customer or client demands and their requirements. As a prerequisite full information and specification about customer requirements should be available in hands before measuring the customer satisfaction. Results from customer satisfaction surveys and the number of complaints received could be used to measure the customer satisfaction.

According to the participant (8) *"we have for, that is subcontractor, client and customer satisfaction form, we send out after the project has finished to see how we rate on the satisfaction level, did we meet. And then we collect them back to see how can we do better and improve our stakeholder management".*

Once a project is able to measure and achieve high level of customer satisfaction it helps the top management to improve the business performance. Participant (2) described how they undertake "Customer Satisfaction Surveys" to measure their performance against their customers' demands. Balancing the goals and satisfaction of different stakeholders in the organization it needs to be reflected in the measures used by the company to ensure its strategy is effective [43]. There are some useful ways to find out about customer satisfaction, as follows-

- Meeting the key clients and customers, and the project manager to discuss and also to know about their demands and problems. Such discussion would help to get the customers feedback and opinion and their attitude on the products and the services,
- Arranging Open Days for all stakeholders and the supply chain partners to conduct group discussion which could give a worthy overview and allows all people to share and build on others' ideas,
- Getting Feedback from the key customers through customer surveys.

(4) Health and Safety Performance: Interviewees remarked that internal stakeholders could develop performance measurement methods that can be used to assess the health & safety issues, on an ongoing basis of safeguarding at work. The Health and Safety performance could be measured through failure, accident statistics and other responsive monitoring, through activities like health and safety inspections, health and safety culture, training achievements, good maintenance and following the correct procedures [44]. Many occupational health and safety professionals believe that the application of effective occupational health and safety measurement systems help to organize, plan, control and monitor the design and implementation of Risk Control System (RCS), leading a better operational, health and safety performance [45, 44].

(5) Personal Knowledge: According to participant (2), *"we regularly monitor how our project staffs developing their own personal knowledge and the competence, as well as how often and effectively these peoples are encouraged in the areas of creativity, learning and creating innovation".* Having appropriate knowledge of the extended project team directly and indirectly affects the project environmental development, social improvement, economic efficiency and customer satisfaction. An individual's behavior and performance depend both on the knowledge that has been acquired through learning, practice and experience. This knowledge allows us to conceptualize goals, to anticipate and perceive events, and to respond in accordance with the changing needs, purposes and desires [46]. Individual perceptions of project goal depends both on the data are received through the senses and activities, the level of knowledge allows interpreting and explaining them. Disterer [47] stressed on the importance of adapting good technical and social knowledge so that the project team members can deal with the project complexity and increase its efficiency. Measuring personal knowledge of extended project team doesn't need to be quantitative in nature; qualitative assessments based upon subjective impressions can provide a quick feedback for deriving improvement of the business processes [48].

(6) Creativity of New Product Development: It is important to measure the creativity of the extended project team to develop the new product. Creativity mostly comes from the people, who have a special set of characteristics for improvement that are different from others. Innovation is associated with the creativity and change or is regarded as something new which leads to change [49]. An organization's overall innovative capability is to introduce inventive products to the market, through combining strategic orientation with innovative behavior and process [50]. Whole project team's performance could be used as indicator to measure the stakeholder's creativity. Innovation can be measured by identifying individual's capability to produce inventive and competitive product in the market that can create the economic value. According to the participant (13), *"innovation is usually associated with the creation of new, quality products but in a cost-effective way."* New and competitive product development is considered to be one of the top indicators for the future performance of a company. Innovation is about implementing new ideas to make new product or adjustments of the existing ones, restructuring or inventing cost savings initiatives, adapting new technologies, special employee behavior or organizational responses to opportunities and unscripted situations [51, 52, 53 and 49]. In order to make the business competitive it needs to excel the innovation through continuously improving capabilities of new product development and adapting new technology. Measuring stakeholder's creativity acts as an enabler for guiding stakeholder's attention to adapt the exact projects objectives, the accurate actions and the right behavior to improve the project performance.

(7) Earned Revenue: It can be used as an indicator to measure the team performance by measuring the profit generated by the project team. Observing profit per employee as the primary metric puts the emphasis on the return on talent. Participant (14) mentioned that, *"Most of the time we measure our financial returns on invested capital, but recently our systems is trying to put sufficient notice on the creation of profit by the knowledge, reputes, skills and other intangibles created by talented people and signified by investments in such activities as R&D".* It will actually measure of how efficiently a particular company is utilizing its employees. When the management system wants to achieve highest revenue on its stakeholders it will lead to expanding the margins and improve the project profitability.

(8) Projects completed on time and on budget: Most of the participants mentioned that they measure their internal stakeholder's ability by measuring the number of the

projects completed by them on time and on budget. It will help to determine how many projects are far behind the project schedule possibly will be fallen in an organization and how much the resources need to be adjusted to control the project budget, plan. It will increase their motivation to complete the project within the resources.

Once an organization has selected all KPI's, considered its mission, identified all its stakeholders and defined its goals, it needs a way to measure the KPIs. The following section outlines the best practices to measure the KPIs.

B. PRACTICES TO MEASURING THE KPI'S

(1) CONTINUOUS IMPROVEMENT: Most of the interviewees agreed with determining the performance targets that encourage continual improvement in terms of project performance need to be set up and stakeholders of extended project team, who are diverse mix of expertise, need to be engaged with the measures.

According to the participant (8) (Developer – House Builder) *".....we do measure the performance because it helps us to identify the individual's strength, identify the gap in their skills and as a whole identify the areas of opportunity for improvement".* The main purpose of performance measurement is to measure and improve efficiency and the quality of the performance and to identify opportunities for progressive improvements in performance [54]. Quantifying performance should take as a primary task which may reflect on the power of extended project team in the organization and reflect the balance of the various goals being pursued by senior management. Project stakeholders could use key performance indicators (KPIs) to measure the success of the continuous improvement. All key stakeholders' individual performance needs to be measured to decide how well they are meeting their responsibilities to produce a better outcome for the project.

Participant (4) (Contractor B - House Builder) described it as follows: *"We have KPIs, we practice KPIs from our parent company to measure the social impact we make in areas. After identifying all of our stakeholders we set up their goals and also use KPIs to measure the progress toward those goals".* Participant (9) (Developer - House builders) mentioned that "... we also measure performance indicators in terms of things like tenancy's satisfaction [which relates to aspects of the TBL] - again we have that as a key driver".

For each improvement target, performance needs to be defined to identify the data to measure and to understand the important aspects that will effectively make up the action plan to ensure the right thing is measured in an appropriate way. Though, sometimes some project's expectations and perceptions may seem difficult to measure on a quantifiable basis. Performance measurement, though, needs to be two-way, providing project team with the opportunity to provide their own feedback, express concerns, and help to identify problems early. Such two way communication will keep motivation levels at a high level. Therefore, interview participants mentioned few of the KPIs (see sub-section A) which they use to measure their stakeholders performance. Chan and Chan [55] conducted research on the key performance indicators for measuring construction success and concluded that KPI's can be both objective and subjective measures, including the satisfaction level of the project team. The range of KPI's proposed in sub-section A include both subjective and objective KPI's. Objective KPI's are measured quantitatively and subjective KPI's are measured qualitatively.

(2) RISK MANAGEMENT PROCESS: Measuring risks of the extended project team, who has a diverse mix of expertise, helps to identify and priorities risk and strategic solution to the risk. Risk measurement could be related to the project objects or project stakeholders to manage the risk. The purpose of the risk management is to give the stakeholders a sense to meet and cope with the agreed management objectives. In order to anticipate and manage the risk, some of the participants mentioned that they do discuss with each of their stakeholders in more detail to measure the reputational risk associated with each stakeholder. Different risks originated from different department associated with internal, external and value chain stakeholders could impact on the project from strategic, business, operational and financial categories.

Participant (1) mentioned that, *"The risk may be reduced measuring its satisfactory level so that we can decrease any or both of uncertainty and constraint. It's important because it measures the growth of markets for financial assets as it's prospective for benefit or profits".* Ploegmakers [56] used value at risk within a performance measurement system. New concepts and innovations in risk measurement invariably compel investors to re-examine their own beliefs and notions of risk which in turn often lead to changes in investment position [57].

(3) USE OF BALANCE SCORECARD: To evaluate the extended project team's performance a balanced scorecard is another prominent, effective and mostly used way to get a complete look at an employee's work performance. Balance scorecard monitors the project implementation and effectiveness to decide the variation between the actual and targeted performance and also it establishes the corporate and operational effectiveness. Participant (15) (Project Manager - Construction Company) mentioned *"from our stakeholder point of view we use balance scorecard to measures the way we care for to our stakeholders through tools such as profit/loss statements, balance sheets and budget reports".*

All project stakeholders should build up and implement the system of measuring the revenue, cost saving, budget policies, technical performance, create a

risk management program and establish internal controls. Participant (12) mentioned, *"from the customer point of view we measure how our customers think about us, about our service through customer satisfaction surveys conducted for all project stakeholders".*

Such way of communication with stakeholders continue to improve and create value through developing solid and collaborative relationships and foster positive relationships by ensuring that all stakeholders are knowledgeable and well-trained. A customized application of the Balanced Scorecard in managing quality in a major infrastructure project measures the performance of all involved stakeholders to move towards a project quality culture [58, 59]. The balanced scorecard approach suggests to measure effectiveness by satisfactory performance in a number of performance measures rather than optimizing any particular one [33].

Participants considered that balance scorecard is an integral part of measuring the supplier performance and evaluating the supplier effectiveness. It should define categories or groupings of metrics by which scorecard can be used and suppliers can be measured, by their product quality, delivery cost, inventory cost and order fulfillment score. It will also enable the companies to rate their suppliers and to identify the top performing and poor performing suppliers, highly innovative and cost efficient supplier etc.

(4) EXISTENCE OF PEER APPRAISAL: The performance of the stakeholders from the extended project team can be assessed by peer appraisal which is based on the ideas of other project associates, for example customers, suppliers, peers and direct reports. This peer appraisal could be assessed to get the team measured as well and this appraisal approach works as one of joint problem solving method and to maintain the good relations to enhance performance [60]. As typically defined, peer rating is the process of having the team members rate each other on a given set of performance or personal characteristics against a set of rating scales [61]. According to the participant (9), *"peer review is a great way for achieving project excellence through analyzing and reviewing our stakeholders performance and we try to detect errors or issues in project documentation and processes as well as provide a basis for making decisions about rewards or punishments".* This evaluation process serves as a pointer system for future performance review meetings, provides a systematic structure for the range of items to be reviewed, facilitates an instrument for the top management and the personnel department to review the activities and monitor performances. It protects the company from the legitimate trouble when poor performance leads to closing the project challenged by the employee.

(5) PROCESS FOR EVALUATION OF COMPETENCIES: The valuation of extended project team's competencies gives the stakeholders a sense of combination and level of skills and capabilities that are necessary to make the project successful. The level of competencies is different among the different project stakeholders. It's important to have the appropriate technical and problem-solving skills of employees in total quality environments and employees must be able to work in teams to diagnose and solve problems [62]. The combination of all relevant competencies is essential to manage the successful outcome of any project [63]. According to participant (8) *"when the project is going on the site we define some scales that we use to rate the levels of their different proficiencies that employees can prove".* Project Team's competencies can be valued through quantifying their skills, experience and capability against the determined project objectives. As a whole, how much they are capable to use their skills and experience against the assigned project objectives needs to determine. Therefore latterly the project, the organization, gains a sense of all the project stakeholders' fitness with specific project activities and their potentiality within the company among other stakeholders, as well as a clearer perception of which competencies result in higher performance.

VI. FINDINGS FROM THE INTERVIEWS

Stakeholders are the main controller of all the project activities; hence the project success is depending on their performance. Adapting the KPI's supports the performance measurement process. Wang and Huang [64] mentioned that performance measurement needs to be countable; otherwise it becomes more difficult to track and monitor the stakeholder's performance toward the project goals, which impacts on overall ability to improve the project performance. Determining different indicators and their measurement process from interviews, it can be remarked that when stakeholders performance are measured using the indicators, it makes them better organized to solve the project problems and to meet the project objectives so that they are more innovative in anticipating customer needs and more reliable in meeting the customer expectations. Besides, solving the project problem is the most important part that demonstrates the level of stakeholder's performance. From the interview findings it is evident that construction companies are using different preferred performance metrics and different measurement systems to measure the individual stakeholder's performance. The KPI's and their measurement systems are varied because of the variation of the situation. Metrics usually focused on the stakeholder's relationship with the project activities and are determined by their performance. Success by the different stakeholders in meeting their respective Key Performance Indicators related to their roles and responsibilities will help the company to meet its overall KPI. These different performance levels will help to identify those competencies that are most important for a given position.

Therefore, findings from this research suggested that indicators understand the project ongoing problem to help the efficient project team to identify the correct strategies, the budget, the required resources and what constitutes the success. According to the participant (10), *"we let our project team members know what we need to monitor, so they're earlier informed what they supposed to do and about the constraints on how they do face it, to prevent project to move stealthily and also delays will be avoided due to the less rework".* Active measurement of stakeholders performance from the project design to project implementation stage helps to keep track of whole project resources, cost, quality and time [65, 66].

In the same way, in order to take care of which KPI's need to be measured, there is also a need to have the process of measuring KPI's. Each of the KPI's has its own method of measurement. This research also identifies some of the processes to measure the performance which in turn provides detailed techniques of measuring the organizational progress against the goals. These measurement processes provides a good understanding of how the performance needs to be measured, also helps to identify and prioritize the areas that needs to be measured. They also help to decide on how best to measure performance in those areas. As a result, measuring stakeholder's performance considers different interests and values that stakeholders have and addresses them throughout the project to ensure that all the project goal and objectives are met at the end.

VII. Conclusions

This paper presented and examined a method to determine the entire project stakeholder's influence on measuring the project performance. This paper suggested some of the KPI's and performance measurement systems that is useful to measure the certain stakeholders performance and can be used in future by the top management construction project professionals for the assessment of quality of their project programs, wellbeing, implication of reducing time and cost. This proposed method provides opportunities to the certain project stakeholders among the whole project team to take into account the risks and thus helps to map the threats or opportunities to overcome the different issues in project activities. Setting up indicators based on the company's strategic focus gives the project team an understanding of the goal to achieve, while aiming on removing the negative environmental and social impacts and increasing the economic sustainability. To make the method more effective, this research could be expanded in future by focusing on validation of the framework through surveying a questionnaire with a list of more KPI's companies prefers to use.

A number of important limitations also need to be considered. The main limitation is project objectives are to deliver services within the limited cost, time, determined quality and other constrain. Therefore, the key massage here is that all project activities needs some input from their stakeholders and in the same way it also responsible to deliver something to its stakeholders. Besides, the construction project is predominantly formed with number of stakeholders and their partnership. Therefore, to jointly create a ground-breaking project performance initiative it needs to involve stakeholders' input. Moreover, most of the KPI's are suggested for certain group of stakeholders, it rarely represent to measure the performance of the whole project team performance. In future it could be expanded by identifying some more indicators to measure the performance of the whole project team.

This study also showed that measuring stakeholder performance can be used as a tool to improve the project performance. However, the approach is both challenging and could be time-consuming for some services. Moreover, the role of stakeholders of extended project team from a performance measurement perspective has little been discussed. This study has identified a large body of stakeholder engagement processes through measuring their performance. However, the aspects of performance which are of interest will vary from one stakeholder group to another, for example, to suggest the idea of stakeholder windows on public sector performance [67]. The results of this study indicate that the measurement of construction project teams must understand the value of stakeholder as resources and creates a way to measure the long-term environmental, social, and economic performance from the stakeholder's perspective. Such performance measurement information is the basis for ensuring accountability to a variety of stakeholders of the extended project team, including the internal and external.

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