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# E-Leader Practices on Construction Project: Industrialised Building System (IBS)

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**Abstract:** In the new globalisation world, organisation took the virtual teams approach as initiative to become more dynamic and innovative to sustain in the new business transformation era. Communicate across time, boundaries and culture become a common practices into new concept of virtual team landscape. Despite an increase implementation virtual approach in organizations, there is little research has been done in discovering virtual-leader capabilities in managing construction industry. In spite, this research to investigate e-leader competency in managing project operational associated to communication process in managing Industrialised Building System (IBS) project. The data were obtained in this research from literature review and followed by semi-structured face to face interviews with 5 experienced stakeholders from IBS contractors in Malaysia. The result from this study showed e-leader face a unique challenges compare to the conventional teams especially on building trust, communication, diversity and distance. E-leader have to set a clear direction and strategies in developing a good management performance and team development process by create a team orientation which included motivation, building positive effect and shaping perception.

## INTRODUCTION

In recent years, many business activities in the organizations become globally. A survey conducted by the Society for Human Resource Management in 2012 claims that's 66% of multinational and 46% of all organizations were using virtual teams in their workplace [1]. The emerged Information and Communication Technology (ICT) such as integrated handheld device, wireless networks, voice over IP, cloud computing, internet video call and video conferencing; give impact on organisation business environment in general, and in particular effect on the team and leadership roles virtual team environment. Virtual team practices supported collaborative network within various organisation and also changes pattern of work, in the decision making procedures and process communication between organisations. Therefore, virtual teaming was emerge as one of the importance tool for the companies to take advantages of the pool of global talent.

The virtual teams is applied in various organizational background such as in product development, customer care, systems design and programming, strategic program implementation, and building design and construction industry [2]. The construction industry is known as a heavily depend on information-dependent industries [3]. Therefore the increasing number of distributed project teams working within organisation make communication process is more difficult in particularly to collaborate with various cultural, background and multiple level expertise [4].

In Malaysia, Industrialised Building System (IBS) are categorises as a modernisation of new modern method construction technology. The IBS method was realizing as an innovation building component that gave value added to emphasize on building quality and end customer satisfaction. IBS is classify as a process with combination of sub system, component and element into one system that could be minimise additional on-site work [5]. On other hand, IBS is a process by which component of the building are conceived, planned, fabricated, transported and erected on

site[6]. Recently, under Construction Industry Transformation Programme (CITP 2016-2020), Construction Industry Development Board (CIDB) was established to set the future direction for the Malaysian construction industry in order to enhance productivity, quality and safety in the local industry and reduce dependency on foreign labour [7].

Unfortunately, lack of communication between project teams has been heavily criticized and has a big impact on IBS construction project performance [8]. The lack of communication process on IBS projects is reflected in higher turnover of staff, conflict and team cohesiveness and also effect on unnecessary expenditure, progress and quality of the project [9]. In addition, the factor of fragmentation is also well-known as a problem in the construction field. The fragmentation problem represents a process of breaking a size of the project into different subsystems due to varying requirements and behaviour of people [10]. The causes of fragmentation seem to be related to the characteristics of construction projects per se. These characteristics include complexity of the project, delivery requirements, high degree of specificity, and location-based activities [10]. The efficiency of project delivery is presently constrained by the largely separated processes through which they are generally planned, designed and constructed. These processes reflect the fragmented structure of the industry and sustain a contractual and confrontational culture [11].

## **VIRTUAL PROJECT LEADER**

The trend of a virtual team is driving organizations to implement virtual business strategy across geographically dispersed teams to pool the assorted talents of employees [12]. In the year 2034, virtual teams and e-leadership will be the way forward in global leadership [13]. Due to the streamlined development of information technologies, nowadays the numbers of organizations prefer to building a virtual team and establishing outsource project by means of virtual team management.

The availability and ubiquity of information and communication technology, the team could work at separated location beyond the boundary, time and location. The trend toward virtual teaming has altered the rigidity of organization boundaries [14]. In fact, virtuality exists in many organizations and performs the activity process virtually. Technology has become part of the transformation team into virtuality, where team members are widely communicate through electronic communication tools and applications such as e-mail, e-messages, audio, video conferencing, cloud storage, smart phone, tablet and computer system [15]. Leading virtual teams differ from conventional teams, on the other hand share the mutual concerns of creating openness, trust, involvement and togetherness, while aiming to avoid confusion, frustration and meaningless rhetoric.

For virtual team leader, project managers is obviously synonym with key person who play a vital role to keep construction project on track and accountable deliver the project progress smoothly. Project leader also have capable to handle the challenges by provides transparent communication since controlling team members becomes increasingly difficult in virtual circumstances. The project leader should aim for member commitment instead and ensure that team member perform the right tasks at the proper time [16]. Project leaders have to coordinate all the activities within the project management process combined with considerate and appropriate use of conferencing technologies and integrated guidelines and rules of the road help in creating structure, trust and cohesion among the members and build a better foundation for team success [17]. In virtual team work, project leaders also have to set the goals and vision of their team, stipulate the direction of all tasks for all members and establish routines and habitual meetings and standard operating procedures clearly.

In contrast, there are many literatures has mainly concentrated on a comparison between traditional and virtual business operation, including virtual and traditional inability practices and reliance on the telecommunication network. Therefore, this study focuses on virtual leader practices by using communication technology as a medium communication in distributed project team in managing IBS construction process.

## **INDUSTRIALISED BUILDING SYSTEM (IBS)**

Establishing of virtual team as strategy to change from conventional teams were deemed to ineffectiveness as team to shift toward operating virtually [18]. Previous studies in the non-construction industry sector, overwhelmingly recommend Virtual Teams (VTs) due to the many advantages they bring about for the organizations [19]. In fact, many suggested from forecasts and predictions by the experts, practitioners and governmental institutes from many countries show an increasing trend for using VTs as a part of future organizations' structure. Thus this platform could bring the industry become globally.

In addition, as developing country like Malaysia government was taken initiative to implement IBS as an innovative approaches towards to the sustainable environment practices. In this study, IBS is classify as an innovative

approach of building method by using the concept of mass-production of IBS [20]. The IBS component is produced at the factory or onsite with controlled environment and also involved the logistic and assembly process under a proper planning and coordination of design towards enhancing the end users desired values [21].

The Industrialised Building System (IBS) project involved a high level of skills and techniques to produce high quality of prefabricated components toward sustainable environment. Even though IBS method has promised to solve and improve the time, quality and safety process, the process implementation the IBS project delivery is not effective and generated many problems. The generic problem associated to the framework in the construction industry which is related to the fragmentation process. Fragmentation represents a common problem in construction, which has attracted considerable attention and research. In layman's terms, fragmentation describe construction industry structure where the large number of small firms causing industry segregation [10] and usually has a negative connotation. Such characteristic generated many problems including non-co-location of individuals and teams collaborating on projects; project-oriented nature of the industry with a tendency for actors to be involved in several projects at the same time; multi-disciplinary and mobile-working practices; temporary and often short-term nature of business relationships. As a result, the industry player's working in solos with minimum coordination thus effect on communication process among project teams.

Moreover, IBS project is considered multi-task and complex due to combination of two method (conventional and IBS-method) with more design and activities. The activities involved by multiple flow of process of IBS which are begins by produces a components at factory, transported to construction site, installation, and finishing. The complexity on construction projects is considered with various dimension such as number of stakeholders, unit and resource; and project managers have to spell out to which of the project's dimensions (organisational or technological). The previous study suggested as project leaders should able to understand the type of leadership style preferred by a multicultural project team. The project manager should has competency in technical knowledge, project management skill and problem-solving ability in managing IBS projects. Therefore, effective leaders should be fair and consistent when dealing with project team members. Project leader has to combine the required technical knowledge and behaviors that may stimulate effective teamwork and communication to achieve successful outcomes.

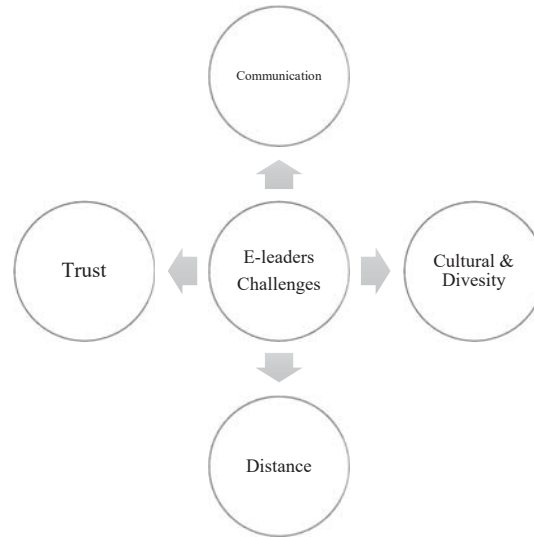
In this context, supported ICTs have the potential value to improve the communication process and team performance by implement formation of ad hoc virtual team. Technologies provide virtual work arrangements such as teleworking, teleconferencing, and video-conferencing that enable effective communication and information diffusion across time and space.

## **THE E-LEADERSHIP CHALLENGES**

The literature on e-leadership is a new phenomenon in new working environment. Even though e-leadership literature still young, but that is not enough if research only focused on the technology impact on leadership style and there is lack of evidence on how technological communication context affects leader behavior and, subsequently, the success of virtual teams. It is important to explore leadership in virtual setting, as leaders in such environment conduct many leadership processes through electronic channels facing new kinds of challenges.

It is widely recognised that e-leadership are different from conventional practiced in traditional teams when there is no face to face interaction practices. In virtual communication, leadership also interact via information technology only without physical meeting and included working in different time zone, sense isolation. The e-leadership face dissimilar challenges from traditional teams by dispersion of team members and reliance on information technology media (Fig. 1). The diversified challenges faced by e-leadership might be able to convert into these challenges into opportunities. Research has found that the main challenges are typically related to trust, distance, communication technology, communication conflict and problems arising from cultural differences and diversity.

The challenge for virtual team leadership is that these functions must be accomplished by substitutes and by distributing the functions to the team itself. For example, the members of virtual teams are usually chosen for their expertise and competence and often for their prior virtual team experience. They are expected to have the technical knowledge, skills, abilities, and to their attributes to be able to contribute to team effectiveness and to operate effectively in a virtual environment. Thus, the need for virtual team leadership to monitor or develop team members may not be as crucial. Moreover, it is important for virtual team leaders to distribute aspects of these functions to the team itself, in effect, making it more of a self-managing team. Leaders will need to implement a system in which team members will be able to regulate their own performance as a team.



**FIGURE 1.** E-leaders Challenges

## Trust

Trust play importance key role in virtual team practices to successful international alliances. Trust also critical especially to project leader in managing distributed project team on virtual team. Trust is importance aspect when team members deal with several members from different area in the world, with diverse goals, value and ideology. Therefore, trust is seen more critical in virtual environments compare to traditional team setting and being the necessary condition for successful work in virtual teams. Hence, virtual project leader must create opportunities for building the trust among all team member for enhance integration and collaboration between members. Trust is seen as holistic approach as foundation in developing team cohesion and confident level. The belief from team are depend on delivering the promise, it seen as highly importance in developed trust in virtual team when delivering a result and expectation meet or exceed as expectation.

## Communication

The construction project involved by diverse stakeholders, various cultural, organisation background, different levels of expertise, various perspectives and interests. Effective communication has power to breakdown such barriers by bringing construction team members together. The high quality of communication comprised quantity, frequency, and accuracy of information exchange. Therefore effective communication, is understood as the process of transferring information, meaning, and understanding between two or more parties. Communication is fundamental to getting any organizing or work done, as it provides the basic building blocks for people to collaborate, make decisions, and act to achieve organizational objectives.

Communication in virtual teams contrast from face-to-face communication. In virtual teams, communication typically based on computer-mediated asynchronous information and knowledge diffusion which allows multiple themes of conversation to occur simultaneously from multiple contributors. The virtual communication supported by computer-mediated technology such as conference calls, e-mail, smartphones or software designed for meetings, in order to communicate across the time and space.

A lacking physical contact in virtual communication, force to leader developed a new communication skill by creating socializing activities and feeling of togetherness which promote inclusion of all team members. Hence, one of the key leadership challenges is to ensure that all groups, which may be produced by certain employees' proximity to e-leaders, will not be formed. The main challenge for e-leaders seems to reside in their ability to inspire and motivate team members to mutual, active and continuous communication, which is known to increase cohesion and motivation, enhance trust, and finally lead to successful team performance.

## Cultural and Diversity

The diversity is viewed from group demographic resource to leadership complexity. Diversity is coins into national culture, different communication practices, value and geographic location. Furthermore, diversity could effected on behaviour and working practices, thus complicate communication process and execution of work. As the virtual team members may represent great diversity, virtual leadership must design explicit activities to promote team building, and respond to diversified competing demands, address the ambiguity of remote communication, and establish personal relationships with different team members which, in turn, require implementation of accessible, stable, and user-friendly technology. Virtual leader may address diversity by promoting a sense and keeping virtual workers engaged.

A cultures is defined as “the totality of learned, shared symbols, language, values, and norms that distinguished one group of people from another”. Thus communication across cultures presents e-leaders with special challenges as effective communication across cultures requires sensitivity, trust-building capacity, and ability to create and maintain good relationships [1]. It also recognised that “cultural fluency” as a critical element in organizational structures with multi ethnic, and various cultural global projects. Participants on virtual teams bring to the collaborate effort various perspectives, opinions and viewpoints as opposed to those participants that have similar backgrounds.

## Distance

Distance is typically considered to be one of the key challenges e-leaders face while managing dispersed employees. Distance in working relationships can be physical when produced by geography, time zone or organizational size; operational when related to team size as well as to opportunities for communication and face-to face meetings or cultural, based on different values, prior familiarity, and status. Geographic distance and lack of overlapping work hours may impose coordination burdens on team members and specifically on e-leaders. Geographic dispersion of virtual team members which reduces the level of social support, prevalent in traditional face-to-face teams, challenges e-leaders to respond quickly to team requests, if they want to increase the feeling of social closeness. As virtual team members communicate without physical closeness, e-leaders have to compensate the physical contact, inherent to collocated teams, by active and diversified use of information and communication technology and by supportive and motivating behaviour.

## RESEARCH METHODOLOGY

The research methodology adopted in this study used a qualitative method. A qualitative methods are suitable to understand human phenomena and to investigate, interpretations meanings that people apply to specific experiences. In this study, qualitative methods were applied by conducted semi-structured face-to-face interviews was used to obtain in-depth information with project managers involved in managing IBS construction project. The advantages used of semi-structured face-to-face interview are reliability, control and speed of data collection, because the same format is used with each respondent.

Moreover, the extensive and in-depth review of literature was done in order to obtain information on the IBS construction, project delivery approach, virtual communication, leadership style as well as factors influencing the successful of communication process in the construction environment. The interviewees were selected from a wide range of backgrounds in terms of their work experience and academic qualifications (Table 1), in total of 5 participants were selected, with from each type of construction profession such as supplier, contractor, consultant, project manager and manufacturer.

**TABLE 1.** Overview of the respondents

Name	Position	Working Experience	Discipline	Gender
Respondent 1	Project Manager	10	Manufacturer	Male
Respondent 2	Project Manager	16	Consultant	Male
Respondent 3	Project Manager	10	Consultant	Male
Respondent 4	Project Manager	15	Contractor	Male
Respondent 5	Project manager	20	Supplier	Male

In attempt to ensure all data collection are relevant, the interviews process was recorded electronically for recollection during data analysis. This process also allows the researcher to record tone and speech patterns from the face-to-face interview, which can help clarify or recall the meaning of the words, phrases or ideas raised. Each interview session lasted an average of 50 minutes.

## **RESULT AND DISCUSSION**

Effective of communication process within project team members is importance to increase project performance. In virtual context, leader play an importance roles to have a proper project management planning to prepare with a convenient additional tools and techniques to support different type of roles in implement certain process. During the analysis, the finding focus on the e-leader managing practices in managing distributed project team members on project construction.

### **Trust**

Trust is positive value and confidence expectation of the behaviour from another party, thus it is highly importance for success in virtual environment. In team context, trust have been defined as a degree of confidence from team member to another by delivering what have been promised. As mention by respondent three (3), “Trust and confident level cannot be determined at the early stage of the project. After enter into long period of time, the trust and confident level will increase after enter into a long period of communication, thus quality of work, trust and confident level will increase in between each other’s”.

E-teams generally face difficulty to generate a trust because of time-limited or task, and that could effected into developed integration team. Conversely, the teams with highest levels of trust began their interactions with social messages, set clear roles for each team member, and showed positive attitudes and eagerness, enthusiasm, and an intense action orientation in all of their messages. However, The trust can prevent the geographical boundaries and time zones of virtual team members from becoming psychological distances. In this way, respondent two (2) was mention;

“To build team cohesiveness at the early stage of the project is quite difficult, especially when interacting with virtual technology. The approach that I apply is to emphasize that the quality of work should be good and give full commitment to obtain positive results not only for the team but the other group members. When the quality of the work shown very satisfactory, it will increase the confidence of other parties. The effects of that we will easily to share the ideas and opinions. Although virtual communication, the final result of work can increase the confidence level among practitioners to our team”.

Trust is built from the quality of work and commitment. Therefore a good quality of work and commitment is a strong motivation factor for team member’s expectation especially developing mutual trust in virtual team’s environment. Most importantly it is the responsibility of the project leader to build trust by conducting periodic face-to-face meetings. As state by project manager (R3) before project started, face to face meeting is conducted at the beginning. It is importance to developed social-cultural information and relationships process. The leadership role is critical to develop team effectiveness to ensure that objectives of the project meet expectations from all project teams.

“We create one platform to communicate to each other’s every day. By the way, for the first meeting ‘kick-off meeting’ we meet all of stakeholders by communicated face-to-face; weekly; monthly and after that we monitored and receive the report from my team’s member by electronic devices”.

### **Communication Technology**

Information technology and communication is a key to success work efficiency process especially in virtual environment. This type of communication become a favorited mechanism for integrating and distributing the knowledge across organisation and team members. Yet, below is how e-leader use telecommunication tool represent efficiency of technology lets team members connected by from different location.

I usually communicate with other teams through telecommunication devices such as smart phone. And this opportunities was increase efficiency of information exchange between stakeholders on the construction site and office. The information also easily to access, accurate, up-to-date, thus can improve the project progress. Moreover the application with online text message and video chat services such as WhatsApp and Skypes application increase our business and we interact with others member in real time situation every day. So I don’t going to site project

everyday just monitor from my office or home. This is how we practices”.

Traditionally, on the site project the information such as drawings, data collection forms, correspondence, progress information and specifications based on paper-based file. The paper-based file was constitute a major challenges due communication and information exchange. In this kind of work, team may overlook into importance issues that require a quick response and often cause on-site decisions to be deferred.

“Nowadays the availability of video conferencing, cloud technology, Voice over IP and instant messaging is a trend. I use all type of application to facilitate communication among project team members either in the same location or located in a remote place. So there is no issues for project team to receive any information even though in different geography. All the project team are active using this type of communication technology to reduce cost and time constraint due to complexity on site project. As a leader, contingency planning is importance to navigate the construction process into sustainable manner. Thus, project managers and project teams should have a knowledge associated to technology communication to enhance performance according to distributed team todays”.

In this situation, virtual leader should pay special intention toward the different landscape of communication process. Even though all the project team aware to the current business environment. It was necessary for virtual leader to increase trust and motivation from several project members although the daily process communication through email, video conferencing and instant messaging are predominant in daily used. Unfortunately, a different skill and technique need to be acquired for virtual business environments as compared to those from traditional business environments to address team members’ professional and personal needs.

## CONCLUSION

This paper offers insight into the issues leading to poor communication in managing the IBS construction project. The poor of communication is a challenge in construction project causes lower performance and a higher turnover of staff. From the results of a survey, development of modern information and communication technology was shift project managers into new paradigm by working virtual working arrangement. In addition, managing on virtual environment required additional competency and possess a set of distinctive qualities to be applied in different circumstances of project complexity for success actual construction. Simultaneously, it seems that the new technologies have not been able to resolve certain traditional organizational, leadership and work-related problems. Thus relevant challenges need for further research in the field to explore the challenges leaders face while managing work in an ICT environment.

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