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HR Moderating HR: Critical link between Developmental HR Practices and work engagement in a Moderated Model

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ABSTRACT

This conceptual paper sheds light on the concept of work engagement. Employees engaged in their work are bursting with energy, dedication and immersion in work. The article offers an overview of the concept of work engagement and the major gaps in its literatures, particularly in relation with developmental HRM (employee training and career development) practices. The evidences quoted in the review have indicated towards the critical

significance of HRM practices on work engagement. Notably, the review also provides adequate support towards the potential moderating role of performance appraisal perceptions upon developmental HRM and work engagement relationships.

Keywords: Developmental HRM, Employee Training, Career Development, Performance Appraisal, Work Engagement.

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INTRODUCTION

Work engagement is an evolving notion in the area of occupational health psychology (Bakker, Schaufeli, Leiter, & Taris, 2008). The concept was first coined by nearly 25 years ago by Kahn (1990) who conceptualized it as the psychological, cognitive and emotional attachment of employee with the work. Bundles of empirical studies have been conducted outlining the numerous antecedents of work engagement (Bakker, 2011; Rothmann & Joubert, 2007; Demerouti et al., 2001; Schaufeli & Bakker, 2004; Xanthopoulou, Bakker, Schaufeli, 2007; Xanthopoulou, Bakker, & Demerouti, 2009). Sadly, despite of dozens of these studies, the human resource management and its major factors seem to have been rarely studied (Albrecht et al., 2015; Suan & Nasrudin, 2014; Arrowsmith & Parker, 2013). The main purpose of the current article is to underline critical imparity of HRM components, particularly on the development HRM (Kuvaas, 2008) practices. Through empirical evidence, the present paper underlines gaps in work engagement literatures concerning to HRM. Accordingly, the paper highlights theoretical, practical and empirical significance of developmental HRM practices including employee training opportunities and career

development opportunities towards the prediction of work engagement followed by the buffering energy of performance appraisal perceptions.

LITERATURE REVIEW

Work Engagement

Bakker (2011) in his article asks to recall someone whom they met at the workplace and found explaining things with energy and passion or individuals striving to give their utmost to serve in the best way possible. All such people were engaged with their work. They were completely attached with their job roles and experienced full immersion in their job activities. According to the most popular definition on work engagement by Schaufeli et al., (2001), work engagement is a positive work based mindset which brings energy, dedication, and absorption in work. Engaged workers are more productive and open to learning in order to go an extra mile. Kahn (1990) is ranked as the pioneer in the engagement literatures who explained engagement as individuals being physically, cognitively and emotionally connected to the work.

Work engagement is principally different from other employee outcomes such as job satisfaction, job involvement, and organizational commitment (Bakker, 2011; Hallberg & Schaufeli, 2006). The JD-R model of work engagement (Demerouti et al., 2001) is the most established framework on the topic according to which, job resources and job demands are principally the core components that influence employees` work engagement. Job resources are those motivational aspects at work that enhance employees` work well-being whereby, job demands are work stressors that potentially drain individual capabilities (Bakker & Demerouti, 2007).

HRM and Employee Behavior at Work

Notable scholars in the area have outlined several antecedents of work engagement (Hamed, 2010; Saks, 2006). Alongside this, empirical evidence has also pointed out towards the significance of human resource management practices and their role towards developing strategies for enhancing employee behaviors and outcomes at work (Arrowsmith & Parker, 2013). HRM and its prominence in predicting different outcomes including employee learning, productivity, employee commitment, and operational performance are evident from the previous studies (Chand, 2010; Ozola, 2014; Lamba & Chaudhary, 2013; Ahmad & Schroeder, 2003; Ouedraogo, 2010).

Shuck, Rocco, and Albornoz (2012) have highlighted that there is a need for HR practitioners to understand how employees' work engagement could be enhanced through core HR practices and functions. Suan and Nasrudin (2014) stated that engagement has mainly been investigated through job and personal characteristics hence; the monumental role of HR seems to be scarce in empirical documents. Review by Albrecht et al., (2015) also asserts that HRM practices needs to be taken to an advanced level in order to embed engagement in more HR procedures and policies. The authors have indicated towards the potential of core HR practices in harnessing work engagement. Purcell (2014) also highlights towards the ambiguous relationship between HRM practices and work engagement. Schaufeli (2012) has directed in his review towards the importance of HRM components in enhancing work engagement whilst underlining the dearth of research in this context. The author has also highlighted that employee training and career development opportunities have a developmental nature due to which they can work as healthy job resources to enhance employee work well-being (engagement).

Conclusively, this takes to infer that HRM functions could be of great prominence in enhancing work engagement. Kuvaas (2007; 2008) has empirically underlined the potential of employee training opportunities and career development opportunities in fostering employee outcomes. The study has concluded that these HR factors are associated with employee nurturing and hence boosts employee work well-being. Likewise, study by Alfes, Shantz, and Truss (2012) also indicates employee training opportunities and career development opportunities as critical for enhancing work perceptions and outcomes which results in giving a boost to their skills, capabilities and potential for performance.

Employee Training and Work Engagement

According to Kuvaas (2008), employee training is employee perception regarding the trainings provided and training needs supported by the HRM practices. Costen and Salazar (2013) indicated that employee training opportunities in an organization are planned and implemented to impart skills that are essential for the workforce to perform effectively and efficiently. In other words, this indicates towards the alignment of individual skill set with organization's needed skill set through training so that they could perform as expected. Employee Training has been studied and closely linked to numerous employee outcomes and behaviors including job satisfaction, organizational commitment, organizational citizenship behavior (Kuvaas, 2008; Costen & Salazar, 2013; Dysvik & Kuvaas, 2008; Al-Emadi & Marquardt, 2007). Thus, adequate employee training opportunities can make a healthy impact on the employee outcomes and behaviors. This also leads to understand that employee training can influence and boost numerous employee aspects.

In connection to work engagement, very limited studies could be traced thus, outlining a gigantic research gap on the

relationship. Salanova, Agut, and Peiro (2005) examined the influence of employee training on hotel employees' work engagement and found a positive association link between the two. The study has recommended further investigation on the matter for better generalizable results. Accordingly, Suan and Nasurdin (2014) investigated and found significance impact of employee training on work engagement. The authors have also made strong recommendations for further research due to lack of study. There are other numerous HR factors that could enhance work engagement and employee training is one of them, Rothmann and Rothmann (2010) empirically recommends. The study further highlights lack of investigation and encourages future researchers for responsive investigation in this regard.

Ahmed, Phulpoto, Umrani, and Abbasi (2015) in their recent review have indicated towards the importance of employee training function by critically linking every sub-components of the functions with overall employee work well-being. The authors have outlined that significance of employee training opportunities cannot be ignored particularly, when it comes to enhancing their psychological development to foster work engagement.

Critical evaluation of this suggests that employee training could be of paramount significance for fostering work engagement. The evaluation also suggests that positive perception about employee training opportunities can help businesses to achieve their broader goals more effectively. Sadly, limited empirical attention has been paid towards this relationship which the current study also indicates for future consideration.

Career Development Opportunities and Work Engagement

Career prospects at the workplace are becoming increasingly important due to rise in the employees pertaining to their career growth and success up the ladder. Career development

opportunities refer to employee view about the extent to which the organization is concerned about the career developments of the employees (Kraimer & Wayne, 2004). Critical appraisal of the literature has underlined strong relationship between career development opportunities and performance, career orientation, proactive work behavior, career satisfaction (Bedarkar & Pandita, 2013; Barnett & Bradley, 2007; Aryee & Chen, 2004; Crawshaw, Dick, & Brodbeck, 2012). Parallel to this, popular review on work engagement have also indicated towards its significance in predicting work engagement (Gruman & Saks, 2011). The authors have also highlighted that similar to other HR functions, career development opportunities is also new in the work engagement literatures and hence, there is a big research gap.

Review of the literature further testifies what Gruman and Saks (2011) asserted as, there are very limited studies available on this relationship. Study by Poon (2013) examined and reported positive association between career development opportunities and work engagement. The study concluded that availability of different career growth and success paths were found to be boosting employees' work well-being thus, resulting in their engagement at work. James, Mckechnie, and Swanberg (2011) in their study on the retail workforce found a strong connection between career development opportunities and work engagement. The study also indicated towards shortage of research and need for further attention in this regard. Similar results were also reported by Barbier et al., (2013).

Critical review outlines that there is a potential link between career development opportunities and work engagement which sadly has not received thorough empirical attention till date. This again points towards the lack of focus of engagement scholars on HRM as potential predictors of work engagement. Poon (2013) has stated that career development opportunities induce feelings

of value and importance in an organization which motivates employees to work with more vigor, dedication, and absorption.

Studies like Hansez, Chmiel, and Demerouti (2013) and Rothman and Joubert (2007) have also underlined the importance of career development opportunities alongside lack of research in this regard. Conclusively, it could be asserted that career development opportunities can have a remarkable impact on employees' well-being at work (work engagement) and organizations need to realize and understand its strategic significance so that they could drive their workforce towards competitive achievement of their strategic goals.

Performance Appraisal Perceptions

Cheung and Law (1998) have described performance appraisal as the consistent observation and comparison of employee performance against established work based standards. According to Erdogan (2002), performance appraisal can be described as the procedure through which performance standards are established and assessment of behaviors is done in order to measure performance for employee assessment. There is no doubt in the fact that performance appraisal is one of the highly significant components of HRM with the predicting power of numerous employee behaviors (Dusterhoff, Cunningham, & MacGregor, 2014). According to them, satisfied employees with performance appraisals works critically well for enhancing employee behaviors. Performance appraisal process is primarily for administrative aims to evaluate employees' performance to make future decisions regarding pay rise, promotion, job responsibility and other fringe benefits (Cawley et al., 1998). Haynes and Fryer (2000) have argued that positive perception about performance appraisal indicate value and recognition of work related efforts to the employees which hence can foster their

outcomes and behaviors and work. Henceforth, they are termed with great importance in the employee circle. Moreover, they help them in valuating what has been of value and what requires improvement; they get to understand what exactly they can work on to improve their engagement (Suan & Nasrudin, 2014).

Critical appraisal of the literature on work engagement managed to find out only two studies that have examined the importance of performance appraisal perceptions on work engagement (Suan & Nasrusin, 2014; Gupta & Kumar, 2012). Both the studies found a strong association of positive perception of employees' performance appraisal with work engagement. The authors have highlighted towards the potential yet, severe paucity of research on the relationship. Performance appraisal can boost employees' psychological well-being to commit with more energy, absorption and resilience at work.

Thus, it leads us to also understand what Kavanagh, Benson, and Brown (2007) that individuals believing performance appraisals to be fair can work with more effectiveness and acceptability. Cook and Crossman (2004) also highlighted the significance of employee perception pertaining to enhancing employee behaviors and outcomes. Conclusively, a strong link and association is expected between performance appraisal and work engagement.

Moderation of Performance Appraisal Perceptions

A potential moderating variable can be introduced in a relationship where there is weak or inconsistent relationship (Baron & Kenny, 1986), whereby, several studies have attempted to test moderating effects in studies relating to workplace and employee behaviors (Ando & Kim, 2006; Zhu, Avolio, & Walumbwa, 2009). In the views of Bakker (2011) that different job factors can moderate the influence of other job factors upon

work engagement. Under the premise of conservation of resources theory (Hobfoll, 2001), the availability of further resources can further maximize and enhance the use of other available resources to influence work well-being. Parallel to this, there are studies available that have investigated the moderation of different job factors upon the relationship of several other job factors with work engagement (Zhu, Avolio, & Walumbwa, 2009; Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Xanthopoulou, Bakker, & Demerouti, 2007). Critical review by Gruman and Saks (2011) has outlined performance appraisal and concerned employees' perception regarding them, to be of great value for enhancing work engagement. The authors have argued that due to the motivational potential of job factors like performance appraisal, the impact of available job resources can be buffered.

Similarly, leaders and management personnel are critically involved in performance appraisals (Elicker, Levy, & Hall, 2006), and based on this, positive perception about performance appraisal could potentially make them feel valued, recognized and energizing them to make the most of other job base HR factors like employee training opportunities and career development opportunities. Therefore, the current study proposes the potential of positive performance appraisal perceptions to not only influence employees' work engagement but also moderate the relationship of employee training opportunities and career development opportunities upon work engagement.

The article thus, asserts that the availability of employee training opportunities and career development opportunities will positively predict work engagement and, positive perception of about performance appraisal would further enhance employees' willingness to capitalize upon these resources hence fostering their impact and relationship upon work engagement. This

proposition is also in parallel with the conservation of resources theory (Hobfoll, 2001) on how some resources can moderate the relationship of other available resources on work engagement.

RESEARCH FRAMEWORK

Conceptual Framework

The proposed conceptual framework indicates towards the significance and potential of performance appraisal perceptions in

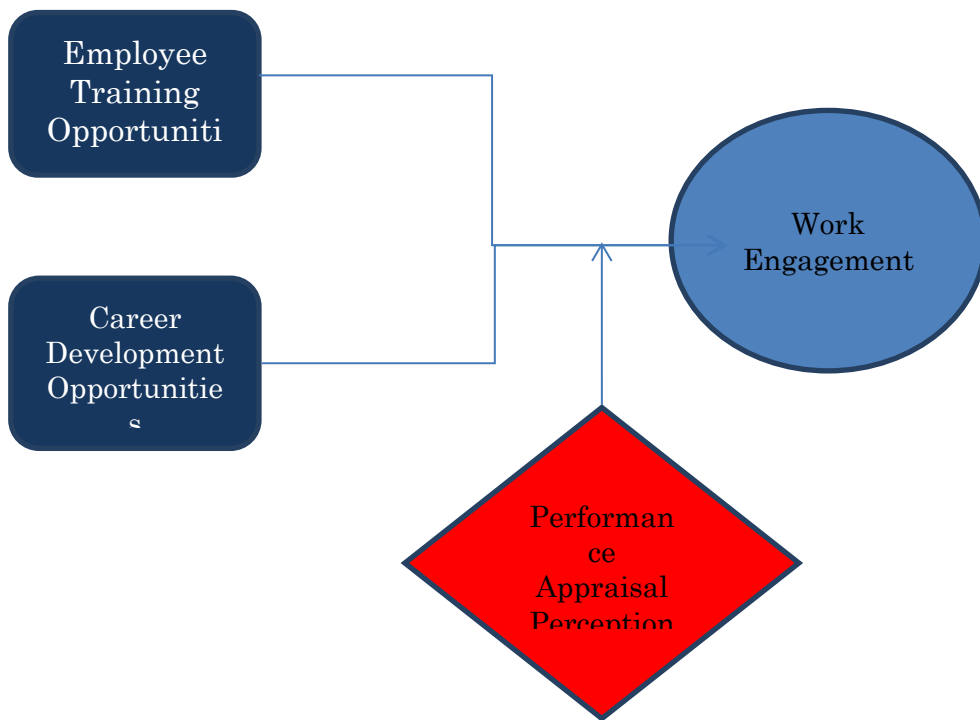


Figure 1. Conceptual Framework

moderating the impact of employee training opportunities and career development opportunities upon work engagement. The framework marks towards a critical gap in work engagement literatures and hence pioneers to be the first to propose this moderation.

Gaps and Contributions of the Study

Through this article, the authors have strived to shed light on numerous research, theoretical, and practical gaps. The paper has indicated towards the significance of HR factors that are associated with the development of employees (Kuvaas, 2008) upon work engagement. Accordingly, the paper also underlines towards the significance yet, paucity of research on employee training opportunities and career development opportunities in predicting work engagement. Ahmed et al., (2015) and Salanova, Agut and Peiro (2005) have indicated towards the importance yet paucity of research on employee training opportunities and work engagement relationship. Similarly, Poon (2013), Barbier et al., (2013) and James, Mckechnie and Swanberg (2011) have also underlined towards the importance of career developmental opportunities along with severe scarcity of research on its relationship with work engagement. This paper thus proposes and highlights the critical need for urgent empirical attention in predicting work engagement. Accordingly, the paper also indicates towards the empirical significance of performance appraisal perceptions in predicting work engagement.

The article also indicates towards severe paucity of research and a strong potential in enhancing work engagement. On a major note, the article indicates towards the alternative relationship between employee training opportunities and career development opportunities and work engagement. The article

proposes the potential moderation of performance appraisal on these relationships which has never been tested before.

CONCLUSION

This conceptual paper has attempted to critically outline how developmental HR practices can further work engagement. The proposed framework has remarkably underlined towards the significance and gaps in engagement literatures regarding employee training opportunities and career development opportunities. Notably, the paper has also proposed the moderation of performance appraisal perceptions with thorough literature justifications. In a nutshell, this conceptual paper of the current study has proposed a significantly contributing moderating framework with specialized focus on some of the notable HR practices through which organizational scientists could help enterprises learn ways to boost their employees' work engagement.

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Strategic Role of HR in Efficient and Effective Management of the Human Capital Pool

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ABSTRACT

The main center of attention of the 21st century's organizations now is employee retention and employee commitment as in comparison to profit maximization earlier. Employees are said to be an organization's greatest asset. Attracting, safeguarding, nurturing and preserving them are a mission in itself, which requires continuous commitment and support. For an organization to get maximum output and quality work it requires effective workforce but with an effective workforce the organization can only go to a certain distance. To gain the maximum out of that workforce the commitment of employees and the turnover ratios requires crafty examination. The employee commitment can have a significant role in employee turnover ratio as it emphasizes on employee eagerness to help colleagues, positive development on productivity and right attitude of employees. This paper aims at understanding reasons for employee attrition and relationship of the same with regards to length of service and number of organizations worked earlier by

an employee. The study suggested that as long as the organization will provide an abundance of career opportunity to an employee they will be reluctant to move out and look for better opportunities.

Key Words: Employee Attrition, ITeS-BPO, Retention, echnology-enabled Business Process Outsourcing

INTRODUCTION

In past few years, the Indian economy has witnessed a positive change in growth and development, with which the technological and the traditional methods of doing business also changed. The smart organizations are now focusing towards the smart way of doing business instead of being a jack of all trade. Outsourcing the noncore business is the trend being followed by the organizations. BPO are proving to be the obvious choice to make a profit, reduce cost while improving the quality of services also to increase the shareholders wealth. (Shah and Sharma 2006).

Since 2003 the domestic IT- BPO market has seen an upward growth and now is an important place for both small and large IT- BPOs. Earlier only the small and medium businesses were taking an interest in the domestic sector, but for past few years, large players have realized the untapped potential of the domestic IT-BPOs. It all changed after the global market slowdown. The domestic IT BPO market is presumed to be around at 100 billion by 2020, which was given in the NASSCOM-McKinsey's Perspective 2020 study. The market research firm has suggested that the BPO alone will grow at the rate of 33.3 percent in the domestic market, with a revenue of around USD 6.82 billion by 2013. The domestic market is getting help from the

factors like involvement in e-Governance projects by both state as well as central governments and increased use of IT by public and private sectors. The result is that the Indian market customers are being engaged by the small and large IT-BPOs and getting the huge and prestigious deals in return.

Globally improved economic conditions have given confidence to the consumer and businesses. Increased expenditure in IT has driven the growth rapidly and was 4.2% in 2011. Indian IT-BPO industry will not only help the business to manage the expenditure but also will help in cutting the cost by improving the process, workforce practices, and improved information use. The sector continued to improve the value chain in 2011, by focusing on adaptable solutions for businesses.

The problem faced by BPOs since their inception revolves around the host of challenges from the beginning. The two major challenges faced by the BPOs are Internal and External. The internal challenges revolve around the management for mid and senior management and high employee turnover rate. The opposition faced from the politicians and labor unions of US and UK which are against the decision of outsourcing the businesses to India is one major external challenge. The most significant internal challenge is the high rate of employee turnover, which causes business a lot of money, talent, and resources and also not forgetting the expense of training.

LITERATURE REVIEW

Attrition, in Human Resource terminology, refers to the phenomenon of the employees leaving the company. It is usually measured with a metric called attrition rate, which simply measures the number of employees moving out of the company (voluntary resigning or laid off by the company).

According to Wendell French (1997), “Attrition is the voluntary separation of employees from the organization through resignation and retirement.” Reddy, A. Jagan Mohan (2007) defines attrition as “Reduction in the number of employees through retirement, resignation or death.” Pradeep Ekta Kumar (2005) states, “Attrition is the separation of employees from an organisation due to resignation, retirement, death, poaching etc.”

The latest trend of employee turnover has heated up the corporate to come up with a solution to minimize the turnover ratio. To maintain an effective workforce the duties of managers have shifted from just hiring the good employees to retaining them for a longer duration. For an organization to get maximum output and quality work it requires effective workforce but with an effective workforce the organization can only go to a certain distance. To gain the maximum out of that workforce the commitment of employees and the turnover ratios requires canny observation. The employee commitment can have a significant role in employee turnover ratio as it emphasizes on employee eagerness to help colleagues, positive development on productivity and right attitude of employees. As a matter of fact, it helps in team building and better understanding among team members. Basically to maintain an effective workforce organization need to have right people for the right job. The review of different studies which have explored the reasons and effects of attrition is presented as under.

Magner et al. (1996) emphasized that employees feel comfortable to stay longer, in positions where they are involved in some level of the decision-making process. That is employees should fully understand about issues that affect their working atmosphere. Labov, (1997) highlighted that employees have a strong need to be informed. Organisation with strong communication systems enjoyed lower turnover of staff.

Trevor (2001) suggested that local unemployment rates interact with job satisfaction to predict turnover in the market. Role stressors also lead to employees' turnover. Role ambiguity refers to the difference between what people expect of us on the job and what we feel we should do. This causes uncertainty about what our role should be. It can be a result of misunderstanding about what is expected, how to meet the expectations, or the employee thinking the job should be different. Manu et al. (2004) found that employees quit from organization due to economic reasons. Using economic model they showed that people quit from organization due to economic reasons and these can be used to predict the labour turnover in the market. According to Mehta et al. (2006), of all the challenges posed to BPO organizations at various levels, attrition, absenteeism and motivating employees are the major ones that dominate at the middle level.

Raman (2006) in his study "Strategies to Retain Human Capital in Business Process Outsourcing (BPO) Industry" said that there are numerous reasons for the attrition to be high which can be categorized into two broad classifications. The first can be coined as "Drive Attrition" which is caused due to the employer; the second can be termed as "Drag Attrition" which is caused due to the employees. The reason for Drive Attrition is many-a-times the employer's policy / policies of terminating the employee at the end of the contract period for employment. Drag Attrition is basically due to the host of insecurities and vulnerabilities associated with the taking up a career with a BPO company.

Borstorff and Marker (2007) conducted an employee survey and interviews at a large international wholesale bakery, the study indicated that health benefits, base pay, and life/work balance were most important to hourly workers. Moreover suggestions on a retention strategy addressing employee's needs

were also given which includes that a good supervisor relationship is important to retaining employees. Moreover it was discussed that supervisory relationship not only influences job performance, career development, recognition and rewards, it also enhances teamwork, better communication, optimum utilization of organizational resources, and relationships with co-workers, customers, and peers.

Shrivastav A.K. (2010) stated that how the organizational environment works in the BPO industry. Six motives of organizational climate in BPO industry Were Measured Through The Paper. Expert Influence, and Extension forms the dominant and backup climates. The affiliation was the weakest of the lot. The Exploratory factor analysis of climate motives revealed three meta climates. i) Brazen shrinking combining heightened dependency and de-emphasised Affiliation. ii) Empowered collaboration represent ingheightened Extension and de-emphasised control. iii) Obsession for Expertise combining the heightened expert influence and de-emphasised achievement. Said Shaban Hamed (2010) the research examines the relationship between role clarity, organizational trust and employee's empowerment, the relationship between employee's empowerment and job involvement. The author has used a cross-sectional design. A random sample of 862 employees was selected to participate in the study. Self-administered questionnaires were used in data collection. The results proved statistically significant positive relationships between role clarity, organizational trust and employee's empowerment, and also a statistically significant positive relationship between employee's empowerment and job involvement, job satisfaction.

Zachariah and Roopa (2012) in their study examined the reasons for employees leaving the Organization, staying back factors, their attitude towards work, work relationships and their

prioritized basic expectations from the organization and they also studied as to whether there is any significant difference in the response among IT professionals of Indian IT and Multinational Companies with respect to the above factors. Based on the analysis of responses of 30 IT professionals carried out, it was found that there was no significant difference among these companies. However with respect to certain demographic factors like total experience, position and sponsored certification programs, it was found that there was significant difference between these companies. The outcome of the study is expected to help the HR Managers of these Organizations in minimizing the attrition rate by developing effective retention strategies specific to their Organization.

Mohamed et. al. (2012) observed that, from an organizational perspective, the higher the intra organizational trust, the more satisfied and productive the employees tend to be. James and Faisal (2013) in their paper aimed at addressing high employee attrition in the BPO sector in Karnataka and Kerala States of India by identifying the critical factors which cause high attrition. The data was collected through a structured questionnaire survey. The study identified 13 factors affecting high employee attrition in BPO industry using Factor Analysis. Multiple regression analysis was also applied to analyze the collected data wherein it was found that the attrition factor employee's salary has emerged as the most critical factor affecting high attrition in the BPO sector. The paper further clarifies the need to pay immediate attention on introducing highly competitive salary packages in BPO sector organizations for addressing the high attrition problem. It was also revealed that both in Karnataka and Kerala states, absence of good HRM practices is also one of the critical factors causing high attrition. BPO management should also

ensure that their employees are paid enough for the work they do in the organization in which they are working.

Shin (2013) conducted a study to examine the process of organizational change into new entrepreneurship such as corporate spin-offs or intrapreneurship. In the study, the organizational change process is divided into two phases; Change initiation and change diffusion. The study is based on the assumption that organizational change is ignited by an individual or small group of change agents and spread throughout the organization and the system within the organization which help agents to spread the change sentiment. Vibha (2013) through her paper analyzed the recruitment and retention challenges faced by the BPO industry and examined the employee turnover ratio in the first year of their joining in Indore's leading domestic call centers. Basic factors based on the findings of this study to control attrition were manageable workloads, recognition, and support from their co-workers and management, good opportunities for growth and innovation. Pradeepkant and Siddharth (2015) in their paper concluded that the employee with the age of 35 and above are less likely to change their job than those with age below age 35. Another factor was the proximity of the employee to the family, in the case of married women they were more likely to change the job to be closer to the family. Moreover, it was also observed that people from the rural and semi-urban area are interested in switching the job since they are already staying away from their homes, but it was more in case the employee is less than 35 years old and vice versa.

While many general studies have been carried out on attrition, very less systematic and comprehensive work has been undertaken that gives an in-depth understanding of the problem and identifies the relationship of the problem with tenure of service and the number of organizations worked earlier in order

to combat the most smoldering problem of the present times i.e. attrition. The present study has been undertaken to explore the Relationship amongst tenure of service, the number of organizations worked earlier and Employee Attrition in ITeS-BPO Sector.

METHODOLOGY

ITeS-BPO companies located at NCR (National Capital Region of Delhi) form the population for selecting the sample units. Hence, the survey was limited to companies located in Delhi and other NCR towns. The target population of employees of ITeS-BPO companies included call-floor executives and operational managers at all levels but excluded back-end support staff from departments like Human Resources and administration. ITeS-BPO companies of each size i.e. small, medium and large were considered for this survey. The total sample size of 428 respondents comprises majority of the respondents to be working for more than 36 months (37.8%) followed by less than 12 months (24.2%). The sample had representation of 18.7 per cent respondents working in between to 12 months to 24 months. The remaining 19.2 per cent of respondents were in the group of 24 months to 36 months.

In the distribution of the sample on the basis of the number of organizations worked, before joining the particular organization presently engaged with 28.9 per cent of the sample belongs to the category where they have not worked with any organization before. 28.5 per cent belongs to the second category where the respondents have worked for a company before, respondents who have worked for two companies before is the third category and 30.3 per cent of the sample represents the same. Finally the last category 12.3 per cent of the sample belongs to this group where

they have changed three and more organizations. Although the distribution of the sample slightly varies, the variation is not substantial. In order to measure factors influencing employee attrition a structured questionnaire was developed after discussions with Human Resource managers of few ITeS-BPO companies and individuals working therein. The questionnaire contains 13 statements concerning various alternatives on a 5 point Likert Scale ranging from 'Strongly Disagree' to 'Strongly Agree' indicating the extent of agreement to reasons for leaving the job. A weight of '5' was assigned for 'Strongly Agree' and '1' for 'Strongly Disagree'. The other categories of scale were '4' for 'Agree', '3' for 'Neither Agree Nor Disagree' and '2' for 'Disagree'. A pilot study was conducted with a small sample size of 35 respondents to finalise the questionnaire. The respondents provided comments on clarity of some items and confirmed face (expression) validity of items in the questionnaire. After pre-testing, the necessary modifications were incorporated in the original questionnaire. Analysis of variance (ANOVA) has been done to test for differences among employees in ITeS-BPO companies across tenure of service and the number of organizations worked earlier.

RESULTS

In order to bring out the factors affecting employee attrition in the ITES-BPO companies, data has been analyzed by applying factor analysis. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of Sphericity were applied to verify the adequacy or appropriateness of data for factor analysis. SPSS Software 16.0 version has been used for analyzing the data. Factor analysis using Varimax rotation has been conducted to reduce the multiplicity of variables into selected factors. The

factor analysis conducted on thirteen statements related to employee attrition in an ITeS-BPO company explains 54.808 per cent of the total variance accounted by all the variables. Three factors have been extracted by using principal component analysis and varimax rotation. The first extracted factor FA1 (*Non-Fulfilment of Needs and Aspirations*) highlights that employees give importance to career growth opportunities for making a decision to leave a company, non utilization of knowledge and experience while doing the job make employees unhappy and drives them towards taking a decision to leave the job. Also employees do need adequate salary for work performance and value the kind of working environment offered by an organization and moreover the inadequate status to an individual does not satisfy his/her power needs. The second factor FA 2 (*Poor Work Place Relations*) indicates that poor relationship with peer and superiors is important reason contributing to employee attrition. It is from the peer, superior, subordinate interaction and team dynamics that an employee draws his opinion and inferences about the company.

The third factor FA 3 (*Personal and Job Issues*) suggests that the employees have attached a large proportion of importance to the variables viz. family constraints, inability to stay at the location /city, and transportation problem, that work load was more, and job security was not there. Thus, personal as well as job related issues comprises an important factor of employee attrition. These factors were then compared with nature and size of organization, the result of which is there in the following section.

Tenure of Service-wise Dimensions Leading to Employee Attrition

Table 1 reveals the mean scores, F-value and p-value on the three factors leading to employee attrition among the different

employee groups based on the length of service i.e. less than 12 months, 12 months- 24 months, 24 months-36 months and More than 36 months.

Table 1. Tenure of service-wise Dimensions Leading to Employee Attrition

| Factors leading to employee attrition | Less than 12 months | 12 months-24 months | 24 months-36 months | More than 36 months | F-value | P-value |
|---|---------------------|---------------------|---------------------|---------------------|---------|---------|
| Non Fulfilment of Needs and Aspirations | 3.21 | 3.06 | 3.21 | 3.53 | 3.075 | .028 |
| Poor Workplace Relations | 2.71 | 2.63 | 2.67 | 2.85 | .701 | .552 |
| Personal and Job Issues | 3.00 | 3.10 | 2.82 | 3.15 | 2.323 | .075 |

Note: i) All figures, except F-values and p-values are mean values, df=3/424.

It is clear from the mean scores given in Table 1 that the highest mean score (3.21) for the respondents Less than 12 months is on the factor ‘Non Fulfilment of Needs and Aspirations’. For the group of respondents’ 12months-24 months the highest mean score is on the factor ‘Personal and Job Issues’ (3.10). The highest mean score accorded by the respondents of 24-36 months (3.21) and more than 36 months of service (3.53) is on the factor ‘Non Fulfilment of Needs and Aspirations’. Thus, except the group 12-24 months, the highest mean score in remaining three age groups is obtained on the factor ‘Non fulfilment of Needs and Aspirations’. The lowest mean score in case of each of the group of

respondents is on the factor 'Poor Workplace Relations'.

ANOVA test has been conducted to find whether there is any significant difference in the mean scores of each of the factors considered by an employee while making a decision to leave a particular organization across the, four tenure of service-wise groups. The results in Table 1 shows that P-value of the factor 'Non Fulfilment of Needs and Aspirations' turns out to be significant with f-value of 3.075 at 5 per cent level. The results indicate that the employees belonging to the group of More than 36 months of service agree that they are affected by the factor 'Non Fulfilment of Needs and Aspirations' while, making a decision for leaving a particular organization. The statements included in this factor are: lack of career opportunity, non utilization of knowledge and experience, inadequate salary, working conditions were not upto mark, and the status was not adequate. The reason for the same can be that non fulfilment of needs even after putting in a sufficient service period of more than 36 months makes employees to take a decision to leave the job.

The f-value of the other two factors turns out to be insignificant at 5 per cent level in case of the respondents having different Tenure of service. Thus, there is no difference in the mean score of four groups in case of both the factors. Thus, employees across the four groups have shown same level of agreement with 'Poor Workplace Relations' and 'Personal and Job Issues' as reasons for leaving the job.

Number of Organizations Worked Earlier-wise Comparison of Dimensions Leading to Employee Attrition

Table 2 reveals the mean scores, F-value and p-value on three factors of employee attrition among the four employee groups based on the number of organizations worked earlier viz.

‘None’, ‘One’, ‘Two’, and ‘Three and more’. For all the four groups of employees, the highest mean score is on the factor ‘Non fulfilment of Needs and Aspirations’. The lowest mean score on the factor ‘Poor workplace Relations’ is accorded by employees of all the four groups.

Table 2. Number of Organizations Worked Earlier-wise Comparison of Dimensions Leading to Employee Attrition

| Factors leading to employee attrition | None | One | Two | Three and more | F-Value | P-Value |
|---|------|------|------|----------------|---------|---------|
| Non Fulfilment of Needs and Aspirations | 3.14 | 3.15 | 3.30 | 3.22 | 1.372 | .251 |
| Poor Workplace Relations | 2.73 | 2.60 | 2.82 | 2.70 | 1.563 | .198 |
| Personal and Job Issues | 3.03 | 3.02 | 3.08 | 2.94 | .427 | .734 |

To find out whether there is any significant difference among the mean scores of each of the three factors contributing to employee attrition across four groups of employees, classified on the basis of the number of organizations worked earlier, ANOVA has been applied. As observed from the table, the calculated F-value (df=3/424) for each of the factor mentioned in the table is too less to be significant at 5 per cent level of significance. This implies that the respondents of different groups have same level of agreement regarding the each of the factors influencing employee attrition.

CONCLUSION

The results indicate that the employees belonging to the group of More than 36 months of service agree that they are affected by the factor 'Non Fulfilment of Needs and Aspirations' while, making a decision for leaving a particular organization. The statements included in this factor are: lack of career opportunity, non utilization of knowledge and experience, inadequate salary, working conditions were not up to mark and the status was not adequate. The reason for the same can be that non fulfillment of needs even after putting in a sufficient service period of more than 36 months makes employees to take a decision to leave the job. Employee retention is a difficult job. But can be controlled by understanding the reason why the employee wants to switch or leave the organization. To engage the employee and to understand his point of view is highly essential. 'NonFulfilment of Needs and Aspirations' is the mean reason of the classified groups on the basis of the length of the service. So it is clear that young as well as experienced employee expect instant recognition and continuous career growth. They are more than happy to achieve set goals, milestones and like to take new responsibility and are happy to receive recognition in the form of cash, non-cash incentives, promotions and travel opportunities.

Also the findings of the study helps in concluding that the respondents of different groups in Number of organizations worked earlier have same level of agreement regarding each of the factors influencing employee attrition.

Recommendations

Organizations can come up with the ways to retain its employee like Good communication and transparent policies, making sure that the employee goals are similar to the

organization's goals, also the involvement of the employee in key projects which are beyond one's expertise and different from the current role. Organizations should develop and publish a formal "Career Ladder" or "Career Path". Employees look forward to various development and learning programmes and plans available to them to grow not only professionally but also personally. Companies need to focus on developing a amiable work environment and providing scope for career growth for excellent performers.

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Investigation of Readiness for 4D and 5D BIM Adoption in the Australian Construction Industry

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ABSTRACT

As Building Information Modelling (BIM) is an enabler that can improve productivity of a construction project by facilitating collaboration among stakeholders, there has been an effort to promote BIM adoption in Australia, and yet the Australian construction industry is remained behind in adopting the BIM

capabilities related to time (4D BIM) and cost management (5D BIM). In order to identify current barriers and potential recommendations for promoting BIM uptake, this research conducted a questionnaire survey and interviews focusing on 4D and 5D BIM adoption in the Australian construction industry. Consequently, it is identified that the Australian construction industry is not fully ready to embrace 4D and 5D BIM capabilities since basic 3D BIM capability related to 3D visualization is the main usage of BIM for construction projects. As major barriers, a lack of demand from clients for BIM use and high initial costs for BIM system setup are identified. More importantly, a lack of guidance to construct an information-enriched BIM model is recognized to move forward to the next level of BIM utilization such as 4D and 5D BIM capabilities. This research serves as a stepping-stone to study further to promoting BIM uptake in the Australian construction industry.

Keywords: BIM, 4D BIM, 5D BIM, Australian Construction Industry

INTRODUCTION

It has been a central issue for construction customers to maximise value, lower cost and achieve sustainability in an industry that has been criticised for its inefficiency and lack of productivity. This inefficiency results in delays in the project schedule, budget and scope, and eventually causes a quality compromised product with a higher price (HZ, 2007). According to the National Institute of Standards and Technology (2004), \$15.8 billion per annum is estimated to be spent due to inadequate interoperability among project stakeholders based on different

software systems in the capital facilities sector of the US construction industry. Despite the current inefficiency in the construction industry, recent customers' design requirements have become more irregular and bespoke. These are difficult to be presented in a two-dimensional manner, and require more productive ways to manage the clients' design needs from the outset of a construction project.

As a response to the increasing complexity of construction projects and a demand for productivity improvement, information and communication technology such as Building Information Modelling (BIM) has been introduced to manage, as well as achieve, sustainability in construction projects (Taxén and Lilliesköld, 2008; Gaith et al, 2012). Building Information Modelling (BIM) is defined as an information management system to integrate and manage various construction information throughout the entire construction project life cycle based on a 3D parametric design to facilitate effective communication among project stakeholders to achieve a project goal(s) in a collaborative manner (Kim, 2014). The purpose of this research is to identify if the current Australian construction industry is ready to adopt BIM technology by following the current trend of global construction industry.

BIM ENGAGEMENT STATUS IN AUSTRALIA

Various benefits of BIM are identified, and three major benefits are commonly mentioned in the literature: 1) Design Quality Improvement, 2) Productivity Improvement (Effective and Efficient Project Information Management) and 3) Sustainability Enhancement (Eastman et al., 2011; Hannele et al., 2012; Froese, 2010). 3D parametric representation is a fundamental distinctive capability of BIM, and there are different

capabilities of BIM that are described in a nD capabilities based on 3D BIM capability as shown in Table 1 (Eastman et al., 2011). 4D BIM capability can establish links between project activities and the 3D building elements that enables construction professionals to conduct the constructability check before the construction phase (Eastman et al., 2011).

Table 1. nD BIM Capability

| nD BIM | Capability | Description |
|--------|-----------------------------|---|
| 3D BIM | 3D Model | Project visualization, Clash detection |
| 4D BIM | 3D + Time | Schedule visualization, Construction Planning |
| 5D BIM | 4D + Cost | Quantity Take-offs, Real Time Cost Estimating |
| 6D BIM | 5D + Facility Management | Life cycle management, Data Capturing/Monitoring |

5D BIM is capable of managing costs throughout a project life cycle including cost estimation and budgeting. In particular, quantity surveyors and cost estimators can reduce time and efforts on quantity measurement and development of bill of quality, and moreover can improve the accuracy of cost estimation (Hannele et al., 2012; Froese, 2010). Consequently, BIM is regarded as a major paradigm shift in the construction industry (Hannele et al., 2012; Succar, 2009), and currently developed countries such as US, UK, and South Korea strive to adopt BIM relentlessly by establishing the BIM strategies and mandates as shown in Table 2. The US government established a national 3D-4D BIM program to increase BIM uptake for public office building design and operation led by the General Services

Administration. The UK and the South Korean governments have introduced and promoted BIM in the construction industry by mandating BIM use for all public construction projects (HM Government, 2012).

Table 2. BIM Engagement Status Comparison

| | US | UK | South Korea | Australia |
|--------------------------------|-----------------------|-----------------|----------------------------------|-------------------------|
| BIM Mandate Year | 2006 | 2016 | 2016 | None |
| BIM Strategy | 3D-4D BIM Program | Push and Pull | BIM Roadmap | National BIM Initiative |
| BIM Standard | AIA E202 BIM Protocol | PAS 1192 series | Public Procurement BIM Guideline | National BIM Guide |
| BIM Champion (Initiation Year) | GSA, 2003 | OGC, 2010 | MLTMA, 2010 | NATSPE C, 2011 |

Note: GSA - General Services Administration,
 OGC - Office of Government Commerce,
 MLTMA - Ministry of Land, Transport and Maritime Affairs,
 NATSPEC - National Specification System of Australia

Nevertheless, Australia has been stalled behind in the BIM adoption status because there have been no follow-up efforts to mandate BIM adoption or develop specific national BIM standards like others. Comparing with high level of public drivers' involvement in other countries, the engagement of BIM driven by the government initiatives is currently limited. Although the

government led initiatives are limited, there are various regional and city based BIM hubs such as Australasian Procurement and Construction Council, Australian Construction Industry Forum, and city based organisations such as BrisBIM (Brisbane), MelBIM (Melbourne), and buildingSMART (Sydney).

In alignment with a nation-wide level of efforts, the National Building Information Modelling Initiative strategy was established in 2012 to promote the adoption of BIM and relevant digital technologies in the Australian built environment sector. Furthermore, there is an increasing number of studies conducted focusing on the adoption and implementation of BIM within the Australian construction industry such as NATSPEC National BIM Guide, National Guidelines for Digital Modelling and Collaborative Design Education using BIM (CODEBIM). As a result, the current proficiency in the usage of 3D BIM capability in Australia is no less than other continents such as North America, Europe, and Asia (Jung and Lee, 2015).

However, the advanced BIM usages, which are 4D and 5D BIM capabilities, are still remained low compared to other continents such as North America and Europe as shown in Table 3 (Jung and Lee, 2015).

Table 3. Advanced BIM Usage Comparison

| Continent | North America | Europe | Asia | Australia |
|--------------------|---------------|--------|-------|-----------|
| 3D Modelling | 81.8% | 60.7% | 67.6% | 88.9% |
| 4D Scheduling | 54.4% | 57.1% | 18.9% | 33.3% |
| 5D Cost Estimation | 95.5% | 92.9% | 56.8% | 66.7% |

There are commonly identified barriers in further BIM adoption within the construction industry as shown in Table 4

(Park and Kim; 2014; Eadie et al., 2013; Kim and Park, 2016), and inevitable barriers to adopt new technology and processes such as cultural resistance and learning curve have been well identified (Joo and Lee, 2006; Chai and Chai, 2007; Mohapatra and Dash, 2011).

Table 4. Barriers of BIM Adoption

| Categories | Description |
|----------------------------|---|
| Business and Legal Barrier | <ul style="list-style-type: none"> · Ambiguity in data ownership and legal risks · Lack of clarity on roles and responsibilities · Lack of clients/market demands · High investment cost and low incentives · Return on Investment |
| Technical Barrier | <ul style="list-style-type: none"> · Lack of standards · Interoperability · BIM Library/Dataset |
| Organizational Barrier | <ul style="list-style-type: none"> · Lack of initiative and training · Resistance to changing current practices · Lack of knowledge/data library |

There have been a few studies about BIM in the Australian construction industry, and yet specific barriers related to the Australian construction industry context have been limitedly researched. According to Smith (2014), it is identified that insufficient amount of investment has been made to adopt 4D and 5D BIM (Smith, 2014; Olantunji et al., 2010). Overall BIM adoption in 4D and 5D capabilities within the Australian construction industry is limited, and Aibinu and Venkatsh (2012) emphasized that insufficient ICT developments and supports

associated with Australian Quantity Surveying (QS), which is directly related to 4D and 5D BIM practices have been made to accommodate QS professionals' dynamic demands and automated quantities measurement trends.

Although, there have been a few attempts to integrate the advanced BIM capability within large construction companies in Australia, the 4D and 5D BIM adoption and implementation are still rare. Aibinu and Venkatsh (2012) attempted to explain the root causes of slow adoption in advanced BIM capabilities, but this research is limited to provide a general issue in the perception of construction industry regarding BIM. Alabdulqader et al. (2013) identified barriers of general BIM adoption: a) resistance to change; b) lack of interoperability; and c) upfront cost, and yet it fails to provide specific grasp regarding the slow adoption of 4D and 5D in the Australia construction industry context.

Thus, this research aims to investigate the readiness of BIM adoption focusing on specific 4D and 5D BIM aspects, and to provide a clear understanding of current challenges in adopting the advanced BIM capabilities in the Australian construction industry. This research is expected to provide practical insights for organisations to utilize BIM further and serve as a stepping stone to move forward to the advanced BIM-enabled construction industry in Australia.

METHODOLOGY

This research consists of semi-structured interviews with a web-based questionnaire survey. Since this research is specifically confined to the Australian construction sector to understand to obtain specific viewpoints and in-depth insights regarding 'what is the current status of BIM adoption' and 'how

can advanced BIM capabilities be adopted' in the Australian construction industry in real life context, questionnaire survey for quantified outcomes in conjunction with interviews for in-depth contextual insights are essentially adopted as a mixed method approach (Creswell et al., 2004). The questions adopted a 5 point Likert scale since it is the most popular method among researchers and easy to communicate with respondents (Knight and Ruddock, 2008; Chimi and Russell, 2009).

In order to obtain valid and relevant research findings, 68 prequalified construction professionals, who are actively involved in a BIM-enabled construction project and employed in a nationwide construction company such as Rider Levitt Bucknall and Mitchell Brandtman, are selected via construction professional organizations such as Royal Institution of Chartered Surveyors (RICS), Australian Institute of Building (AIB), and Australian Institute of Quantity Surveyors (AIQS).

The web-based questionnaire was comprised of 15 questions designed to explore the following three key aspects; a) awareness and current status of BIM, b) perceived advantages and barriers to BIM adoption, and c) current readiness for 4D and 5D BIM capabilities adoption. A pilot questionnaire survey was conducted prior to the main questionnaire survey to eliminate misleading questions, ambiguity and any difficulty in responding (Polit et al., 2001). After the completion of questionnaire surveys, follow-up semi-structured interviews were conducted.

RESULTS AND DISCUSSION

Total 68 prequalified professionals were contacted and the response rate was 38% (26 out of 68). As shown in Table 5, the profile of respondents indicates a wide range of roles. The average experience of using BIM for their practice is 4 years, and 19% of

respondents (5 respondents) indicate that they have more than 6 years of experience with BIM.

Table 5. Profile of Respondents (Total 26 Respondents)

| Role | Number of Respondents | Percentage (%) |
|------------------------------|-----------------------|----------------|
| Quantity Surveyor | 10 | 38 |
| Project Manager | 6 | 23 |
| Construction Manager | 6 | 23 |
| Building Estimator | 3 | 12 |
| Business Development Manager | 1 | 4 |
| Total | 26 | 100 |

Awareness and Current Status of BIM

39% of respondents (10 respondents on Level 4 and 5) indicate that BIM is highly recognized in their organization in terms of benefits of 4D and 5D BIM capabilities. On the other hand, 35% of respondents (9 respondents on Level 1 and 2) indicate that BIM has been rarely or even unrecognized in their organizations as shown in Table 6, which reflects the low BIM adoption in the Australian construction industry.

Table 6. Level of BIM Awareness in Organization

| BIM Awareness | Lv1 | Lv2 | Lv3 | Lv4 | Lv5 | Total |
|-----------------------|-----|-----|-----|-----|-----|-------|
| Number of Respondents | 3 | 6 | 7 | 9 | 1 | 26 |
| Percentages (%) | 12 | 23 | 27 | 35 | 4 | 100 |

Note: Lv1= Unaware, Lv5= Highly Aware

Those who indicate as Level 3, which is neutral, provide supplementary comments that they are aware of BIM benefits, and yet they have not implemented or planned to adopt BIM in their practice. In addition, respondents commented that there should be a person serving as a BIM adoption champion in order to increase awareness and uptake of BIM within an organization, and lead an organization to embrace BIM practices.

Follow-up questions are asked to identify what kinds of capabilities of BIM are mainly utilized for their projects in their organisations by allowing multiple choices. As shown in Table 7, the responses are evenly distributed across various capabilities. Clash detection, Concept Design Planning, and Cost Estimating functions have received relatively high recognition among respondents' organisations.

Based on this finding, it can be considered that currently BIM is utilized more frequently for the early design phase and constructability check compared to project planning and controlling such as project scheduling and cost control. Six respondents who indicated 'Not Applicable' commonly commented that BIM is mainly used for a visual-aid purpose, and clients do not require further BIM implementation in a project. Furthermore, since respondents utilize customized in-house 2D measuring tools and scheduling tools such as MS Project and Primavera, they mentioned BIM is not applicable for them.

Table 7. Primary Capabilities of BIM

| Capabilities of BIM | Numbers of Respondents | Percentages (%) |
|-------------------------|------------------------|-----------------|
| Clash Detection | 10 | 40 |
| Concept Design Planning | 9 | 36 |
| Cost Estimating | 6 | 24 |
| Not Applicable | 6 | 24 |
| Project Management | 6 | 24 |
| Cost Planning | 5 | 20 |
| Cost Control | 4 | 16 |
| Project Scheduling | 1 | 12 |

However, they clearly emphasized that they are fully aware of BIM usage due to the engagement with other project participants such as architect and engineers, but information for quantity measurement and scheduling has provided a format that is compatible with their in-house tools, which is mainly 2D based drawings and specifications. Thus, it can be extrapolated that the current BIM usage in the Australian construction industry is a mixture of 2D drawings and 3D BIM.

Advantages and Barriers of Advanced BIM Adoption

Respondents are asked to indicate their opinions regarding the advantages and barriers of BIM adoption in order of priorities. As identified through literature review, the full capabilities of BIM have not been explored and utilized, and it is proven the first priority use of BIM focuses on 'Better Visualization' as shown in Table 8.

Table 8. Advantages of BIM Adoption

| Advantages | Numbers of Respondents |
|---|------------------------|
| Better Visualization | 24 |
| Improved Design Coordination (Clash Detection) | 20 |
| Whole Life Asset Management | 15 |
| Reduced Project Costs and Duration | 10 |
| Enhanced Team Collaboration | 7 |

The advantages of advanced BIM capabilities adoption such as ‘Whole Life Asset Management’ and ‘Reduced Time and Costs’ are ranked in the lower priorities. The findings reflect the research findings (See Table 3) that the Australian construction industry is relatively slow in adoption of advanced BIM capabilities such as cost estimation and project scheduling.

Table 9. Barriers of BIM Adoption

| Barriers | Numbers of Respondents |
|---|------------------------|
| High Setup Costs | 20 |
| Lack of Client Demand | 20 |
| Resistance/Reluctance to Adopt New Technology | 18 |
| Extra Efforts for BIM Model Development | 17 |
| Incompatibility with Standard Methods of Measurement | 12 |
| Lack of Quality Datasets | 9 |
| Lack of Government Intervention | 7 |

92% of respondents (24 respondents) are aware of the 3D visualization capability of BIM and better coordination through clash detection, which is mainly related to 3D visualization capability of BIM. After addressing fundamental advantages of BIM inherited from 3D parametric modelling nature, respondents mentioned that they have limited experience in 4D and 5D BIM capabilities.

Respondents addressed barriers such as the high upfront cost for establishing BIM systems and a lack of demand or interest from clients, which impede the active implementation or investment in BIM system. It is important to note that there are no huge numerical differences among the identified barriers from rank 1 to 4. From this finding, it can be extrapolated that the current low BIM adoption or limited exploration of advanced BIM capabilities in the Australian construction industry is not caused by only one single reason such as high upfront cost, but it is caused by complex reasons which are a combination of various barriers including a lack of demands and reluctance of team members in an organisation.

Thus, it is important to consider mutual efforts to adopt and explore advanced BIM capabilities in both sides – clients and construction professionals. More interestingly, through the interviews, it is commonly pointed that construction professionals face challenges since there is no common cost database to measure the bill of quantity, which is addressed as Rank 5 and 6 in the questionnaire survey. In particular, QS professionals have to build up their own cost databases and the database is not interoperable across the supply chain as other project stakeholders including contractors, sub-contractors, and manufacturers using their own cost estimation software. There were other concern and comments on the transition between the 2D based practice and the 3D BIM based system. Currently, the

Australian construction industry uses the mix of 2D and 3D based system. Interviewees share the common experiences that they encountered when they implemented 5D BIM in QS practices, which is a poor quality BIM model with inaccurate cost information. According to interviewees, it took a longer time to spot BIM objects with inaccurate information and rectifies it for quantity take-off in a BIM system compare to using 2D based drawing in the first place. All of the interviewees emphasized the importance of quality BIM models and BIM objects with accurate information.

Furthermore, government intervention or policy based push is required as similar to other countries such as the UK, US, and South Korea to increase the uptake of BIM usage and appreciate the full capabilities of BIM. The responses from interviewees exactly echo with the findings from the literature review that there is a lack of government-led effort on mandating BIM for public construction projects, even though interviewees commonly mentioned that the BIM uptake will be possibly increased by either clients' demands or government's intervention.

Current Readiness for Advanced BIM Adoption

As shown in Figure 1, respondents are asked to indicate the level of BIM adoption in their organizations, and most of them indicate that they are at the intermediate level to utilize 3D BIM capability.

In contrast with 3D BIM capability, most of the respondents indicate that the adoption of 4D and 5D BIM capabilities has remained at a basic level. Based on this finding, the Australian construction industry is not fully ready to embrace the advanced 4D and 5D BIM capability, although there is an indication that an effort has been made at a minimum level as 4 respondents addressed that their organization is in the intermediate level of

4D and 5D BIM capability.

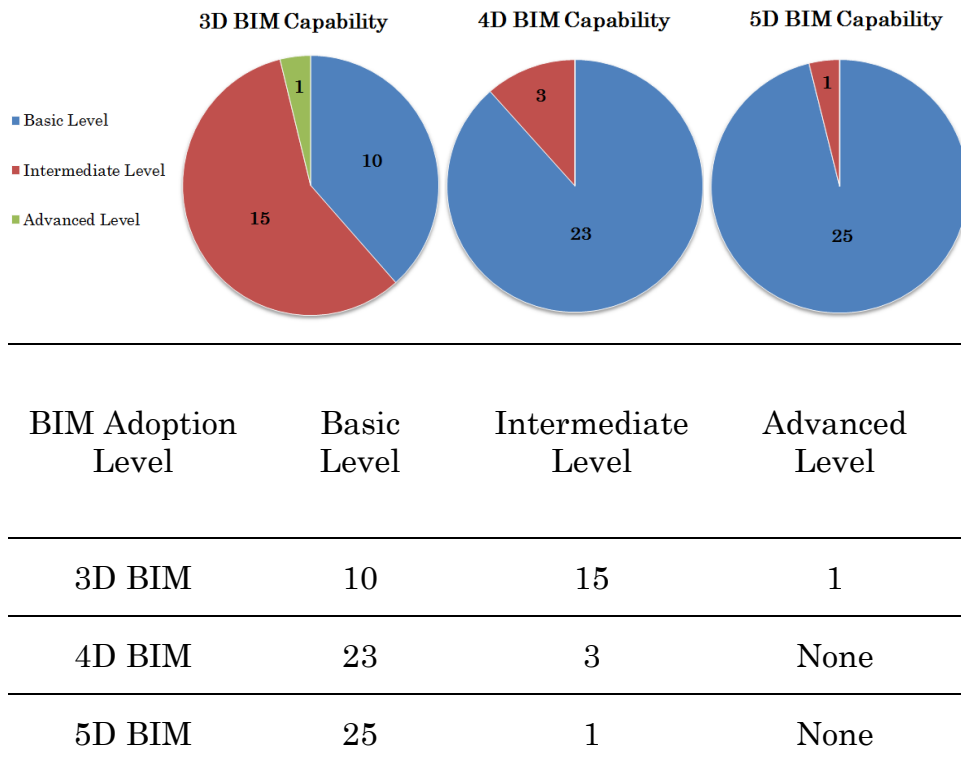


Figure 1. Level of BIM Adoption (Number of respondents)

However, it needs to be noticed that the 4D and 5D BIM capabilities are not actually practiced in respondents' organization. The respondents commonly mentioned that they hire cost and scheduling consulting firms or consultants to utilize 4D and 5D BIM capabilities on behalf of the employer company, and arguably the interviewees mentioned the practice is a norm

in the industry. The interviewees are quantity surveyors, construction manager, and cost estimator with average six years of experience in 4D and 5D BIM in Australia. Interviewees commonly addressed that a lack of demand from clients constricts the construction industry to adopt and explore BIM more actively. An interviewee commented that the most of the clients are satisfied with 3D visualization of buildings. In addition, there were arguments that contractors and sub-contractors are also not pleased to utilize BIM over 2D based system, and they are reluctant to change their practices in accordance with the BIM system without any proper compensations or incentives. It can be considered that BIM needs to be adopted and practiced across the supply chain for a full experience of BIM capabilities. For increasing uptake of BIM, one interviewee stated that mutual efforts or agreements must be made between clients and construction professionals before a project starts because clients do not want additional financial expenses and construction professionals want to be compensated reading additional time and efforts to utilize BIM, which is very unlikely if there was no agreement from the beginning.

Additional Comments and Reflections

Two interviewees, a construction manager, and a project manager, addressed that the current BIM-enabled processes induce delays on project schedule since the processes between BIM model management and project management are entangled. For this reason, there are redundant efforts to coordinate project works and BIM related works, and consequently, delays on the project schedule occur. During the interview, two interviewees are asked if they are aware of BIM standards such as PAS 1192:2 or NATSPEC National BIM Guide, and yet they failed to confirm acknowledging the BIM guides. Indeed, PAS 1192:2 explicitly

explain the roles and responsibilities of a BIM manager as well as a project manager in a BIM-enabled project environment. Based on this findings, it can be argued that collective efforts to educate the construction industry and provide more relevant and practical knowledge and skills to construction professionals or an organization. Additionally, interviewees are asked to indicate how long they think it will take 4D and 5D BIM is positioned in the centre of QS practices, and the average of the period was 5-10 years. More active government intervention and standardized guidelines such as a standard method for measurement are mentioned as an essential stepping-stone of promoting BIM in the Australian construction industry.

CONCLUSION

Currently, the construction industry around the world focuses on practical and advanced BIM capabilities implementation to improve productivity and enhance sustainability in the built environment. There has been an effort to promote the BIM adoption in the Australian construction industry by releasing proper guidelines for BIM, and yet the Australian construction industry is remained behind in adopting the advanced BIM capabilities compare to other countries such as US and UK. In order to identify current barriers and possible solution to promote BIM uptake in the Australian construction industry, this research conducted a questionnaire survey and interviews focusing on 4D and 5D BIM adoption in the Australian construction industry. Consequently, it is identified that the Australian construction industry is not fully ready to embrace 4D and 5D BIM capabilities since basic 3D BIM capability is the main usage of BIM for construction projects which is demanded by clients at present. As major barriers, a lack of demand from

clients for BIM use and high initial costs for BIM system setup are identified. Based on the findings, it can be understood that there is a vicious cycle presented between clients and the construction industry as clients do not want to use the advanced BIM capabilities, and the construction industry does not want to make an investment. Furthermore, a lack of guidance to construct an information-enriched BIM model is recognized to move forward to the next level of BIM utilization such as 4D and 5D BIM capability.

This research reveals that the current slow adoption of advanced BIM capabilities is not caused by one single reason, but induced by a complicated combination of reasons. In order to resolve current issues and move forward to the digital construction era, it is highly recommended to encourage BIM demands from the clients, support investments for advanced BIM use in the construction industry, and make proper government interventions in the development of standards and BIM datasets. This research is expected to provide a stepping-stone to study further to promoting the uptake of advanced BIM capabilities in the Australian construction industry by providing a fundamental and in-depth appreciation of current BIM readiness of the Australian construction industry.

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The Triptych of Strategic Alliances Performance in Developing Countries

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ABSTRACT

Strategic alliances are seen as a means for favoured access to knowledge in order to acquire or maintain a sustainable competitive advantage. On the literature, strategic alliances have evolved to stress mainly determinants such as the specificity of assets, the complementarities of skills, or risk sharing between partners. However, numerous questions remain unanswered; in particular, the impact of strategic alliances on the performance of each partner remains a central preoccupation. The aim of this article is to address this problem by identifying the determinants of the success of strategic alliances involving nation states and multinationals firms. Based on a data from the World Bank, our results confirm that strategic alliances in developing countries are more performing than other local firms and that this performance is based on three successful factors, the triptych of strategic alliances: technological expertise, financial borrowing capacity, and the level of education of the local managers.

Keywords: *strategic alliances, competitiveness, performance, three keys factors, developing countries*

INTRODUCTION

The proliferation of strategic alliances has been a new business trend of the global economy over the last two decades. Strategic alliances can help firms to acquire knowledge, market share, new capabilities, and other relevant resources (Beamish & Lupton, 2009). Moreover, there is a substantial literature on strategic alliances performance including capacity building, longevity, survival, productivity, stability, and instability. The research on strategic alliances in developing countries has pointed out the frequent intervention of the governments in such countries. Governments mediate the interaction between the MNCs and partners in developing countries. A different trend, until now marginal, now gathers increasing interest in strategic alliances taking root in developing countries (Sovannara and McCullough, 2010; Friedman and Kalmanoff, 1961; Beamish, 1984; Schaan, 1983; Child and Faulkner, 1998). In effect, the hostile business environment in these countries and the difficulties related to utilising resources brings these authors to privilege strategic alliances as the most appropriate means to acquire the skills and resources vital to the company and to postulate that strategic alliances can even serve as macro-economic models. It is increasingly acknowledged that strategic alliances can even constitute essential means of development in a global economy that is more and more integrated. To do this, the performance of strategic alliances must be superior to those of other companies that are locally entrenched. In such an instance, a number of researchers have noted the importance of the triad, knowledge, education, and the financial ability to draw funds as

determinants of this performance (Marcotte, 1999; Lyles, 1994). Consequently, the objective sought throughout this research is, in part, to evaluate the performance of strategic alliances compared to other companies, and as well to further reflect more deeply on the consequences of this performance for improving the economic situation in developing countries.

LITERATURE REVIEW

Background of strategic alliances

Inter-company cooperation agreements cover a large range of contractual obligations such as commercialization, licensing, contracts for exchanging technology (Lowen and Pope, 2008; Contractor and Lorange, 1988). The common subsidiary appears when at least two independent companies share the capital and the control of a distinct legal organizational entity. Our research is centered on the particular case of developing countries. The first large studies pertaining to strategic alliances, and especially on the co-firms established in developing countries, were realized at Columbia University (Friedman and Kalmanoff, 1961; Friedman and Beguin, 1971). Their results were then corroborated by Reynolds (1979) and Tomlinson (1970) but lacked surprise and revelation. At the beginning of the 1980's, the team at the University of Western Ontario, under the stewardship of professor Beamish, evolved the problematic of establishing strategic alliances in developing countries as an autonomous and structured research field (Beamish, 1984; 1985; 1988; Schaan, 1983; Inkpen, 1992; Hébert, 1994). Therefore, the rapid development of strategic alliances in developing countries (via the privatization of public companies) observed by these authors served to complete the movement initiated by multi-national joint ventures described by Dussauge and Garrette (1995). Historically,

these multinational joint ventures that operated in developing countries for many decades followed government legislative constraints rather than purely economic objectives. However, the economic environment of these countries was always anchored by a strong predominance of public companies and other types of organizations such as foreign private companies, private/public partnerships, and local private companies. Nonetheless, in the last decade, the context of globalization has transformed this near quasi-political environment into a vast domain of socio-economic changes favouring the emergence of strategic alliances. We infer the following hypothesis:

Hypothesis 1: In Developing Countries, strategic alliances are more performing than other local firms.

The Determinants of Strategic Alliances Performance

Environmental analysis and endogenous capacity has always occupied a premium place in strategic reflection (Andrews, 1971). However, the concept of internal analysis has seen important developments in recent years (Vaidya, 2009; Barney, 1991). In effect, according to the classic paradigm, the ability of a company to obtain a superior rate of profit compared to its capital cost depends on two factors: the attractiveness of the industry in which it is part and establishing a competitive advantage over its competition (Porter, 1980; 1985). Consequently, the source of the competitive advantage is essentially derived from the positioning of the company within the industry itself. Furthermore, it presupposes that all companies have a relatively free access to the resources. This foundation of competitive advantage presents an inherent empirical weakness (Rumelt, 1991). Actually, the majority of studies do not establish any significant relationships between the characteristics of an industry and the profitability of

individual companies that are part of that industry (Rumelt, Schendel and Teece, 1991; Rumelt, 1991; Hansen and Wernerfelt, 1989). For example, research by Rumelt (1991) shows that the profitability spread between individual companies within the same industry are considerably more important than the profitability spread between different industries. This conclusion leads us to anticipate that the source of the competitive advantage will not only come from the positioning of the company but also from the specific dimensions of the company. As a result, numerous researchers will center their reflection on the resources and the skills of the firm (Wernerfelt, 1984; Barney, 1986). This approach finds its origins in the work done by Penrose (1959). Skills and resources are comprised of three types of tangible and intangible assets associated in a quasi-permanent manner with the company (Barney, 1991): physical resources (technology, finance, buildings, and primary resources), human resources (education, experience, intellectual know-how by personnel) and organizational resources (formal command structure, formal and informal planning systems, control and coordination, informal relations between internal and external company groups). Certain resources assume a particular importance such as know-how, which is a result of the accumulation of knowledge gained through everyday routines (Nelson and Winter, 1982). Consequently, a competency results from a particular combination of resources and organizational processes (Amit and Schoemaker, 1993).

Skills and resources are perfectly detailed and can thus be protected by patents; in addition, they are represented in the assets or exist on plans and in formulas (Miller and Shamsie, 1996). Badaracco (1991) advances four conditions as prerequisites for formal skills and resources: «*First, the knowledge must be clearly articulated and reside in packages. Second, a person or*

group must be capable of opening the package, of understanding and grasping the knowledge. Third, the person or group must have sufficient incentives to do so, and fourth, no barriers must stop them» (p.34). The economic situations in the majority of developing countries are fertile ground for the reality of formal skills and resources. This is precisely the case for contracts dealing with technology transfer used by companies in developing countries to acquire the necessary technology for their industrial production (Oman, 1984). But, as noted by Kiggundu, Jorgensen and Hafsi (1983), when the transfer between industrialized countries and developing countries evolves beyond purely the technology aspect and implicates the environment, success becomes uncertain and problematic. Thus, the transfer of technology in developing countries is confronted with problems of implementation (Munir, 1998). The eventual risk of the appropriation of formal skills and resources is tied to the protection clauses in the legal justice system (Miller and Shamsie, 1996). Depending on the nature of the industry or the geographical location, such legal protection can be more or less enshrined, hence the importance of tacit agreements on skills and resources. We infer the following hypothesis:

Hypothesis 2: Access to technology favours more strategic alliances than other locally established companies.

As noted by Nelson (1987), the skills and resources based on knowledge are more or less transferable. In effect, the enhanced value of assets based on knowledge depends on the ability of companies to continue absorbing new knowledge (Cohen and Levinthal, 1990), to stimulate social interactions necessary for the creation of such knowledge (Kogut and Zander, 1992), and to select, conserve, and reactivate the knowledge of the organization

(Garud and Nayyar, 1994). In order to maintain and develop these different abilities, companies must be able to access skill and gifted human resources, and in sufficient quantities. Starting with this premise, we can infer that the ability to maintain and develop these skills is a function of the general context in which companies evolve; in other words, the companies of developing countries are considerably less able to maintain and especially to develop these skills (Austin, 1990; Kiggundu, 1989). Access to tacit skills is therefore contingent on the degree of development in countries.

The approach to skills and resources must therefore be adapted to the context of developing countries in which they rarely have access to sufficient human resources, nor to adequate physical, financial, and organizational resources (Delalande, 1989). For example, Gauthier et al. (1995), and Saadi (1999) showed that numerous companies in developing countries, especially the smaller ones, are excluded from the banking financial system. In this case, strategic alliances represent an effective means for company directors to reinforce their financial borrowing ability.

Consequently, strategic skills become particularly difficult to create. As seen in numerous works (Austin, 1990; Delalande, 1989; Bourgoin, 1984), the strategic value of resources, in such a context, is a function of the economic, social, and cultural conditions. We infer the following hypotheses:

Hypothesis 3: Access to technology favours more readily strategic alliances than other locally established companies. The level of education of the local director more often favours strategic alliances rather than other locally established companies.

Hypothesis 4: The financial ability to borrow more often favours strategic alliances over other organizational forms.

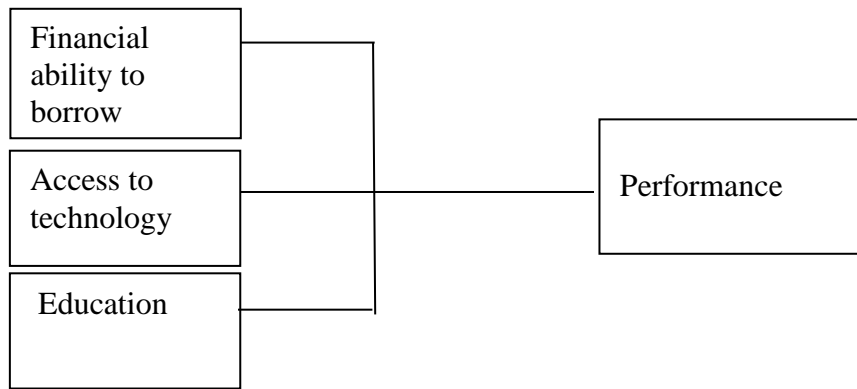


Figure 1: Research Model

The research framework describes the relationship between skills and resources and the performance of companies. It shows that access to critical skills and resources (ability to borrow, technological know-how, and education) determine the performance of all companies established locally, particularly favouring strategic alliances.

METHODOLOGY

Survey and Sample description

The Regional Program on Enterprise Development (RPED), initiated by the World Bank (And the Canadian International

Development Agency), is designed to take stock of the overall condition on the dynamics of the manufacturing sector in a number of African countries. As such, it encompasses many universities (HEC Montreal, Oxford, and Amsterdam University) along with many African countries (Cameroun, Ghana, Ivory-Coast, Kenya, Burundi, Zambia, and Zimbabwe). The database used relates to Cameroonian companies. The RPED collected data by means of panels over a three-year period (1993-1995). It comprises a sample size of 611 companies. A questionnaire was administered directly to local managers by a team of researchers and nine (9) subject matters were discussed: the creation of companies, companies in general, technology, marketplaces, financial markets, resolving conflicts, infrastructure, regulations, and services that assist companies.

Description of the variables

Variable operational procedures are based on a precise knowledge and definition of each variable. We have identified in the database the most pertinent indicators susceptible to accurately measure the given variable. In certain cases, we introduced binary variables. As for dependent variables, we retained the evolution of the survey over three years (1993-1995), the dollar value of sales, and the number of jobs (Gauthier et al., 1995). As for the explicative variables, we identified the different types of companies as per the three dimensions outlined in our conceptual framework; namely, environmental, resource, and local leadership. Regarding the different types of companies, we retained as a category variable the capital structure that we transformed into five diatomic variables according to the type of shareholder (local, public, and foreign or mixed).

Table 1. Description of the variables

| Variables | Descriptions |
|---|---|
| Dependant variables | |
| <i>Value of sales (SALES):</i> | Progression over 3 years 1993/1995. LOG |
| <i>Value for employment (EMPLO)</i> | Progression of employment over 3 years 1993/1995. LOG |
| Independent variables | |
| <i>Strategic Alliances (STRAAL)</i> | Comprises companies controlled by local and foreign shareholders. |
| <i>Local private companies (PRIVEN)</i> | Comprises companies controlled by local shareholders. |
| <i>Public companies (PUBEN):</i> | Comprises companies controlled by public shareholders. |
| <i>Public/Private Companies (PAPEN)</i> | Comprises companies controlled by public and local shareholders. |
| <i>Foreign private companies (PRIVFEN)</i> | Comprises companies controlled by private foreign shareholders. |
| <i>Access to financial resources (ACFRE)</i> | Ability to borrow from banking system: 1- Yes; 2-No. |
| <i>Access to technological know-how (ACTEK)</i> | Contract for technical assistance: 1- Yes; 2-No. |
| <i>Level of education (LEVDU)</i> | Level of education of the local director: 1- secondary or less; 2-higher education. |

Hence, the private local companies (PRIVEN) are characterized by the presence of only local shareholders, public companies (PUBEN) are comprised only of public shareholders,

and partnerships between public and private local companies (PAPEN) are identified by the presence of local enterprise and public shareholders. Foreign private companies (PRIVFEN) are controlled by foreign private shareholders. However, strategic alliances (STRAAL) are characterized by both local and foreign shareholders. Regarding resources, skills, and access to financial capital, we retained the ability to borrow from the banking system (ACFRE). Finally, upon examining technological know-how, we retained both the technical assistance contracts and no assistance at all (ACTEK). We also retained the level of education of the local director (LEVDU). See the Table 1 is below:

Data Analyses

We have conducted comparisons of means and standard deviation between the different variables in order to identify the existence of certain extreme values susceptible of influencing the results of our analysis (Anderson, 1982). At this stage, the objective is to identify and suppress, when needed, these extreme values so as not to alter the nature and pertinence of the statistical results. In our analysis, the comparisons of the means and the standard deviation do not include very strong extreme values of a nature that would affect the credibility of our results on the selected values (See Table 2). After the descriptive analysis that shows the pertinence of the variables retained, we then proceeded to the multiple linear regression analysis to estimate the impact of the explicative variables on the dependent variables.

Multiple Linear Regression Analysis

In this section we will present the results of the multiple linear regression analysis of the two dependent variables. The method for estimating ordinary least squares was judged to be more appropriate for our analyses.

Table 2. Means, standard deviation and correlations (N: 611)

| | Vari- able | Mean s | S. devi ation | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|-----------------|-----------|---------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1 | SAL ES | 18.6 4 | 2.54 | 1 | .765 ** | .345 ** | .997 ** | .556 ** | .875 ** | .442 ** | .874 ** | .532 ** | .855 ** |
| 2 | EM PLO | 3.17 | 1.54 | .345 ** | 1 | .227 ** | .861 ** | .667 ** | .543 ** | .912 ** | .533 ** | .124 ** | .991 ** |
| 3 | STR AAL | 0.19 | 0.39 | .234 ** | .654 ** | 1 | .429 ** | .334 ** | .455 ** | .459 ** | .245 ** | .843 ** | .346 ** |
| 4 | PRI EN | 0.58 | 0.49 | .139 ** | .432 ** | .556 ** | 1 | .865 ** | .637 ** | .348 ** | .744 ** | .243 ** | .451 ** |
| 5 | PAP EN | 0.01 | 0.12 | .490 ** | .321 ** | .554 ** | .419 ** | 1 | .587 ** | .563 ** | .428 ** | .567 ** | .951 ** |
| 6 | PRI VFE N | 0.00 | 0.09 | .125 ** | .223 ** | .342 ** | .228 ** | .443 ** | 1 | .298 ** | .543 ** | .857 ** | .342 ** |
| 7 | PUP EN | 0.09 | 0.29 | .092 ** | .454 ** | .789 ** | .337 ** | .552 ** | .511 ** | 1 | .567 ** | .357 ** | .641 ** |
| 8 | ACF RE | 0.43 | 0.49 | .229 ** | .675 ** | .336 ** | .118 ** | .778 ** | .336 ** | .519 ** | 1 | .354 ** | .833 ** |
| 9 | ACT EK | 0.14 | 0.34 | .564 ** | .553 ** | .557 ** | .129 ** | .453 ** | .216 ** | .248 ** | .873 ** | 1 | .688 ** |
| 10 | LEV DU | 0.29 | 0.45 | .342 ** | .876 ** | .448 ** | .225 ** | .432 ** | .649 ** | .866 ** | .724 ** | .661 ** | 1 |

**P<0.01

To verify the heteroscedasticity and the residual normality, we calculated the Durbin-Watson statistic in order to detect an eventual auto-correlation of estimated residual (Dodge, 1993). Its value is normally between 0 and 4. If the value is close to 2, this generally indicates that the residuals are not auto-correlated and, consequently, the variance of the estimated parameters is minimal. To verify the absence of multicollinearity, we calculated

the inflation factor of the variance that allows us to detect the existence of collinearity between explicative variables. As a general rule, if the inflation factor of the variance (IFV) of an explicative variable is higher than 10, there is multicollinearity between the variable under study and the others.

Analysis and Design Models

Considering that our base model depends on two dependent variables, it is imperative to present our analyses by following these two sub-models (sale value and employment value).

The first sub-model: Sales Value

For all models, we obtained a Durbin-Watson (DW) statistic of 1.830 and an IFV of approximately 1, which in turn indicates that we do not have heteroscedasticity or multicollinearity. As previously mentioned, we have conducted a partial regression of each explicative variable: models (1), (2), (3) and (4). These different models are exploratory in nature and allowed us to emphasize the most interactive model. It turns out that this model is the one which comprises all the variables (see Table 3).

The β coefficients are, respectively, 2,864, -0.480, 2010 and 2098, for the variables STRAAL, PRIVEN, PAPEN, and PRIVFEN. These coefficients mean that the different types of companies contribute more to the value of sales than the reference companies (public). Moreover, β coefficients are 1.469 for the variable ACFRE, 0.652 for the variable ACTEK and 0.574 for the variable LEVDU. These results show that these variables contribute favourably to the value of sales. Comparatively speaking, the model indicates that the performance of the companies can be classified in decreasing order as follows: 1-STRAAL, 2-PRIVEN, 3-PAPEN, 4-PRIVFEN.

Table 3: Results of linear regression: Sales Value

| Items | (1) | (2) | (3) | (4) |
|-------------------------|---------------------|---------------------|---------------------|--------------------|
| (Constant) | 18.005 (0.280)** | 17.961 (0.278)** | 15.875 (0.617)** | 17.917 (0.276) |
| ** | | | | |
| STRAAL | 3.048 (0.344)** | 2.932 (0.345)** | 4.970 (0.645)* | 2.864 (0.341) |
| ** | | | | |
| PRIVEN | -0.539 (0.306) | -0.564 (0.304) | 1.640 (0.630)* | -0.480 (0.301) |
| PAPEN | 2.922 (0.729)** | 2.708 (0.728)** | 2.052 (0.872)** | 2.010 (0.716) |
| ** | | | | |
| PRIVFEN | 2.321 (0.402)** | 2.240 (0.400)** | 4.101 (0.683)** | 2.098 (0.398) |
| ** | | | | |
| ACFRE | | 1.897 (0.178)** | 1.765 (0.173)** | 1.469 (0.180) |
| ** | | | | |
| ACTEK | | | 1.399 (0.286)** | 0.652 (0.252) |
| * | | | | |
| LEVDU | | | | 0.574 (0.195)** |
| R ² adjusted | 0.372 | 0.380 | 0.450 | 0.394 |
| N. | 474 | 474 | 375 | 474 |

Constant: public companies

* P < .05, ** P < .01

We can conclude that the value of sales are more performing for strategic alliances than for other types of companies. This result is similar to that of Krishnan (2002) who shows that strategic alliances improve the marketing and communication abilities of partnerships. However, Gauthier et al. (1995), while confirming the results, highlight that the strategic alliances in Cameroon are generally comprised of large companies whose sales volume largely surpass those that smaller companies could hope to realize.

The second sub-model: Employment numbers

For this linear regression, we obtain a Durbin-Watson statistic (DW) of 1.980 and an FIV factor of approximately 1, which confirms that we have neither heteroscedasticity, nor multicollinearity. As previously mentioned, we conducted a partial regression on each of the explicative variables; namely, models M1, M2, M3 and M4. These different exploratory models allowed us to uncover the most interactive model (See Table 4).

The analysis of the contributions of the variables deemed significant to job creation is based on the β coefficients. Thus, the β coefficients are respectively 1.321, 1.159 and 0.894 for STRAAL, PRIVEN and PAPEN. These coefficients indicate that these types of companies contribute more to job creation than the referenced public companies. Nonetheless, the β coefficients are, respectively, 0.609, 0.152, and 0.314 for the variables ACFRE, ACTEK, and LEVDU, which indicate that their contributions to employment are positive. Overall, the model shows us that the performance of companies can be classified in decreasing order as follows: 1-STRAAL, 2-PRIVEN, 3-PRIVFEN, and 4-PAPEN. This shows that upon examining the employment numbers, strategic alliances are more performing than other types of companies.

Table 4: Results of linear regression: Employment numbers

| Items | (1) | (2) | (3) | (4) |
|-------------------------|---------------------|---------------------|--------------------|-------------------|
| (Constant) | 3.110 (0.167)** | 3.065 (0.165)** | 3.269 (0.350)** | 2.956 (0.161) |
| ** | | | | |
| STRAAL | 1.432 (0.210)** | 1.348 (0.208)** | 1.094 (0.368)** | 1.321 (0.201) |
| ** | | | | |
| PRIVEN | -0.604 (0.183)** | -0.626 (0.181)** | -0.818 (0.357)* | -0.475 (0.176) |
| ** | | | | |
| PAPEN | 1.604 (0.460)** | 1.428 (0.456)** | 1.245 (0.532)** | 1.159 (0.440) |
| ** | | | | |
| PRIVFEN | 10.024 (0.250)** | 0.958 (0.247)** | 0.529 (0.394) | 0.894 (0.239) |
| ** | | | | |
| ACFRE | | 1.003 (0.112)** | 0.993 (0.109)** | 0.609 (0.117) |
| ** | | | | |
| ACTEK | | | 0.835 (0.175)** | 0.152 (0.165)* |
| LEVDU | | | | 0.314 (0.125)* |
| R ² adjusted | 0.312 | 0.331 | 0.409 | 0.372 |
| N | 512 | 512 | 404 | 512 |

Constant: public companies

* P < .05, ** P < .01

These results are confirmed by a number of research studies done in an African context by Gauthier et al. (1995), Delalande (1989), Sleuwaegen and Goedhuys (2002) and Kessy (2000). The study by Kessy shows how, in the context of the Ivory-Coast, partnerships well grounded in cultural relationships can favour solid economic performances and also create employment. Our results show that strategic alliances (STRAAL) are more performing in creating employment and generating sales than other companies. Besides, these results indicate that this performance is based on the technological know-how, the level of education of local company directors, and the financial borrowing ability. We shall now analyse the range or reach of these results.

DISCUSSION

Is the performance of strategic alliances superior to that of other types of companies established locally?

Statistical results show that strategic alliances are generally more performing than other companies established locally. Such a result is important since it answers a multitude of hypotheses postulated by previous researchers (Sovannara and McCullough, 2010; Friedman and Kalmanoff, 1961; Friedman and Béguin, 1971; Beamish, 1984; 1988; Schaan, 1983; Hébert and Beamish, 1997). In fact, since the beginning of the 1980's, strategic alliances have been considered as the organizational form most appropriate to compete in the globalization of markets that inherently create numerous economic (Kogut, 1988), strategic (Dunning, 1979) and organizational (Hamel, 1991; Jarillo, 1988) difficulties for companies. Strategic alliances are thus seen as a preferred means by which companies, while conserving their key skills, ally themselves with other partners to acquire certain skills they are missing. However, this strategic vision is not

universally shared. For example, authors such as Porter (1990; 1991) and Reich (1986) warn companies against the potential dangers, deceit, and damages of an alliance. These authors believe that it is nothing but a «Trojan Horse» used by certain companies to unscrupulously and deceptively gain the skills of their new partner. On this point, Hamel (1991) suggests that, from now on, an essential factor for a successful strategic alliance requires the implementation of contractual terms and conditions that allow the sharing of knowledge between partners while withholding from transfer select private in-house information. According to him, this is one of the reasons why the Japanese rapidly learn from their occidental partners whose know-how is easy to imitate, while the latter have difficulty learning from their Japanese partners because of the cultural complexities and practices in Japan. This risk allows Porter (1991) to state that strategic alliances are but transitory manoeuvres and unstable partnerships that are inevitably destined to fail. However, despite this reticence, the research generally shows that the results substantially favour this type of organizational form and that it is best suited to face the multiple challenges faced by developing companies (Beamish and Killing, 1997).

Nevertheless, if strategic alliances seem to be the organizational type best suited to face the challenges by companies in the industrialized world, how do such organizations fare with companies in developing countries? On this point, most authors that are interested believe strategic alliances can help developing world countries reduce the spread in development that separates them from industrialized countries by improving notably the performance of other companies locally established (Friedman and Kalmanoff, 1961; Beamish, 1984 and 1988; Hébert and Beamish, 1997; Gherzouli, 1997). It is by acquiring skills through these strategic alliances that improves the business

environment, the resources, and the leadership of local companies. From this perspective, Chrysostome (2000) showed that alliances can improve the transfer of skills between companies in developing and industrialized countries. However, he indicates that this transfer is often difficult because of cultural differences and difficulties in communication over distances. Recently, Krishnan et al., (2002) measured the contribution of strategic alliances to local businesses in an Indian context. Their results show that alliances do not bring a satisfactory contribution to local businesses if they are centered on research and development or technological innovation. On the other hand, those that concentrate on advertising and promoting products are beneficial for local companies since the latter can increase their sales and profits. Furthermore, the authors emphasize that cultural distance between partners have a negative impact on performance overall. These examples complete and reinforce those that we have obtained by demonstrating that the contribution of alliances can take several forms. It is now time to return to the determinants of their performance.

Which Determinants of Strategic Alliances Performance?

Differing from the industry based approach by Porter (1980), the resource approach proposes to rely on the skills and resources of the company to produce a durable competitive advantage (Vaidya, 2009; Wernerfelt, 1984; Barney, 1986). It suggests implicitly that the source of the competitive advantage no longer lies solely with the positioning of the company but also within the company itself through the distinct skills and resources. Many authors have tried to render it operational. For example, Miller and Shamsie (1996) first proposed to make a distinction between the resources based on property-based rights and those on knowledge-based rights. They showed, by studying the case of

film studios in Hollywood, that resources based on property rights were more performing when they were linked to a stable environment; on the other hand, resources based on knowledge rights were more profitable and adaptable when they are linked to turbulent and uncertain environment. These results tend to support ours and show that each resource can only be effective in an appropriate environment.

The first hypothesis postulates that in the presence of technological know-how, the performance of alliances is better than those of other enterprises. It is validated according the value of sales and number of jobs, as confirmed by our statistical results. In effect, the first type of empirical study encountered in literature review concerns technological knowledge that is based entirely on the transfer mechanism or technique (OECD, 1998; CNUCED, 1995). This concept of technological transfer that overlooks the know-how has been contested. Marcotte (1999) shows that the most important elements involved in the process of technological transfer are based on the cognitive experience acquired by local partners during their apprenticeship. As our statistical results show, it seems necessary to integrate in the process of technology transfer not only the technology itself but also specifically the management and the organizational abilities to accompany it thus making both an integral part of this technology (Hafsi, 1990; Kiggundu, Jorgensen and Hafsi, 1983). In any case, we can imagine that in the turbulent and complex environment that is found in developing countries, the transfer of resources based on technological know-how as it happens seems to be better suited than resources based on property rights such as patents, exploitation licences, and equipment.

The hypothesis that postulates that the ability to borrow from the banking system is more profitable for strategic alliances than for other companies is also validated statistically according to the

value of sales and number of jobs. Literature confirms the importance of strategic alliances in the mobilisation of financial resources. The majority of studies on the performance of alliances in developing countries emphasize the primordial role of the foreign partner in strengthening the financial abilities of the alliance (Gherzouli, 199; Saadi, 1999). These studies have revealed that the objective sought by the local partner, through cooperation, is much more linked to the need in strengthening his financial abilities rather than pursuing strategic development objectives. As for the rest, our research arrives at the same conclusions. It shows that local partners seek first and foremost financial partners who are capable of supporting their activities or international development.

The hypothesis that local directors with higher education favours to a greater extent strategic alliances rather than local establishments is also validated by our results. Literature on the role of academic education for managers regarding the performance of companies again supports our research. For example, Kimberly and Evanisko (1981) had established in the context of industrialized countries that formal education by the manager was associated with his innovative spirit. Their results stipulate that a higher level of education by the manager is positively related to his ability for innovation. Besides, Hambrick and Mason (1984) suggest that managers who have a lower level of education have more difficulty in mastering the environmental complexities than managers with a higher level of education. In other words, their results seem to suggest that a manager with a higher academic education is more suited to handling the actual environmental complexities in organizations. This series of results that highlights the link between the education of managers and the performance of companies joins and corroborates the results obtained by Estrin and Wright (1999) in

certain countries undergoing transition in Eastern Europe. This also includes the elements clearly shown in the work of Bourgoin (1984), Kessy (2000) and Mutabazi (2000) with strategic alliances implicating African companies. However, it is important to mention that regarding the work realized in most established alliances in developing countries, the impact by local managers trained on performance issues is often tied to the size of the resistance to change expressed by less trained managers whose numerous privileges are threatened by movements created because of the proliferation of strategic alliances (Estrin and Wright, 1999; Kessy, 2000). However, if these resistances to change are removed, the higher education of local managers mostly profits strategic alliances instead of local establishments because of a certain «cultural proximity». In fact, as shown by our research, the higher occidental type education of the local manager brings him closer «culturally» to the foreign manager and this represents a decisive advantage in the performance of strategic alliances.

CONCLUSION

Research on strategic alliances centered on governments of developing countries and foreign firms saw unprecedented development in the 1970s and 1980s (Friedman and Béguin, 1971). Certain researchers initially structured their work on the problematic of economic development. The question, therefore, was whether the success of *strategic alliances* would guaranty developing countries their own economic expansion (UNCTC, 1988). In the 1990s, the research was essentially structured around strategic alliances as a new type of organization (Gugler, 1992). According to Hafsi and Foucher (1996), «the opening of markets coupled with globalization brought to the forefront more

complex behaviours». Seen from a strategic viewpoint, this evolution allowed us to understand the importance of changing our existing strategic approach based on a product/market rapport towards a strategy based on mastering skills and resources. This meant that the entire framework and implementation of strategic alliances would be re-examined under this new approach. Our research shows that strategic alliances result in superior performance over other locally established companies. It also shows that companies participating in strategic alliances profit more than other local types of companies in technology know-how, higher education for local directors, and the ability to borrow from financial markets.

However, researchers such as Kiggundu, Jorgensen and Hafsi (1983), and Kiggundi (1989) believe that when the transfer of skills between companies from industrialized and developing countries involve a relationship between the organization and its environment, western theories are ill suited. It seems that the role played by socio-cultural and ethical parameters in the performance of companies reinforces the complexity of the environment of developing countries. The performance of strategic alliances is dependent on taking into account these parameters. Regarding the methodology, the limitations are related to the quantitative data used in the study. Insofar as these are concerned, the decision that we made to determine strict criteria for the composition of our sub-group of strategic alliances may represent a limitation. Even at the literature level on strategic alliances, the opinions expressed by different authors are not unanimous on the best way to define a strategic alliance. However, the selection criteria that we retained are in agreement with those generally suggested by the most prominent researchers in the field of strategic alliances.

The performance criteria retained may represent another

limitation; we made our selections as a function of the local context, as well as quantitative data. This is why we essentially retained the quantitative criteria to measure performance. Furthermore, to conduct quantitative analyses similar to those we realized, it would have been necessary to arrange for a large quantity of companies in many activity sectors and over a number of years, which would have contributed in reinforcing the external validity of the results. Besides, the researcher is often confronted at one time or another with the question of the quality of his data. Working on secondary data as we have done involves other types of difficulties, despite the number of advantages that it generates, as is the case with the surveys by questionnaire. Thus, with respect to our database, future researchers should be aware of three principal limitations: it relies on 4 activity sectors, rather than on the full set of activity sectors; and it collected data over a 3 year period, which limits all longitudinal analyses. As well, the principal objectives were to facilitate the comprehension of the micro-economic effects on the functioning of the companies rather than reveal their strategic behaviour, as we have purposely done.

However, can we conclude that strategic alliances, which now profit from the current context of globalization, can contribute to decreasing the spread between the economies of developing countries and industrialized countries? That's the big question for future research. For example, East Asia has clearly shown during the greater part of the last three decades the advantages of globalization and the benefits of openness and economic liberalisation (World Bank, 2000). Thanks to their substantial investments in capital and human resources, and also an openness of their economies, these countries recorded an impressive economic growth, and benefited from enviable advances in the reduction of poverty. However, at the opposite end, Africa attracted less foreign capital. A recent study by the

United Nations Conference on Trade and Development (UNCTAD) reveals that direct foreign investments in Africa amounted to 9.1 billion dollars in 2000, compared to 10.5 billion dollars in 1999 (UNCTAD, 2000). This represents less than 1% of foreign investments throughout the world, with the quasi-entirety flowing from industrialized countries to developing countries. At the same time, African exports in 1999 represented less than 2% of world exports. These results show that the integration of Africa into the world economy is considerably less advanced than other regions by the absence of a favourable environment and especially by a lack of qualified human resources. It is perhaps in this light that we should understand the recent implementation of NEPAD (New Partnership for Africa's Development). For one of the first times, a program that provides a vision and traces the perspectives for growth and development for countries in Africa that was conceptualized and designed by African leaders themselves. The implementation of such an ambitious program is based on a new partnership with companies from industrialized countries. Hence, the success of such a program could be the beginning of the integration of African countries with the rest of the world economies. However, to prevent making the same errors and repeating shortfalls as in the past, African leaders should dwell on the words of Nelson Mandela: «A vision that is not accompanied by action is but a dream; an action that does not stem from a vision is but a waste of time; but a vision followed by action can change the world».

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Business management is a primary area of market competitiveness and sustainability in all types of industries. Managerial insights in the global and/or local business are major drivers of organizational innovation, business dynamics and business value chain. Managerial review will be an integral player in the 21st knowledge industry and economy.

Nevertheless, how to foster managerial review and insights have not been appropriately explored in terms of global or local business perspectives. In fulfilling of this urgent and timely theme, business management need more sustainable profitability, better operational excellence, higher goods and services quality, more proper market promotion, stronger leaderships, and more accurate financial planning in order that business organizations are more competitive.

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Examples of topics appropriate to the theme of management review include:

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