International Review of Business Research Papers
Volume 6. Number 4. September 2010. Pp.126 - 133

Have International Joint Ventures in Uganda's Manufacturing Industries Benefited from Foreign Partner's Technological Knowledge?

Mary Basaasa Muhenda*

Prompted by the Uganda government's policy that encourages local firms to acquire and adopt technological knowledge to foster industrialization, this study investigates the extent of and factors that affect technological knowledge transfer from foreign partners to International Joint Ventures (IJV) in Uganda's manufacturing sector. The study cross sectional in nature used factor and reliability analysis and multiple regression as data analysis methods. The findings reveal a low incidence of technological knowledge transfer and report that communication behaviour, learning and development and structural attachment have a positive significant impact on the extent of technological knowledge transfer from foreign partners to the IJVs. The study recommends Government to facilitate and strengthen Technical Institutions where technological knowledge could be acquired. Technological gatekeepers could also be nurtured by IJV's in order to tap into external technological knowledge bases in addition to identifying boundary spanners who could translate and disseminate the external knowledge identified by technological gatekeepers.

1.0 Introduction

Aware of its insufficient levels of scientific and technological knowledge (UNCTAD, 2004; World Bank, 1995), the Government of Uganda has embarked on several strategies aimed at acquiring and adopting new scientific and technological knowledge from foreign partners. Through its numerous economic reforms, the government has since 1986 attracted many foreign investors, encouraged local firms to form joint ventures in business partnerships with foreign investors in the hope that firms in Uganda could gain knowledge and expertise from such consortia and partnerships and apply it in their own operations. In spite of all these efforts on the part of Government to accumulate technological knowledge from foreign partners, there is no indication of the extent of transfer of technological knowledge from foreign partners as a result of joint partnerships. What are lacking are comprehensive empirical studies to determine the extent to which technological knowledge has been transferred from foreign partners. This study investigated the extent of technological knowledge transfer from foreign partners to Uganda's international joint ventures to ascertain whether Governments efforts to encourage local firms to form joint partnerships with foreign firms as a strategy of taping into external technological bases has yielded any benefits.

*Dr. Mary Basaasa Muhenda, Uganda Management Institute: mmuhenda@yahoo.com

2.0 Literature Review

Technological knowledge in our context refers to a body of experience, contextual information and techniques used in the development, design, production and application of processes, procedures, systems and services (Shrivastava & Souder, 1987). Knowledge transfer on the other hand is defined in this study as a process whereby technological knowledge passes from one person or group of persons to another group and the eventual adoption of that knowledge (Macdonald, 1999; Pearlson, 2001). The need for technological knowledge transfer for developing countries like Uganda cannot be underscored since organizations capable of integrating and utilizing technological knowledge have been linked to improved manufacturing productivity, alliance efficiency and adaptability, supporting international expansion strategies and developing a sustainable competitive advantage (Griffith, 2002). The use of alliances, co-location in technology intense regions, the use of foreign direct investment and licensing agreements constitute several knowledge transfer mechanisms that firms use (Child, 2002; Lyles & Dhanaraj, 2004). International Joint Ventures (IJV) which are recognized as arrangements whereby two or more distinct partners one of whom must be a foreigner provide complementary resources to establish a separate organisation are viewed as conduits for accessing partners' embedded knowledge, new organizational skills and capabilities (Inkpen & Beamish, 1997; Hamel, 1991). Once established, each partner stands to gain from the relationship; foreign partners could with much ease access new markets by leveraging the local partners' market knowledge and local networks whereas the joint venture itself could receive technological and managerial knowledge and capital from its foreign counterparts (Inkpen, 2000; Koka & Prescort, 2002). With such ties, IJV in Uganda could obtain resources such as information, experience, connections and technological knowledge from foreign partners that could propel the country towards the status of an industrialized nation.

According to Doz and Hamel (1998) and Hamel (1991), the quality of a relationship between IJV and its partners is very important because a firm is able to learn more easily from alliance partners when the degree of trust, transparency and openness between them is high. Since the cost of developing, deploying capabilities and of sharing know-how in inter-organizational relationships is high, effective mechanisms must be in place to discourage free riding and allow knowledge exchange (Dyer & Singh, 1998). Equally important is the quality of information and know-how exchanged in terms of accuracy, comprehensiveness and timeliness and participation in goal formulation and joint planning referred to as communication behavior. As individuals' mental modes are enhanced, organizations ability to search, identify, acquire and adapt external knowledge is also enhanced. We therefore conclude that improved communication behavior and trust will result in greater extents of technological knowledge transfer.

Luo (2001) states that cross organizational boundaries aimed at establishing social ties either at individual or organizational level play an important role in knowledge transfer. When the partners have developed a strong attachment that is manifested at organizational level referred to as structural attachment, it's more likely that they will

have a basic understanding about each other's skills and competencies (Inkpen & Beamish, 1997). Effective attachments reduce risk by carrying expectations of trust and abstention from opportunism and encourage resource exchange (Luo, 2000; Seabright, Levinthal, & Fichman 1992) of which technological knowledge transfer is part. We follow Luo (2002) argument that attachments in IJV create a favorable climate for knowledge exchange because increased trust and commitment that develops between exchange partners facilitate the transfer of especially embedded knowledge.

Firm-level learning capabilities as reflected in the way in which an organization encourages training and development of its staff in addition to supporting creativity and providing a flexible work environment enhances IJV absorptive capacity. It is such capacity that enables IJV to recognize, evaluate and utilize foreign technological knowledge. Organizations that have clear strategies for learning and staff development acquire knowledge more effectively from their foreign parents (Inkpen & Crossan, 1995). Learning and development will enhance individual absorptive capacity and cumulatively improve overall learning of the IJV. Since possession of prior related knowledge is necessary for the effective assimilation of new knowledge (Cohen & Levinthal, 1990) we anticipate that IJV that encourage their employees to learn by formal training and development are more likely to exploit any critical external knowledge opportunities. This line of argument is also supported by Rice (2003) who argues that employees can engage in creative problem-solving and exploitation of new knowledge as long as the working conditions within which an IJV are operating are flexible enough and conducive to allow for individual and group creativity.

We support Rosenkopf and Almeida's (2003) suggestion that the formation of strategic alliances as in case of Joint Ventures can enable firms overcome geographical and technological constraints. We hypothesized that relationship quality (trust and communication behavior), inter-party attachment (structural attachment), and firm-level learning capabilities (learning & development, flexibility & creativity) affect the extent of technological knowledge transfer in Uganda's IJV. We drew relationship quality and firm-level learning capabilities' variables from Argote (1999) model and incorporated inter-party attachment from Luo (2002) model. Aware of the fact that rapid globalization of markets coupled with the complexity of organizational tasks resulting from rapid technological changes has made it impossible for any one firm to go it alone (Dyrer & Nabeoka, 2000; Powell, 1996), we justified the choice of networks theory to support our conceptualization.

From the review of related literature and from our conceptualization we formulated three major hypotheses;

H1. There is a positive and significant association between relationship quality and the extent of technological knowledge transferred from foreign partners to IJV in Uganda.

H.2. There is a positive and significant relationship between structural attachment and the extent of technological knowledge transferred from foreign partners to IJV in Uganda.

H.3 There is a positive significant relationship between firm-level learning capabilities and the extent of technological knowledge transferred from foreign partners to IJV in Uganda

3.0 Methodology

The study, cross sectional in nature was conducted in all the districts of Uganda that had IJV and a total of two hundred and fifty six (256) IJV registered with the Uganda Investment Authority. One respondent from each IJV at the rank of CEO served as a respondent in the survey giving a total of 256 interviewees. Purposive sampling was used to identify all participating IJV's because the data needed could only be provided by particular groups of subjects. A total of 159 questionnaires were returned out of which 56 questionnaires could not be used, leaving a balance of 103 usable questionnaires which accounts for 62.5% of the response rate. In addition to self administered questionnaire, personal interviews using open-ended questions were also conducted by the researcher in person. The interviewees were purposely selected basing on their knowledge about the phenomenon, experience and considering their level of decision making in their respective sectors. A total of twenty key respondents including senior personnel in the Ministry Finance, Trade and Industry, Uganda Investment Authority, Uganda Manufactures Association and some technical staff in four IJV were interviewed.

Factor analysis of the survey data was used in our study to identify dominant factors of relationship quality, inter-party attachment and firm-level learning capabilities that were thought to influence the extent of technology knowledge transfer in Uganda's IJV. The principal component factor method was used to examine the total variance among all original variables. **Six** dominant factors (communication behavior, trust, learning and development, creativity & flexibility, management support and structural attachment) that jointly explain a total variance of 76.4% with factor loadings ranging from .57 to .95 were generated .In addition to the mentioned independent variables was the dependent variable referred to as technological knowledge transfer extent which was assessed by three items that determined the extent to which the acquired knowledge is applied and institutionalized into IJV best practices. Multiple regressions was used to test the simultaneous effects of the six independent variables on the extent of the transfer of technological knowledge. By using multiple regression we were able to: test how much of the knowledge transfer variance is explained by the three variables namely relationship quality, inter-party attachment and firm-level learning capabilities; which among these variables is the best predictor of the outcome and whether a particular predictor variable is still able to predict an outcome when the effects of other variables are controlled. In order to have a feel of the magnitude and direction of the relationship we used (β) and R square to show how well the values fit the data. The Beta Coefficient gave an indication of how strongly each predictor variable influenced the criterion variable, for the greater the β value, the greater the impact of X on Y. The R square on the other hand indicated the percentage of variance in the dependent variable explained jointly by the dependent variables.

4.0 Results

Out of the 256 CEOs of IJVs in Uganda surveyed, 103 responded to this study giving a response of 62.5%. We carried out tests of differences on the respondents' profiles and found no significant differences in the respondents' profile (between male and female and between local and expatriate interviewees). Only 13.6 % of the respondents were expatriate staff as compared to 86.4 % of local staff an indication that the members of those foreign countries expected to have the technological know how are substantially low and hence the low incidence of transfer of technological knowledge. According to the responses from the managers interviewed the majority of IJV in Uganda started their operations from 1990 and account for 58.3% which time is considered sufficient to facilitate transfer of knowledge. Majority of the companies earn over 500 million Uganda Shillings (61.2%), which is equivalent to United States dollars ($ 300,000) and are categorized by the Uganda Manufacturers' Association as large-scale industries.

4.1 Extent of Transfer of Technological Knowledge in Uganda's IJV

On a scale of 1.0 (lowest) to 5.0 (highest) for the extent of knowledge transfer, we recorded a mean score of 2.97. Thus we conclude that the extent of knowledge transfer from foreign partners to IJV in Uganda is fairly low or slightly below the average (3.0) level of incidence of transfer performance.

4.2 Relationship between the Independent Variables and Extent of Transfer

To test the hypothesis, multiple regression was carried out to determine the variance of the effect of communication behavior, trust, learning and development, creativity & flexibility, management support and structural attachment on the extent of technological knowledge transfer in IJV's in Uganda. Below is the summary of findings:

Independent Variables	Beta coefficient & Significance levels
Relationship Quality	
Communication behaviour	.21*
Trust between IJV	.06
Inter-Party Attachment	
Structural Attachment	.46***
Firm- level learning Capabilities	
Learning & Development Competency	.32**
Creativity & Flexibility	.10
Management Support	-.07
*: significant at 10% level **significant at 5% level and	*** significant at 1% level
Model Summary	
R	.80
R Square	.63
Adjusted R Square	.60
Significance	**.000**

The results of the hypothesis testing are interpreted as follows:

1. Trust between IJV and foreign partners and creativity and flexibility have a positive but not significant effect on the extent of technological knowledge transfer. These findings imply that although trust and creativity and flexibility are associated with the transfer of knowledge their effect does not cause any increase in the extent of technological knowledge transfer from foreign partners to IJV in the Ugandan manufacturing sector.
2. Management support is negatively but not significantly related to technological knowledge transfer extent meaning that increased management support lead to a decrease in the extent of transfer of technological knowledge. Communication Behavior is positively but not significantly related to knowledge transfer extent.
3. Structural attachment and learning and development have a positive significant relationship with the extent of technological knowledge transfer in Uganda's IJV. The two variables explain 0.63 of the variance in OBP (R^2 =. 63). The following results were obtained: Structural attachment (β = .46 at 99% level of confidence) and learning and development (β = .32 at 95% level of confidence). The results imply that IJV that offer more learning and development opportunities to their employees and whose degree of structural attachment is higher are likely to experience higher extents of technological knowledge transfer from foreign partners. Results further reveal that learning and development has a greater impact on the extent of knowledge transfer than structural attachment.

5.0 Discussion

A positive and significant effect between structural attachment and extent of technological knowledge transfer was also recorded. This finding is underpinned by Luo's(2001; 2002)earlier assertions that attachments in Joint Ventures create

conducive climate for knowledge exchange because of increased trust and commitment that facilitate the embedded knowledge. Also reported was the significant effect of learning and development on technological knowledge transfer. A learning organization is skilled at modifying its employees' behavior to identify new knowledge and insights. Inkpen and Crossan (1995) also reported that organizations that have clear strategies for learning and staff development acquire knowledge more effectively from their foreign parents. Surprisingly, this study did not find any significant relationship between creativity and flexibility, trust between IJV and foreign partners and management support and technological knowledge transfer extent although earlier studies reported significant effects of these factors on knowledge transfer. From the findings, communication behavior did not have any significant effect on knowledge transfer extent. Surprisingly, trust between IJV and foreign partners' did not have any significant impact on the extent of transfer contrary to conventional thinking.

This was substantiated by shop floor staff who reported that;
"*actually some of our foreign bosses come at night to do some work, so where would you expect locals to acquire such knowledge from."* Other cases of mistrust cited include foreign staff coming very early to carry out the processing activities, leaving late or holding important discussions in their local languages.

6.0 Recommendations

Results confirm a low incidence of the transfer of technological knowledge from foreign partners to IJV in Uganda which findings could guide policy makers. The Uganda Government could encourage, support and strengthen the existing policy on investment in general and IJV in particular There is therefore need to enforce the policy, which encourages the transfer of foreign technology and expertise and lays out all conditions which limit the ways in which technical know how may be used. Managers could identify and reward technological gatekeepers who are self-selected individuals with more exposure to outside sources of technological information. These could keep colleagues apprised of the latest trends and screen the vast amount of information for relevance (Leonard–Barton, 1995). Selection of boundary spanners could also be an option that could be considered by managers. Boundary spanners could complement the role of gatekeepers by translating and disseminating knowledge. Since learning technological knowledge whose composition includes a bigger portion of tacit elements requires active contribution, managers could consider any of the following: Managers allocate enough time and resources to staff for learning and arrange scheduled brainstorming meetings for sharing conference proceedings, encourage discussions to share research findings and schedule work related social activities. The government could also strengthen technical institutions where technological knowledge especially could be acquired. Conditions of service also need to be improved in order to retain trained staff because discussions with our key informants revealed that majority of IJV do not pay well and the high mobility of trained staff in search of better paying jobs.

7.0 Limitations

The IJV were only identified from the Uganda Investment Register and yet some IJVs might not have registered with the authority which is a common occurrence. Another limitation is that one CEO (majority of whom were foreigners) responded to the questionnaire on behalf of the IJV which implies that some responses may not have fully represented the views of the local employees.

8.0 Future Research

This study confined itself to IJV in the manufacturing sector omitting service industries because it investigated the extent of technological knowledge. More empirical research could be extended to service industries to investigate the transfer of other forms of knowledge.

References

Argote L. 1999, *Organisational learning: Creativity, retaining and transferring knowledge*, Boston, Kluwer Academic.

Cohen W. M. & Levinthal, D. A. 1990. "Absorptive capacity: A new perspective on learning and innovation' Administrative Science Quarterly", vol.35, pp.128-52.

Doz Y.& Hamel G. 1998. "Alliance Advantage: The art of creating value through partnering', Boston MA Harvard Business School Press".

Dyer J. H. & Nobeoha, K. 2000. "Creating and managing a high performance knowledge-sharing network: The Toyota case', *Strategic Management Journal",*vol.21,pp. 345-367.

Dyer, J. H. & Singh, H. 1998. "The relational view: Cooperative strategy and sources of interorganizational competitive advantage', Academy of Management Review",vol.23, pp. 660-679.

Griffith, D. A; 2002. "The role of communication competencies in international business relationship development', Journal of World Business", vol. 37, pp. 256 - 265.

Hamel, G. 1991. "Competition for competence and inter-partner learning within international alliances', Strategic Management Journal" vol. 12 (special issue), pp.83 - 103.

Inkpen, A. C. & Crossan, M. M. 1995. "Behaving is seeing: Joint Ventures and organization learning', *Journal of Management Studies" vol. 32*, pp. 595 - 618.

Inkpen A. C. 2001. "Learning, knowledge management and strategic alliances: So many studies, so many unanswered questions', Unpublished Paper."

Inkpen, A. C. & Beamish, F. W. 1997. "Knowledge, bargaining power, and international joint venture instability', Academy of Management Review",vol. 22, pp. 177 - 202.

Koka, B. R.,& Prescott, J. E. 2002. "Strategic alliances as social capital: a multidimensional view', *Strategic management Journal" vol. 23,pp.* 795-816.

Lee, C., Lee, K. & Pennings, J. M. 2001. "Internal capabilities, external networks, and the performance: A study on technology-based ventures', *Strategic Management Journal", vol. 22*, pp. 615-640.

Luo, Y. 2001. “Antecedents and consequences of personal attachment in cross-cultural Cooperative Ventures’, Administration Science Quarterly”, vol. 46, pp. 117 - 201.

Luo. Y. 2002. “Contract, cooperation and performance in International Joint Ventures’, Strategic Management Journal”, vol.23, pp.903 – 919.

Lyles, M. A. & Dhanaraj, C. 2004. “Learning across borders: Organizational learning and international alliances”, in Mahnke, V. & Pedersen, Torben (Eds), Knowledge flows, governance and multinational enterprises: frontiers in international management research, New York, Macmillan, pp. 81-107.

Macdonald, J. 1999. *Understanding knowledge management in a week*, London, Holder and Stoughton.

Pearlson, K. E. 2001. *Managing and using information systems: A strategic approach,* New York, John Wiley.

Powell, W.W., Koput, K. W., & Smith - Doerr, L. 1996. “Inter organizational collaboration and the Locus of innovation: networks of learning in biotechnology*’, Administrative Science Quarterly”, vol.41,* pp.116-145.

Rice, G. 2003. “The challenge of creativity and culture: A framework for analysis with application to Arabian Gulf firms’, International Business Review”, vol. 12, pp. 461-477.

Rosenkopf, L., & Almeida, P. 2003. “Overcoming local search through alliances and mobility’, Management Science”, vol. 49, no. 6, pp. 751 – 766.

Seabright, M.A., Levinthal, D.A., & Fichman, M. 1992. “Role of individual attachments in the dissolution of inter-organizational relationships’, Academy of Management Journal”, vol. 35, pp. 122 – 160.

Shrivastara, P., & Souder, W. E. 1987. “The strategic management of technological innovations: A review and a model’, Journal of Management Studies”,vol. 24, pp. 25-41.

United Nations Conference on Trade and Development (UNCTAD, 2004). Investment Policy Review on Uganda. Unpublished Paper, UN.

World Bank (1995). *Developing Industrial Technology: lessons for policy and practice.* Washington (unpublished papers).