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Abstract: Critique of the IEEE Transactions on Engineering Management article, "A Study of Technology Transfer in a Multinational Cooperative Joint Venture."

**Critique of the IEEE Transactions on Engineering
Management article, "A Study of Technology
Transfer in a Multinational Cooperative Venture."**

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EMGT 520

Management of Engineering and Technology
Individual research paper

B+

A Study of Technology Transfer in a Multinational Cooperative Joint Venture



EMGT 520

B+

MANAGEMENT OF ENGINEERING AND TECHNOLOGY

Individual Research Paper

A Study of Technology Transfer in a Multinational Cooperative Joint Venture

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CONTENTS

Summary.....	1
Review of Research: Concepts, Methodology, Results, Conclusions.....	1
Concepts/Background.....	1
Methodology.....	2
Results.....	2
Conclusions.....	2
Research Comparison and Contribution.....	3
Related research.....	3
References.....	4
Future Research.....	5
Figure 1.....	6
Figure 2.....	7
Bibliography.....	8

1. Summary

(What are the concepts studied in this paper?)

The transfer of technologies across national boundaries are essential factors in the development of multinational corporations. Therefore, many researches have addressed it. This discussion was centered around the technology transfer in a multinational cooperative joint venture. It describes the venture made by the partners formed among firms in Germany, Japan, and the United States. The main focus of this study was to understand the different kinds of technologies that are transferred across organizational boundaries. Such as technology transfer success across the organizational boundaries, transfer processes differ across international boundaries, and the organizational, national and cultural differences are examined in this study.

2. Review of Research : Concepts, Methodology, Result and Conclusion

(What are the strengths and weaknesses of the paper in terms of concepts methodology and results?)

Concepts and Background

Technology transfer in a multinational cooperative joint venture introduces the fact that many companies have been transforming themselves worldwide into multinational corporations (MNC's) in order to expand their business in a very competitive and fast moving market conditions[1]. The technology transfer is a vast area to cover because there are many factors for successful technology transfer like Figure 1: The Critical Factors for Successful Technology Transfer. Another importance of technology transfer is the process of technology in Figure 2: The Process of Technology Transfer [2]. Both of these are the basis for successfully transferring technologies across the organizations and the different transfer processes across international boundaries. The strength of this paper is that it gives great examples when illustrating concepts.

The classification of role in this study is joint venture technology transfer characteristics. This paper told that technology transfer is not difficult if corporations have successful *implementation and operation* [3]. *Manufacturing processes* are one of the most important characteristics in technology transfer. It could be cost effective. Then, manufacturing ought to have *the relative inflexibility of the production lines* because of expensive changes in equipment. Another role is that “*know - how is transferred between very similar manufacturing lines but across different organization and national culture.*”[1] All of them are well for the action of multinational product joint venture.

Furthermore, it is a bridging mechanisms for effective transfer. This one is interesting concept, it could be use to impact the successful transfer of technology. This is one of the weaknesses of this research since it was not covered.

Methodology

(what methodology has been used?)

The methodology of this study was based on *data collection interviews*. The regions of focus were Germany, Japan, and the United States, which were in an international joint venture comprising three operating divisions of large multinational chemical companies. Interviews were conducted over a three - year period in 74 samples. Each of these firms had been identified to participate in the survey by partner firms playing key roles in the transfer process. They were divided by 24 from the American, 23 from the German, and 27 from the Japanese companies.

The interview questions were centered around the information about the transfer of identified technologies such as the type of technology, the kind of initiating events for transfer and technology transfer success. This study is very informative and the methodology used was appropriate for this type of research. On the other side, the data took three years to collect. I think the length of time was too long. Why?

Results

(What are the strengths and weaknesses of the paper in terms of results?)

The results of the study showed a total of 208 separate transfers of technology. The technology transfer was to classify into 4 basic categories, 1) general information, 2) specific information, 3) procedure uses and practices, and 4) hardware, by analyzing the interview statements. These results were presented in clearly table formats, that give the reader a chance to address each individual issue. The first research issue, *type of technology transfer*, was that specific information is the most common technology transfer and Germany was the most active. The second issue addressed, *the kind of initiating events for technology transfer*. This analysis showed that technological discussions and site visits were main initiating events of the technology transfer. The last research issue focused on, *technology transfer success*. It displayed procedure and practices and Germany had the highest success in technology transfer.

There are missing information pertaining to organizational, national, and cultural differences in this study. The results were not shown. I think the missing information is important, therefore is one of the weaknesses.

Conclusions

(What are the conclusions of the paper? Are they well stated? How are they supported by the research reported in the paper? Do they need strengthening? If so, how?)

This paper discussed different types of technology that were transferred between the partner firms of multinational joint venture. Individuals of the partners were able to support its firm with technology transfer. For example, the German firms used the joint solving meetings and discussions, and exchanges, to improve the manufacturing processes. The American firms were not good at transfer of technology so, it was willing to learn

from its partners. The Japanese companies were the best in manufacturing, so it entered in the joint venture to gain market shares.

All of these countries have stereotypes and biases about each other, but it proved false. In reality they became very excellent team. Another main pinpoint is that they have to carry out a collaborative effort because of the cultural differences. For example, American and Japanese companies are very different. American firms required cost-return justifications before most changes would be approved, but the Japanese company core philosophy and sense of priority was to incorporate changes as long as they led to improvements. Moreover, bridging mechanism are important for enhancing the successful socialization and implementation of any joint venture.

Overall, the conclusions of this study are clearly reported. It was undertaken by steps. For instance, it addressed each countries first. Then, it compared the three countries against each other. On the contrast, this conclusion could be better supported by giving more examples base on the research result.

3. Research comparison and contribution

(What are the contributions of the paper to the literature?)

There are several main points of the contributions of this paper to the literature. International joint ventures have emerged as an important factor for the development and transfer of technology. The importance of international joint venture is further verified by their proliferation in the emerging market [4]. Gartlett and Ghoshal [5] and Granstrand et al. [6] pointed out that multinational corporation seeks competitive advantage by exploiting global economies of scale. The main status of this paper is the technology, however the capabilities of any complex manufacturing or process can not be capture very readily by written means [7],[8]. Therefore, multinational corporations established joint venture to accomplish this learning and increase their technology. This situation could expand manufacturing and technical operations abroad , building and managing (RD&E) facilities in various strategic international locations [9],[10].

4. Related Research

(How does the paper compare with other research publications in the field?)

A) What have the other researchers found that are related to this research?

The discussion of technology transfer in research literature has been approached from many views. The researches or case studies have been undertaken to fill the gap of technology transfer. An example of such literature is an article by Cynthia K. Wagner, which discusses "Strategy First in International Joint Venture." [4]. The article tells about tipping the balance in favor of successful joint ventures which requires a strategic approach and several frameworks. Another issue, Bernard J. Schroer and his collaborates address the measuring technology transfer performance[11]. A.C. Samli shows the general model of technology transfer [12]. Eum Young Kim which addresses the preparation for international technology transfer [13]. Eum Young Kim examined the role of multinational counseling firms and their corporate training in international technology transfer. Sergio Lopes' [14] discussion of a particular technology transfer in the United

States presents possible answers to two questions. First, what are the technologies most need in the U.S., second, how can these technologies be transferred? This will help to understand more of the United States technology transfer.

B) What are the findings of this paper that support, extend or refute the findings of the other researchers?

There are many researchers doing studies in this area. Therefore I found several researches that supported and extended the finding of this paper. For example, Steven L. Cobb and Thomas S. Barker address a model of cross cultural training in the transfer of technology. The model emphasizes the need for workers to be trained to understand and use the new technology and to understand the culture of the foreign corporation. This paper will aid in the side of knowledge on the high technology countries. Another research that supported this paper is "Social Impact Analysis on Technology Transfer," written by Ajay Das and Allen Jedlicka [15]. The results of this study extend to analyze Ajay Das and Allen Jedlicka's paper on technology transfer in the develop countries.

There is a refutation of this study to the other researches. For instance, Erik J. de Bruijn and Xianfeng Jia, "Transfer Technology to China by Means of Joint Ventures," addressed "Foreign firms pursue strategies that often turn out to be less effective than envisaged because of misunderstanding about China's open door policy." [16] It refutes this paper that this paper thinks the joint venture giving strategies or opportunities to be more effective.

C) How does this paper differ from the other researchers' work?

This study differs from the other research in that it studies technology transfer among the developed countries. In contrast, many researches have been done on the developing countries with developed countries because the developed countries do many multinational projects with the third world. The reason is that they can get more benefit.

A vast number of studies and reports has been devoted to multinational corporation (MNC) in recent years, dealing mainly with their economic, financial, social and political implications [16]. It could say that they focus on the environment more than technology transfer.

5. References

(Are the references adequate, or have you identified other researchers in the same area that should be included? If so, give full citations and briefly describe their work.)

This study was found to be very informative, however there are some references that would have been of benefit in this case. For instance, John A.S. Green, John Brupbacher, and David Goldheim, "Strategic Partnering Aids Technology Transfer," Journal of Technology Transfer, pp.26-31. They address "A method of technology transfer that has evolved out of the need to transfer promising technologies in the engineered materials field to full scale production and application, when the inventing company is not in the materials production industry. The method that solves the technology transfer problem is develop strategic partner." This reference will reinforce this

research. Another reference, Ajay Das and Allen Jedlicka, "Social impact analysis on technology transfer," Technology transfer, Winter-Spring 1993, pp.49-54. It told about "As societies and cultures are changed, technology transfer is an integral part of the process of creating a new world order." It clarified the culture side. These are also examples [2],[3],[11],[12],[13],[14],[15] that I include in this paper.

6. Future research

(What research ideas have you identified for the future work?)

This study is very interesting research that pinpointed to the technology transfer in a multinational joint venture. However, I think that there are some areas which could be further research. The first research issue is the challenges or problems of technology transfer in a multinational joint venture. I think it would be useful to know the problems involve before joining the international ventures. The second issue is that the research should study the specific tools which were used in technology transfer. The third issue is furthering the discussion of cost - effective technology transfer. This study is also very interesting. It will help someone to decide on investing the project in multicultural joint venture.

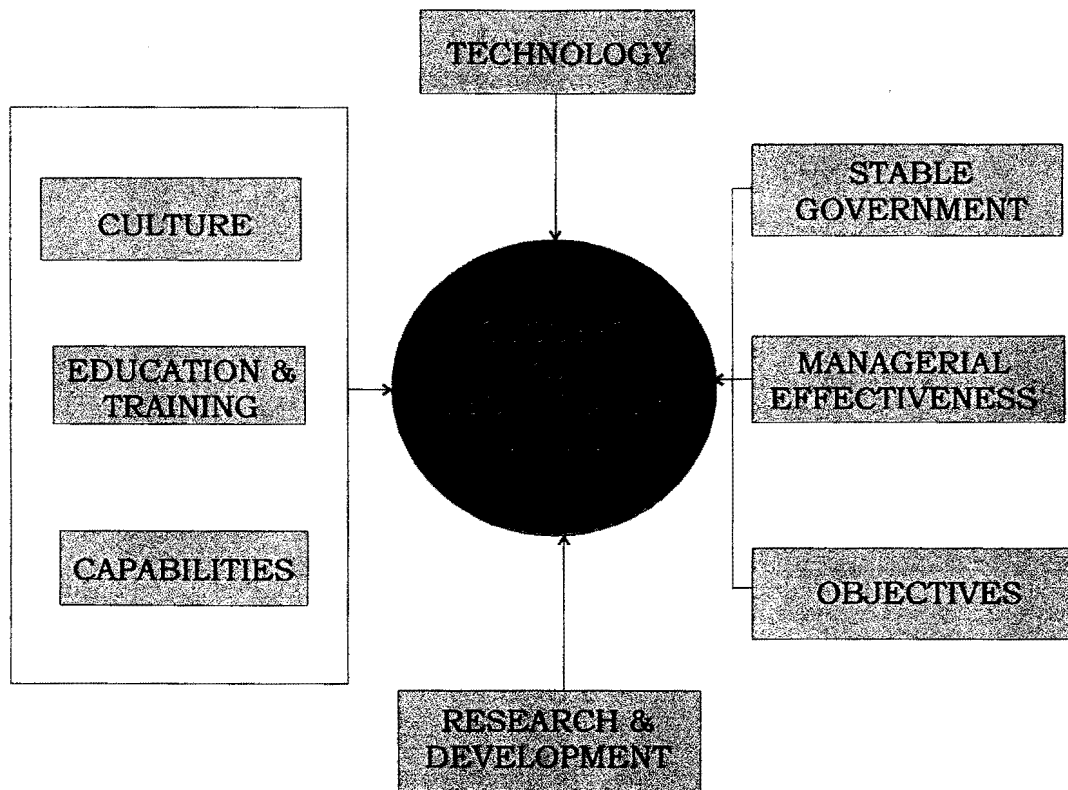


Figure 1: Critical factors for Successful Technology Transfer

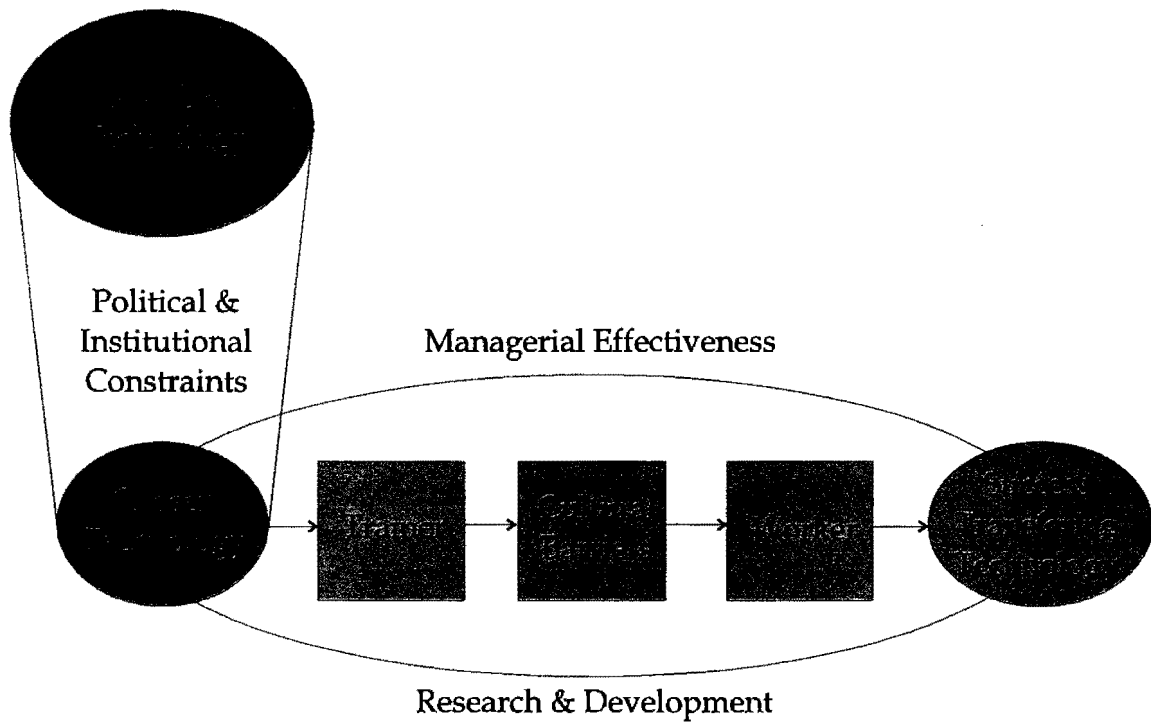


Figure 2: The Process of Technology Transfer

Bibliography

- [1] Ralph Katz, Eric S. Rebertisch, and Thomas J. Allen, "A Study of Technology Transfer in a Multinational Cooperative Joint Venture," *IEEE Transactions on Engineering Management*, vol.43, no.1, February 1996, pp.97-105.
- [2] Steven L. Cobb, Thomas S. Barker, "A Model of Cross-Cultural Training in the Transfer of Technology," *Technology Transfer*, Fall, 1992, pp.8-15.
- [3] Michael D. Devine, Thomas E. James, Jr., and Timothy I. Adams, "Issues for Successful Technology Transfer," *Journal of Technology Transfer*, December 1, 1987, pp.27-31.
- [4] Cynthia K. Wagner, "Strategy First in International Joint Venture," *Technology Transfer*, Winter-Spring 1993, pp.39-48.
- [5] C. A. Bartlett and S. Ghoshal, "Managing innovation in the transnational corporation," in *Global Firm*, C. A. Bartlett, Y. Doz, and G. Hedlund, Eds. London : Routledge, 1990, pp.215-255.
- [6] O. Granstrand, L. Hakanson , and S. Sjolander, Eds., *Technology Management and International Business*, W. Sussex, Uk: Wiley, 1992.
- [7] J. Allen, *Managing the Flow of Technology*, Cambridge , MA : MIT Press, 1984.
- [8] P. Adler, "Managing High Tech Processes : The challenge of CAD/CAM," in *Managing Complexity in High Technology Organizations*, M. A. Von Glinow and S. A. Mohrman, Eds. New York: Oxford, 1990, pp.133-142.
- [9] P.J. Neff, "Crosscultural research teams in a global enterprise," in *res.-Technol. Manage. Conf.*, May-June 1995.
- [10] S. Rhinesmith, *A Manager's Guide to Globalization*. Burr Ridge, IL: Erwin, 1993.
- [11] Gerard J. Schroer, Phillip A. Farrington, Sherri L. Messimer and J. Ronald Thornton, "Measuring Technology Transfer Performance," *Technology Transfer*, September 1995, pp.39-47.
- [12] Eun Young Kim, "Multinationals : Preparation for International Technology Transfer ," in *Technology Transfer*, Williams&Gibson, 1990, pp. 258-273.
- [13] Sergio Lopes, "Technology Transfer in the Americans," *Technology Transfer*, August, 1994, pp.26-33.
- [14] Ajay Das and Allen Jedlicka, "Social Impact Analysis on the Technology Transfer," *Technology Transfer*, Winter- Spring 1993, pp.49-54.
- [15] Dimitri Germidis, *Transfer of technology by multinational corporation*, Volume 1, 1987.
- [16] Erik J. de Bruijn, and Xianfeng Jia, "Transfer Technology to China by Means of joint Ventures," *Technology Transfer*, pp17-22.