UNIVERSITÄT PASSAU
Wirtschaftswissenschaftliche Fakultät

Structured knowledge transfer for the implementation of a new engineering service centre in India

Results from a captive offshoring project in the automotive supplier industry

Prof. Dr. Franz Lehner
Dipl.-Kfm. Christian Warth
University of Passau, Germany

Agenda

- Background, motivation, & research method / goal
- Related work and main influence factors for KT
- KT phases
- Governance for KT
- Conclusion and outlook

Background

1 Introduction
2 Related work
3 KT phases
4 Governance for KT
5 Conclusion

Research project

Global automotive tier-1 supplier

- a specialist for automotive air conditioning and engine cooling systems, the company is one of the world's leading manufacturers and suppliers of original equipment for passenger and commercial vehicles.
- ~16.000 employees // 28 production sites// 17 development locations [2009]
- unique development processes

In 2004 foundation of a joint venture in India to provide engineering services for the development locations (mainly cost reasons)

- 160 employees which provide 180.000 service hours in 2010
- Youngest organization in group (average age 28 years)
- Less company knowledge (average company belonging 2,2 years)

Main problems the company is facing

- due to extremely bad financial situation need for heavy offshoring (related to tasks and hours) from the US location to the Indian location in 2009
- Less experience in offshoring processes
- Hugh knowledge parts only incorporated in experienced employees (less documentation and standardization)

Motivation

1 Introduction
2 Related work
3 KT phases
4 Governance for KT
5 Conclusion

In the last years India has become the hub of the service industry

- growing number of highly educated young English speaking people
- stable economic conditions
- lower labour costs compared to Europe / US

The global automotive industry started offshoring engineering tasks in 2000

omotive design Services outsourced tions offshoring automotive work to Ir

- Total global outsourcing market in 2009 – USD $11 billion
- India's share (2010 expected) – USD $1 billion

Source: http://www.sourcingmag.com/

Research method / goal

1 Introduction
2 Related work
3 KT phases
4 Governance for KT
5 Conclusion

Action research

...combines theory and practice (and therefore researchers and practitioners) through change and reflection in an immediate problematic situation within a mutually acceptable ethical framework and can be described as an iterative process involving researchers and practitioners acting together on a particular cycle of activities, including problem diagnosis, action intervention, and reflecting learning (Avison et al. 1999).

Two parallel and interacting cycles recommended (McKay et al. 2001)

Focused on the problematic situation

Focused on the scientific goals

Research goal

· Escort and support the KT between US and India for the research partner company

· By doing so it seems possible to develop an integrated KT model which can be valid in parts also for similar companies who offshore services to India

Quantitative KT models

1 Introduction
2 **Related work**
3 KT phases
4 Governance for KT
5 Conclusion

Classification of the existing quantitative tested KT models into

Author, Year // Type of Knowledge // Branch // Influence factors // Significance

Author, Year	Title of study
Minbaeva, D., 2007	Knowledge transfer in multinational corporations
Muthusamy, S.K./ White, M.A., 2005	Learning and knowledge transfer in strategic alliances
Cho, K.R./ Lee, J., 2004	Firm characteristics and MNC's intra-network knowledge sharing
Minbaeva, D./Michailova, S., 2004	Knowledge transfer and expatriation in multinational corporation
Pak, Y.S./ Park, Y.R., 2004	A framework of knowledge transfer in cross-border joint ventures
Simonin, B.L., 2004	An empirical investigation of the process of knowledge transfer in international strategic alliances
Kogut, B. / Zander, U., 2003	Knowledge of the firm and the evolutionary theory of the multinational corporation
Minbaeva, D. et al., 2003	MNC knowledge transfer, subsidiary absorptive capacity and HRM
Gupta, A.K./ Govindarajan, V., 2000	Knowledge flows within multinational corporations
Lord, M.D./ Ranft, A.L., 2000	Organizational learning about new international markets
Szulanski, G., 2000	The process of knowledge transfer
Athanassiou, N./ Nigh, D., 1999	The impact of US company internationalization on top management team advice networks
Bresman, H. et al., 1999	Knowledge transfer in international acquisitions
Hansen, M.T., 1999	The search-transfer problem
Simonin, B.I., 1999a	Ambiguity and the process of knowledge transfer in strategic alliances
Simonin, B.I., 1999b	Transfer of marketing know-how in international strategic alliances
Inkpen, A.C./ Dinur, A., 1998	Creating knowledge through collaboration
Lane, P.J./ Lubatkin, M., 1998	Relative absorptive capacity and interorganizational learning
Mowery, D.C./ et al., 1996	Strategic alliances and the interfirm knowledge transfer
Szulanski, G., 1996	Exploring internal stickiness
Zander, U./ Kogut, B., 1995	Knowledge and the speed of the transfer and imitation of organizational capabilities

Main factors influencing KT processes

1 Introduction
2 **Related work**
3 KT phases
4 Governance for KT
5 Conclusion

	No.	Factor	Description	Reference
Sender	1	Sender	also disseminative capacity; ability and motivation of an employee to share knowledge	Minbaeva (2004)
Knowledge characteristics	2	Tacitness	Implicit and non-codifiability accumulation of skills	Zander/Kogut (1995)
	3	Complexity	Number of critical and interacting elements embraced by an entity or activity	Hayes/Wheelwright (1984)
	4	Specifity	Transaction cost's asset specifity	Reed/DeFillippi (1990)
	5	Teachability	Extent by which know-how can be taught to new workers	Hayes/Wheelwright (1984)
	6	Reciprocity	Sum of a partner's account of the resources committed by itself and its perception on the extent of resources committed by the other party	among others: Williamson (1991)
	7	Codifiability	Extent to which the knowledge has been articulated in documents	Kogut/Zander (1992)
	8	Ambiguity	Extent with which the knowledge can be transported, interpreted and absorbed	among others: Kogut/Zander (1992)
Receiver	9	Recipient	Employees' job related abilities and overall competencies, job related motivation, involvement, job satisfaction, absorptive capacity (overall ability and willingness to absorb new knowledge)	Minbaeva et al. (2003)
	10	Learning intent	Degree of desire for internalizing a partner's skills and competencies	among others: Hamel (1991)
Environment	11	Cultural distance	People from members of our corporate global network including our parent tend: 1) to think like us and 2) to behave like us	among others: Lin/Germain (1998)
	12	Relationship	Degree of involvement in MNCs network	Among others: Hansen (2002)
	13	Ability-based trust	The focal party's perception of the partner's capabilities, knowledge and skills related to alliance	Mayer/Davis (1999)
	14	Benevolence-based trust	Extent to which the focal party perceived the partner would not intentionally harm its interests	Mayer/Davis (1999)
	15	Integrity-based trust	The focal party's perception regarding partner's fairness, sense of justice, consistency and values	Mayer/Davis (1999)

→ Consideration of those influence factors for the KT from US to India

→ Those factors can be considered as groundwork for the practical approach

Assumptions for this study

1 Introduction
2 **Related work**
3 KT phases
4 Governance for KT
5 Conclusion

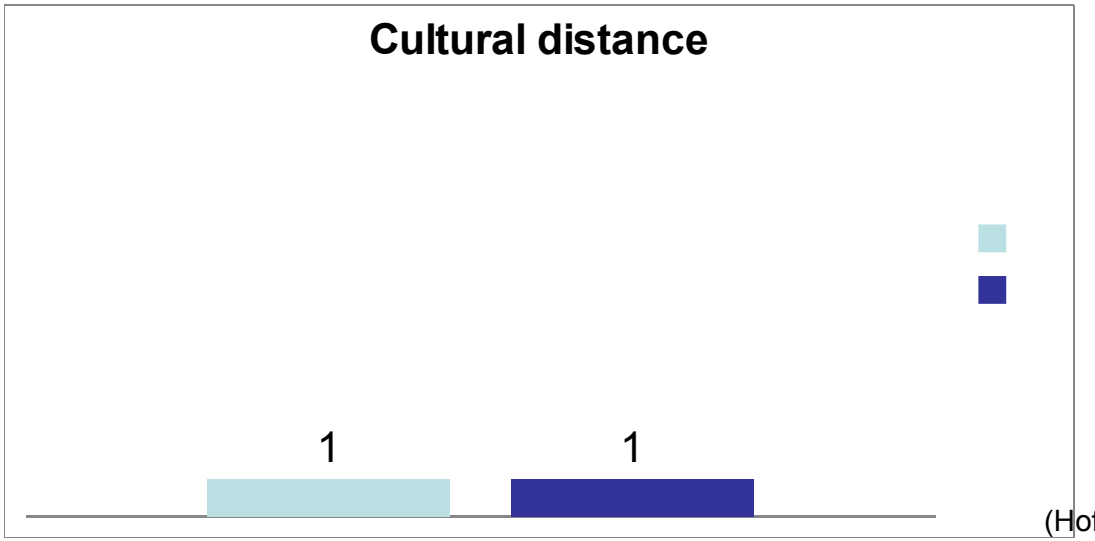
Most important for this research project

· Technological knowledge

is company specific application knowledge which is implicit disposed across the organization, dependent from history and experiences of the company, incorporated in companies products and process specific as technical know-how

· KT within an automotive environment

· US citizens as sending and Indian citizens as receiving elements



(Hofstede 2006)

Prearrangements for KT

1 Introduction

2 Related work

3 **KT phases**

4 Governance for KT

5 Conclusion

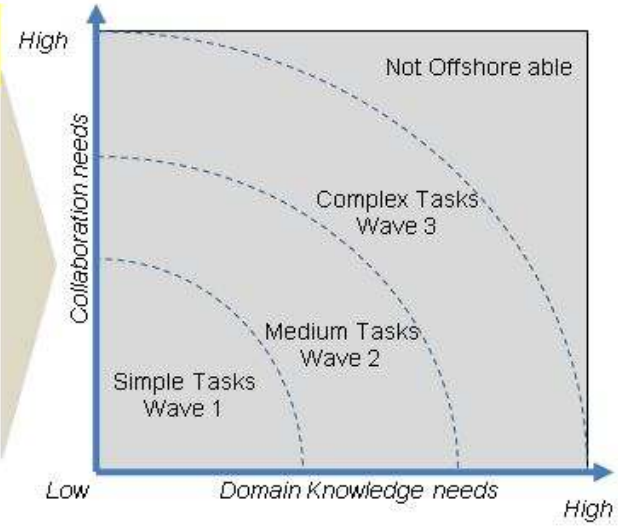
Due Diligence at the sending location

· understand the work in the different departments inside engineering centre

· rate the complexity level of all tasks by analyzing intensity of collaboration and domain knowledge

· cluster all tasks into three offshore waves accordingly

Phase	#	Deliverable / Task	Rating: Domain Knowledge	Rating: Degree of Interaction	Off-shoreability Wave	Requester / Owner / Functional Role
2	6	Validate / reconfirm price/capacity on c/o parts	2	2	Wave 1	Buyer
2	9	Pre-selection of SSC parts/suppliers	2	1	Wave 1	Buyer
2	11	Add New Suppliers	1	1	Wave 1	Buyer
2	13	Request for quotes sent out to supply base	2	1	Wave 1	Buyer
2	15	Quote analysis and BASICS completed	2	2	Wave 1	Buyer
2	16	Logistics Calculation requests per part	2	2	Wave 1	Buyer
2	20	Complete SSC supplier decision sheet	2	1	Wave 1	Buyer
2	28	Develop overall supplier timeline	2	2	wave 1	Buyer
2	33	Send Confidentiality Agreements to potential Suppliers	1	1	Wave 1	Buyer
3	4	Send out RFQ's to supply base	2	1	Wave 1	Buyer
3	5	Quote analysis and BASICS' filled out	2	2	Wave 1	Buyer
3	11	Issue order for prototypes	2	1	Wave 1	Buyer
4	1	Quote updates according to last requirements-Final	2	2	Wave 1	Buyer
4	4	Issue SA	2	2	Wave 1	Buyer
4	5	SAP, GRIPS and XPPS Maint.	2	2	Wave 1	Buyer
4	6	Notify Behr Service of 'dead parts' for carryover business (Brian Stone)	1	1	Wave 1	Buyer
4	9	Quote EVs/ECR's	2	1	Wave 1	Buyer
4	11	Manage Tool Database - Tool Survey	2	1	Wave 1	Buyer
4	12	Manage Supplier DP's (SREA's / Deviation Permits)	1	1	Wave 1	Buyer
5	1	Order parts for machine run off, FST and track	2	2	Wave 1	Buyer
5	3	Technical change management (ECR)	2	2	Wave 1	Buyer
		MSA-All documents, Routing Page	2	2	Wave 1	Buyer



- define job descriptions and resource assignments at Indian service location
  - → establish minimum entry criteria for new hired Indian resources (qualifications)
  - → create training plans based on prequalification's of Indian resources

KT process

1 Introduction

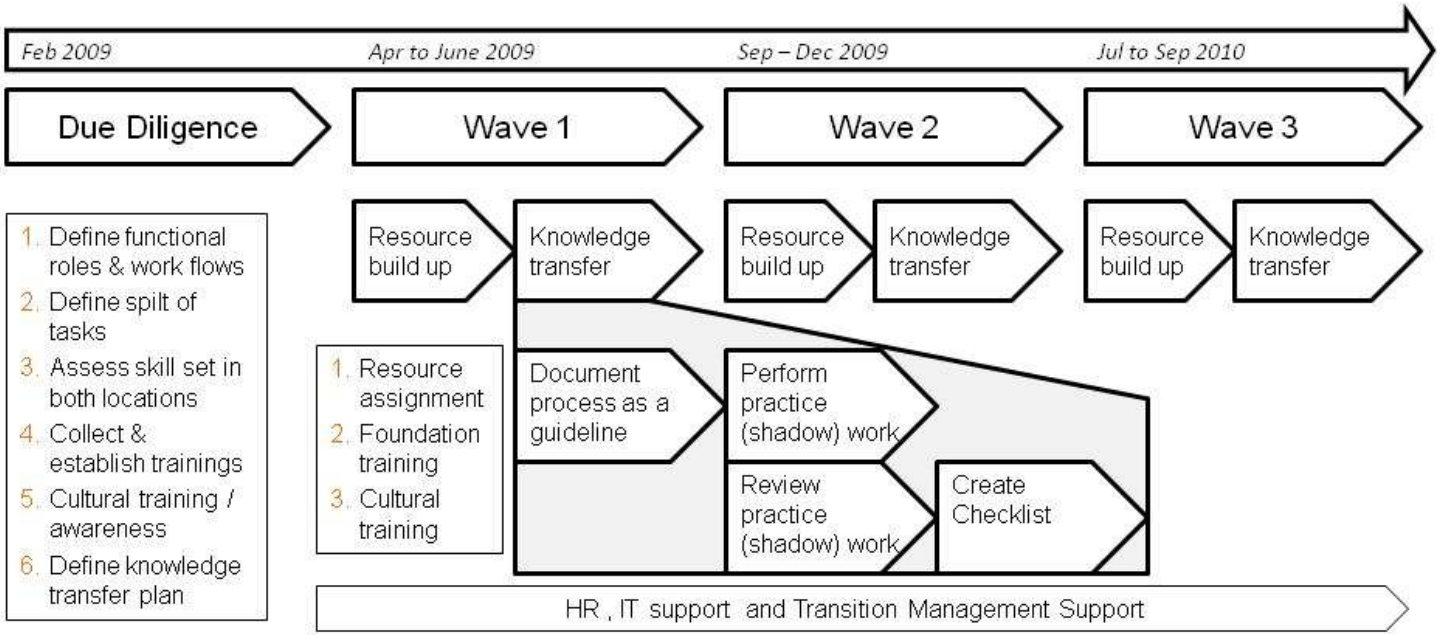
2 Related work

3 **KT phases**

4 Governance for KT

5 Conclusion

Overall transition process



Preparations' for KT

· Implementation of a transition management office on both sides (staffed with 4 FTE's) for the period of two years

· intercultural and collaboration trainings for all affected employees

· physical space for working at the US location for the Indians

· introduction classes and team building

KT process

1 Introduction
2 Related work
3 **KT phases**
4 Governance for KT
5 Conclusion

Standardization of knowledge documentation

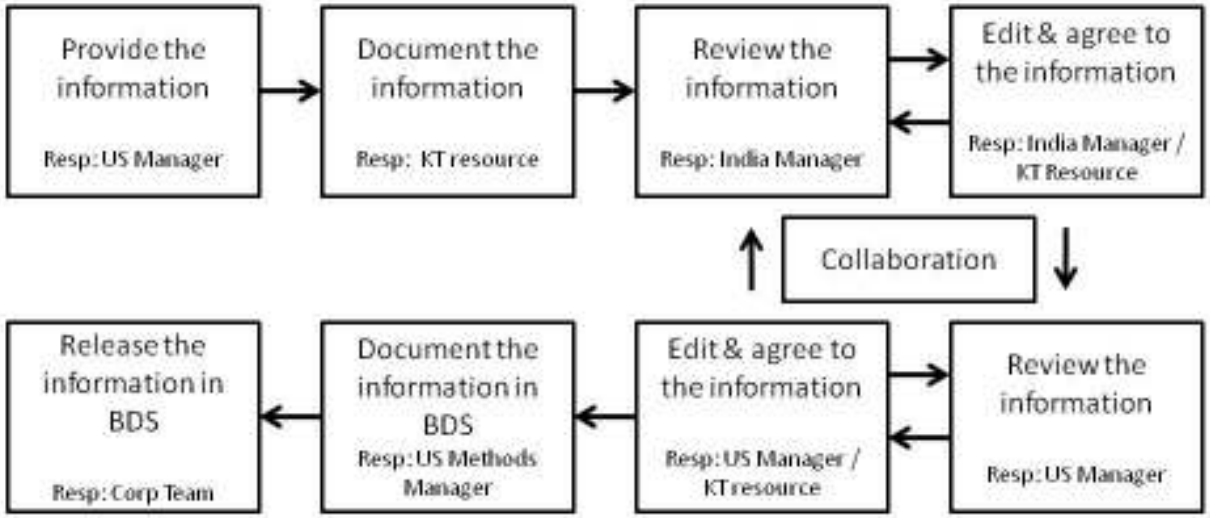
· Global system (BDS) for technical knowledge was already existent but for Indian "youngster" mainly not understandable

· This system housed all relevant standards, specifications, etc

· But basic knowledge was absent – e.g.

- Preparing CAD deliverables per OEM standards
- Translating DVP&R into test orders in the test request system
- Developing control plans and like wise

→Indians should document those knowledge parts while they are for KT at the US location



□ outcome: checklists, guidelines, documentation "from Indians for Indians" but approved and verified from US experts

Steady state of KT

1 Introduction
2 Related work
3 **KT phases**
4 Governance for KT
5 Conclusion

Shadow work

· After 6-10 weeks individual KT was closed and shadow work started

 Indians were physically moved to an other building and separated from their US counterparts/managers – "little India"

 they had to execute by their own engineering tasks and could only communicate via ICT with their American virtual "customers"

Procedure manuals as "masterpiece"

· Once they went back to the engineering centre in India they had to create one final deliverable for the function they worked for

· Creation of this procedure manual had to contain six chapters with the following key questions and content

Chapter	Key question	Contents
1	How are the tasks requested?	Required inputs, input review, time/cost estimation
2	How are the tasks executed?	Working process, issue and status reporting
3	How are the tasks reviewed?	Checklists, error reporting, fixing errors
4	How are the tasks delivered?	Assumptions, issues, acceptance notes
5	How are the tasks accepted?	Closure, rework, feedback, lessons learned, billing
6	What reference information exists?	Guidelines, standards, expert list, methods, forms

Governance for KT

1 Introduction

2 Related work

3 KT phases

4 **Governance for KT**

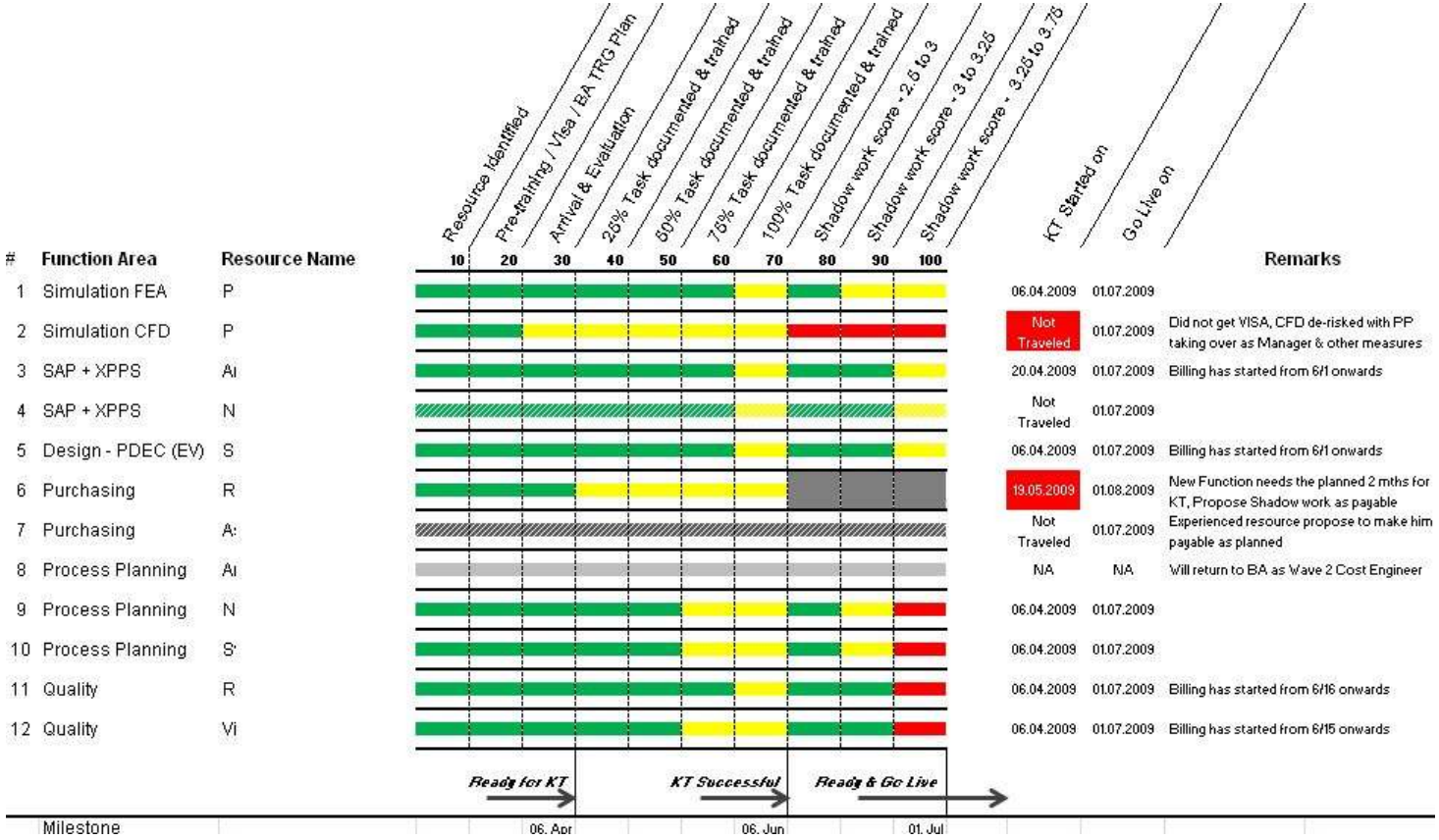
5 Conclusion

KT monitoring

· ensures that all functions are moving to a steady state level

· Go-live of engineering service only when all phases are successfully completed

· KT dashboard display status of each resource in each KT phase

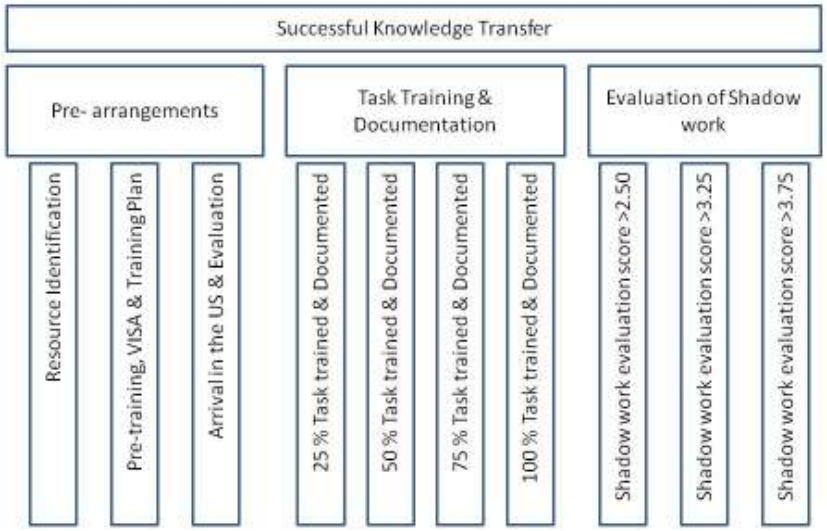


Lessons Learned

1 Introduction
2 Related work
3 KT phases
4 Governance for KT
5 **Conclusion**

Success factors for efficient KT

· Creation, implementation of a standardized KT road map



· Set up of a stable and well defined "Transition Management Office" which actively manages KT

· Implementation of an IT tool to track engineering service and to adjust knowledge basis

- standard workflow to submit a work request
- check status of off shored tasks
- generate KPI's for overall tracking and served as base for improvement measures
- provide feedback
- log defects and support by doing Lessons Learned

Some references

· Avison, D., Lau, F., Myers, M. and Nielsen, P. (1999):
Action Research, in: Communications of the ACM, Vo.42, No.1, pp 94-97

· Lehner, F., Warth, C. (2010): Knowledge Transfer Processes in the Automotive Supplier Industry – Designing an Integrated Knowledge Transfer Model. In: Moreira, R., Silva, R. (Hrsg.), Proceedings of the 11th European Conference on Knowledge Management, Universidade Lusíada de Vila Nova de Famalicão, Famalicão, Portugal, 2-3 September 2010, Academic Conferences, 2010, pp. 591-601

· Lin, X. and Germain, R. (1998): Sustaining Satisfactory Joint Venture Relationships: The role of conflict resolution Strategy, in: Journal of International Business Studies, Vol. 34, No. 3, pp 179-196

· Mayer, R. and Davis, J. (1999): The effect of the performance appraisal system on trust for management: a field of quasi-experiment, in: Journal of Applied Psychology, Vol. 84, No. 1, pp 123-136

· McKay, J. and Marshall, P. (2001): The dual imperatives of action research, in: Information Technology & People, Vol. 14, pp 46-59

· Minbaeva, D. and Michailova, S. (2004): KT and Expatriation in Multinational Corporations, in: Employee Relations, Vol. 26, No. 6, pp 663-679

· Minbaeva, D., Pedersen, T., Björkman, I., Fey, C.F. and Park, H.J. (2003): MNC KT, Subsidiary Absorptive Capacity, and HRM, in: Journal of International Business Studies, Vol. 34, No. 6, pp 586-599

· Warth, C. (2009): Aktionsforschung, in: Lehner, F. (Hrsg.) (2009): Forschungsstrategien im Wissensmanagement. Passauer Diskussionspapiere, Schriftenreihe Wirtschaftsinformatik, Diskussionsbeitrag W-31-09, pp 29-36

UNIVERSITÄT PASSAU
Wirtschaftswissenschaftliche Fakultät

Thank you for your attention!

Questions?

Franz.Lehner@uni-passau.de // Christian.Warth@gmx.de