

International Knowledge (Transfer) Management

**Models, Concepts and Solutions for Facilitating Knowledge Transfer
Processes in a Multilingual and Multicultural Business Environment**

Doctoral Thesis

Submitted to the

University of Paderborn

**Faculty of Business Administration and Economics
Department of Business Information Systems**

Submitted by

Dipl. Inf., Dipl. Wirt. Inf. Kemal Bicak

Avenue Maréchal Joffre n°28 Bt:7
1190 Forest / Bruxelles
Belgium

Paderborn, 11.02.2005

Contents

1	Introduction	1
1.1	Scenario	1
1.2	Aims of this thesis	2
1.3	Structure.....	3
2	Economic, Theoretical and Technical Foundations	4
2.1	Economic Foundations	4
2.1.1	General Economic and Social Upheaval	4
2.1.1.1	General Globalization Trends	4
2.1.1.2	The Global Electronic Market and Electronic Commerce	6
2.1.1.3	Cultural and Linguistic Diversity.....	8
2.1.2	Impacts on Organizations	10
2.1.2.1	General Potential and Challenges	10
2.1.2.2	Internationalization of Business Profiles and Processes	11
2.1.2.3	Knowledge becomes a Critical Resource of Success.....	15
2.2	Knowledge Management.....	16
2.2.1	Benefits and Values of Knowledge Management	17
2.2.2	Connotations of the term “Knowledge Management”	21
2.2.2.1	The confusion behind the term “Knowledge Management”	21
2.2.2.2	A Synopsis of Knowledge Management definitions.....	22
2.2.2.3	Data, Information, Knowledge, Wisdom	25
2.2.3	Basic Camps of Knowledge Management.....	30
2.2.3.1	Information Processing Camp.....	30
2.2.3.2	Human Processing Camp	31
2.3	Technological Foundations	33
2.3.1	Character encoding and visualization.....	33
2.3.1.1	General Overview	33
2.3.1.2	National and regional character sets and encoding standards.....	35
2.3.1.3	Universal Character Sets and Encoding Standards	38

2.3.2	Messaging and Collaboration Platforms.....	39
2.3.2.1	General Classification	39
2.3.2.2	IBM Lotus Notes/Domino	40
2.3.2.2.1	General characteristics.....	40
2.3.2.2.2	Linguistic and Cultural Characteristics	45
2.3.3	Localization, Internationalization and Globalization Tools	47
2.3.3.1	General Overview	47
2.3.3.2	IBM Domino Global WorkBench.....	48
2.3.4	Machine Translation Systems.....	50
2.3.4.1	Generation and Methodology of Machine Translation Systems	50
2.3.4.2	Types of computerized approaches to the translation process and its applications	52
2.3.4.3	IBM WebSphere Translation Server.....	54
2.3.4.4	Lotus Translation Components	56
2.3.5	General Linguistic and Cultural Resources	59
3	Theoretical Framework of International Knowledge (Transfer) Management .	61
3.1	Terminology	61
3.2	A Balanced Approach between Information Technology or Human Factor	62
3.3	International Knowledge (Transfer) Management in a Strategic Context	64
3.4	International Knowledge (Transfer) Management as a cross-disciplinary domain.....	65
3.5	Building a Corporate Culture	66
3.6	Social Networks and Collaboration.....	68
3.7	New Works Roles	70
3.8	The Process-based View.....	72
4	International Knowledge Transfer Process Analysis	74
4.1	Communication Analysis	74
4.1.1	Communication Theories	75
4.1.1.1	Basic Communication Models	75
4.1.1.1.1	<i>A Basic Model based on Aristotle's Rhetorics</i>	75
4.1.1.1.2	<i>Lasswell's Model</i>	75
4.1.1.1.3	<i>Shannon's Model</i>	76

4.1.1.2	Communication Models Reflecting Communicators' Role.....	76
4.1.1.2.1	<i>Schramm's Model</i>	76
4.1.1.2.2	<i>Gerbner's Model</i>	77
4.1.1.2.3	<i>Berlo's Model</i>	77
4.1.1.2.4	<i>Osgood & Schramm Circular Model</i>	78
4.1.1.2.5	<i>Schulz von Thuns' Communication Model</i>	79
4.1.2	Semiotics / Semiology.....	80
4.1.3	International Communication Situations.....	83
4.2	Knowledge Transfer Process.....	89
4.2.1	Communication and Knowledge Transfer.....	89
4.2.2	Synchronous Knowledge Transfer Process.....	90
4.2.2.1	Synchronous Knowledge Transfer Model.....	90
4.2.2.2	Knowledge Software - Symbolic Systems for Knowledge Articulation and Presentation.....	93
4.2.3	Asynchronous Knowledge Transfer Process.....	95
4.2.3.1	Knowledge Hardware - Storage and Communication Medium for Symbolic Systems.....	95
4.2.3.2	Basic Components of an Electronic Document based Knowledge (Transfer) Management System.....	97
4.2.3.3	Asynchronous Knowledge Transfer Model.....	99
4.3	Cultural and Linguistic Analysis of the International Knowledge Transfer.....	101
4.3.1	Cultural and Linguistic Issues within the Cognitive Process of Knowledge Transfer.....	101
4.3.1.1	Cultural and Linguistic Dissimilarities.....	103
4.3.1.2	The Distinctive Role of Mother Tongue.....	107
4.3.2	Cultural and Linguistic Issues within the Knowledge (Transfer) Management System.....	108
4.3.2.1	Acquisition and Presentation.....	108
4.3.2.2	Refinement.....	112
4.3.2.3	Translation.....	113
4.3.2.4	Retrieval.....	114
4.3.2.5	Distribution.....	116
4.3.3	Translation Support Employment Potentials within the Knowledge Transfer Process.....	117
4.3.3.1	Employment Potentials by Quality, Time and Cost Requirements.....	118
4.3.3.2	Cultural and Linguistic Support Needs within the Knowledge Transfer Process.....	120

5	International Knowledge (Transfer) Management Concepts.....	124
5.1	Multilingual and Multicultural Knowledge (Transfer) Management System....	125
5.1.1	Multiple Language Script Support	125
5.1.2	Multilingual and Multicultural Input and Output Interfaces	129
5.1.3	Multilingual and Multicultural Taxonomy Management	134
5.1.4	Multilingual and Multicultural Retrieval.....	143
5.2	Enabling MT, MAHT, HAMT and HT in a Knowledge (Transfer) Management System Domain	147
5.2.1	Integration of MT, MAHT, HAMT Resources	147
5.2.2	Integration of HT Resources	156
5.2.3	Multilingual and Multicultural Communication Gateway	159
5.2.4	Linguistic and Cultural Statistics Database	164
5.3	Cognitive Process Support in International Knowledge Transfers	165
5.3.1	Cultural and Linguistic Knowledge Base.....	167
5.3.2	Terminology Base	172
5.4	Central Linguistic and Cultural Function Pool.....	176
6	TransKnow	181
6.1	Architecture	181
6.1.1	General Design Approach	181
6.1.2	Technological Basis.....	183
6.2	Modules	184
6.2.1	TransKnow <i>LTConnect</i>	184
6.2.2	TransKnow <i>ConnectorLTC</i>	196
6.2.3	TransKnow <i>HTConnect</i>	197
6.2.4	TransKnow <i>MMCGateway</i>	201
6.2.5	TransKnow <i>Statistics</i>	208
6.2.6	TransKnow <i>CakeBase</i>	211
6.2.7	TransKnow <i>TeaBase</i>	215
6.2.8	TransKnow <i>FPool</i>	216
6.3	TransKnow in Practical Application	221
7	Concluding Summary and Outlook.....	223

8	References	229
9	Indices	248
9.1	Abbreviations	248
9.2	Figures	254
9.3	Tables.....	258
10	Appendix	259