

From Theory To Practice: Technology Transfer in Social Sciences and Humanities

Editor: Dr. İsmail ÇETİN



Editor: Dr. İsmail ÇETİN

**FROM THEORY TO PRACTICE:
TECHNOLOGY TRANSFER IN SOCIAL SCIENCES AND HUMANITIES**

ISBN 978-625-5964-24-3

Responsibility of the contents belongs to their authors.

© 2025, PEGEM AKADEMİ

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage or retrieval system, without prior permission in writing from the publishers.

Pegem Academy Publishing Training and Consultancy Services Tic. Ltd. Şti. Pegem Academy is a publishing house founded in 1998 in Ankara/Turkey which has been operating regularly for 23 years. Published books, it is included in the catalogs of higher education institutions. Pegem Academy has over 2000 publications in the same field from different authors. Detailed information about our publications can be found <http://pegem.net>.

1st edition: January 2025, Ankara

Publication-Project: Selcan Durmuş

Typesetter-Graphic Designer: Tuğba Kaplan

Cover Design: Pegem Akademi

Printed by: Repro Bir Mat. Kağ. Rek. Tas. Tic. Ltd. Şti.
İvedik OSB Matbaacılar Sit. 1514. Cad. No: 23-25
Yenimahalle/ANKARA

Publishing House Certificate Number: 51818

Printing House Certificate Number: 47381

Contact

Pegem Akademi: Shira Trade Center
Macun Neighbourhood 204th Street Number: 141/A-33 Yenimahalle/ANKARA
Publishing House: 0312 430 67 50
Distribution: 0312 434 54 24
Preparatory Courses: 0312 419 05 60
Internet: www.pegem.net
E-mail: yayinevi@pegem.net
WhatsApp Line: 0538 594 92 40

PREFACE

Knowledge is one of the most important forces in the development and progress of a society. However, merely producing theoretical knowledge does not ensure that this knowledge translates into societal benefit. The practical use of knowledge is a fundamental element that transforms society, improves people's lives, and enriches cultural interaction. This process is closely related to the concept of "technology transfer." While technology transfer is typically discussed in the context of engineering and natural sciences, it is important to recognize that a similar knowledge transfer process exists in the fields of social sciences and humanities as well.

This book, *From Theory To Practice: Technology Transfer In Social Sciences and Humanities*, discusses how the theoretical knowledge produced in these fields can be transformed into practical solutions and integrated into social life. Social sciences and humanities offer valuable insights into human behavior, culture, society, and ethics, providing in-depth analysis of the challenges faced in daily life. However, when this knowledge remains confined to an academic level, its potential impact is limited.

The book aims to highlight the potential of social sciences and humanities knowledge to generate concrete and applicable solutions to the complex problems faced by societies. By bridging theory and practice, it presents strategies and models to increase the social impact of research conducted in these fields. The book also examines how social sciences and humanities can drive social change through innovative approaches and interdisciplinary collaborations.

For research in social sciences and humanities to transition from academia to societal benefit, the application of theoretical knowledge into practice, collaborations, and innovative processes are crucial. This book encourages researchers, policymakers, educators, and practitioners to move their knowledge into broader social contexts and utilize this knowledge for social development.

We hope that this book will serve as a guide to bringing the transformative power of social sciences and humanities to a wider audience. Offering a practical perspective on increasing the social impact of research in these fields, it aims to be a source of inspiration for professionals, researchers, and policymakers in the relevant academic disciplines.

Dr. İsmail ÇETİN

CHAPTERS AND AUTHORS

Editor: Dr. İsmail ÇETİN

Chapter 1. Technology Transfer Systems in The World

*Ayşe ASİLTÜRK*¹, Trabzon University
ORCID: 0000-0002-6221-6208

Chapter 2. Public, University and Industry Cooperation in Turkey:

**The Role of Technology Transfer Offices Within The Framework
of Development Policies**

*Batuhan BİLİCİ*¹, Atılım University
ORCID: 0000-0002-645-248X
*Bahattin Gökhan TOPAL*¹, OSTİM Technical University
ORCID: 0000-0002-0022-1976

Chapter 3. An Example of Integrated and Sustainable Quality Assurance System Digitalisation in Higher Education: Omu Unikys

Gülcan AKPINAR, Ondokuz Mayıs University
ORCID: 0009-0008-2756-0389
Ayşe Begüm TOPYILDIZ, Ondokuz Mayıs University
ORCID: 0009-0001-5586-7387
Emre DEMİR, Ondokuz Mayıs University
ORCID: 0009-0009-7121-6793

Chapter 4. Digitalization of Hadith Sources and An Example of Hadith Database as an Online Reference Source

Yavuz ÜNAL, Ondokuz Mayıs University
ORCID: 0000-0002-7927-2943
Fatma EKİNCİ, Meridyen Association
ORCID: 0000-0002-2963-1872
Büşra Nur DURAN, Amasya University
ORCID: 0000-0001-6995-0803

Chapter 5. Artificial Intelligence in Education: The Role and Innovation of ChatGPT

İsmail ÇETİN, Ondokuz Mayıs University
ORCID: 0000-0002-7865-6080

Chapter 6. A Review of Research & Development and Design Center**Companies in TR61 Region**

İ. Veli SEZGİN, Akdeniz University

ORCID: 0000-0003-3639-8738

M. Cem SAKARYA, Akdeniz University

ORCID: 0000-0002-1754-7171

Nuray ATSAN, Akdeniz University

ORCID: 0000-0001-5415-891X

C. Ece ÖNER AYBEK, Antalya Bilim University

ORCID: 0000-0002-9034-6050

Chapter 7. Artificial Intelligence and Ethics in Technology Transfer

İbrahim Enes ÖNER, Tokat Gaziosmanpaşa University

ORCID: 0000-0002-9513-8242

Chapter 8. Technology Transfer Experiences and Future Challenges in Augmented**Humans Technologies**

Süleyman TURGUT, OSTİM Technical University

ORCID: 0000-0003-1466-402X

Chapter 9. A Research on Companies Producing Tourism Technologies in Technoparks in**TR61 Region**

M. Cem SAKARYA, Akdeniz University

ORCID: 0000-0002-1754-7171

Nuray ATSAN, Akdeniz University

ORCID: 0000-0001-5415-891X

İ. Veli SEZGİN, Akdeniz University

ORCID: 0000-0003-3639-8738

C. Ece Öner AYBEK, Antalya Bilim University

ORCID: 0000-0002-9034-6050

Chapter 10. Technology Transfer in Education: Digital Games

Yunus Emre ÖNER, Şehit Recep İnçe İmam-Hatip Middle School

ORCID: 0000-0003-3063-2845

CONTENTS

Preface.....	iii
Chapters and Authors	v

CHAPTER 1

TECHNOLOGY TRANSFER SYSTEMS IN THE WORLD

Introduction	2
Technology Transfer and Technology Transfer Systems	2
Management of The Technology Transfer Process	3
The State of Technology Transfer Systems By Country	4
Technology Transfer System in the United States of America.....	7
Technology Transfer System in the Europe	7
Technology Transfer System in Türkiye	8
Conclusion	9
References.....	10

CHAPTER 2

PUBLIC, UNIVERSITY AND INDUSTRY COOPERATION IN TURKEY: THE ROLE OF TECHNOLOGY TRANSFER OFFICES WITHIN THE FRAMEWORK OF DEVELOPMENT POLICIES

Introduction	13
Development Plans in the Historical Process: University and Public Cooperation	15
Public, University and Industry Cooperation within the Framework of Strategic Planning.....	16
The Role of University and Industry Cooperation in the Process of Technology Transfer.....	17
What Should Be the Role of Technology Transfer Offices in Public, University and Industry Cooperation?	19
Result and Discussion.....	23
References.....	24

CHAPTER 3

AN EXAMPLE OF INTEGRATED AND SUSTAINABLE QUALITY ASSURANCE SYSTEM DIGITALISATION IN HIGHER EDUCATION: OMU UNIKYS

Introduction	26
Quality Assurance System and Digitalisation in Higher Education.....	26
THEQC and Quality Assurance Systems in Higher Education	27
Increase in Competitive Environment.....	28
Changes in Expectations	28

OMU KGS Model: UNIKYS	29
Data and Indicators Module	30
Process Management Module.....	31
Document Management Module	31
Risk and Opportunity Management Module.....	32
Feedback Module.....	32
Internal Evaluation Module	33
Internal Audit Module	33
Improvement Management Module	34
Action Plan Module.....	34
Result and Discussion.....	36
Acknowledgement.....	38
References.....	38

CHAPTER 4

DIGITALIZATION OF HADITH SOURCES AND AN EXAMPLE OF HADITH DATABASE AS AN ONLINE REFERENCE SOURCE

Introduction	40
The Adventure of Recording and Processing Hadiths as Data.....	42
Digitization of Hadith Sources: The Example of Türkiye.....	44
Mastering Data and Producing Knowledge.....	45
Ease of Access to the Founding Texts of Religion and Culture and What They Bring	46
A Comprehensive Hadith Database Study: HVT	48
Conclusion	51
References.....	52

CHAPTER 5

ARTIFICIAL INTELLIGENCE IN EDUCATION: THE ROLE AND INNOVATION OF ChatGPT

Introduction	53
Methods.....	55
Result.....	55
Advantages of Using ChatGPT in Education.....	55
Disadvantages of Using ChatGPT in Education	58
Discussion	60
References.....	61

CHAPTER 6**A REVIEW OF RESEARCH & DEVELOPMENT AND DESIGN CENTER COMPANIES IN TR61 REGION**

Introduction	66
R & D Centers, Design Centers and Sustainability In Turkey.....	66
Methods	69
Findings	72
General Situation of Official R&D and Design Centers in Turkey within the scope of Statistical Regional Units Classification (IBBB).....	72
General Situation Regarding R&D and Design Centers	73
The General Situation of R&D and Design Center in TR61 Region	74
Current Status of R&D, Design and Innovation Concepts on the R&D and Design Center Websites	75
Current Status of Sustainability Issues on the R&D and Design Center Websites	76
Companies' Main Products on the R&D and Design Center Websites	77
Examining the Product-Sustainable Development Goals (SDGs) Relationship on R&D and Design Center Websites	77
Examining the Patent and Utility Model Performances of R&D and Design Centers	78
Examining the TÜBİTAK TEYDEB R&D Project Closing Performances of R&D and Design Centers in the TR61 Region	79
Discussion and Conclusion.....	80
References.....	81

CHAPTER 7**ARTIFICIAL INTELLIGENCE AND ETHICS IN TECHNOLOGY TRANSFER**

Introduction	84
Technology Transfer and Ethic.....	86
Technology Transfer and Artificial Intelligence	88
Artificial Intelligence and Ethics in Technology Transfer	89
Conclusion	93
References.....	93

CHAPTER 8**TECHNOLOGY TRANSFER EXPERIENCES AND FUTURE CHALLENGES IN AUGMENTED HUMANS TECHNOLOGIES**

Introduction	96
Material and Methods.....	97
Augmented Humans Technologies	97
Technology Transfer Experiences in Augmented Humans Technologies	98
Future Challenges in Augmented Humans Technologies.....	99
Result and Discussion.....	100
Conclusion	101
References.....	103

CHAPTER 9

A RESEARCH ON COMPANIES PRODUCING TOURISM TECHNOLOGIES IN TECHNOPARKS IN TR61 REGION

Introduction	107
Research Methods	111
Result and Discussion.....	111
General Findings on TR61 Region Companies and Tourism Industry Related Companies.....	112
Findings for Companies Producing Products/Solutions For The Tourism Industry	114
Conclusion	121
Acknowledgement.....	126
References.....	126

CHAPTER 10

TECHNOLOGY TRANSFER IN EDUCATION: DIGITAL GAMES

Introduction.....	128
Digital Games	129
The Use of Digital Games in Educational Environments.....	130
The Effect of Digital Games on Educational Environments.....	133
Conclusion	135
References.....	136

CHAPTER 1

TECHNOLOGY TRANSFER SYSTEMS IN THE WORLD

*Ayşe ASİLTÜRK*¹, Trabzon University
ORCID: 0000-0002-6221-6208

ABSTRACT

With the effects of globalization and recent digitalization, the proliferation and diversification of technological innovations have become increasingly important in facilitating mobility among businesses, institutions, universities, countries, and geographical regions. As the share of science and technology within economic growth increases, there arises a need for the development of national strategies, technology transfer organizations, and mechanisms to monitor and enhance technological performance. Rather than considering technology transfer solely as individual actions undertaken by institutions and organizations, it can be argued that focusing on the importance of technology transfer systems and aiming for comprehensive improvement will lead countries to gain advantages in technological competition. This study aims to examine the concept of technology transfer systems and conduct an analysis of the status of technology transfer systems in major countries around the world and in Türkiye. A descriptive literature review was conducted to shed light on future studies. Although scattered data on technology transfer in various countries can be found in numerous sources and reports, it is evident that new frameworks are needed to compare these data. In this compilation study, which aims to explain the current situation of technology transfer systems, academic studies that examine the technology transfer systems of 15 countries, including Türkiye, across the USA, Europe and Asia, directly at the main title level or indirectly such as comparison, were used. In these studies, the characteristics attributed to the systems and successes of different countries are summarized and presented in a table. The findings indicate that leading countries in technology transfer possess “strong collaboration between academia and industry, robust intellectual property laws, and a culture that fosters entrepreneurship and innovation.” Türkiye is a promising country in the field of technology transfer; however, it is important to address potential challenges and issues in the development of the technology transfer system.

Keywords: Technology Transfer Systems, World, Türkiye, Entrepreneurship, Innovation

1 Corresponding author e-mail: ayseasilturk@trabzon.edu.tr

1. INTRODUCTION

Although numerous technological innovations have entered human life from the past to the present, the process of how these innovations are transferred from the laboratories of inventors to businesses, from businesses to society, and from one country or region to another has been a relatively less explored and background topic. In this context, various aspects of the subject, such as innovation and entrepreneurship, emerge as different research areas. However, “technology transfer systems,” which constitute the backbone of the entire process from the idea stage of technological innovations to their commercialization and dissemination, are a less focused area. Today, the transforming competitive conditions influenced by digitization and digital transformation are motivating institutions and organizations, including both the private and public sectors, to reconsider technology transfer. Digitization and digital transformation are taking technological innovations and technology transfer to a new level. Technological innovation can be linked with the innovation ecosystem and technological transfer with the entrepreneurship ecosystem. When looking at the whole picture, a country’s technological advancement is related to the uniqueness and successful operation of its technology transfer systems. While there are successful role model countries in the development of technology transfer systems, other countries attempting to directly replicate these models have faced various challenges. This study aims to provide a conceptual explanation of technology transfer and technology transfer systems, along with an analysis of the status of technology transfer systems in different countries around the world and in Türkiye.

2. TECHNOLOGY TRANSFER AND TECHNOLOGY TRANSFER SYSTEMS

Technology transfer can be defined as a process involving various mechanisms through which technical needs are matched interactively with new devices, methods, and data, facilitating the movement of a technical innovation from a research and development (R&D) environment to other settings, ultimately encouraging the widespread adoption and utilization of technology [1]. Within this process, it is observed that technical knowledge or devices are transferred within a company or among companies, countries, and geographic regions across R&D, production, sales, and services. The concept of technology transfer is also used to describe less formal processes where new technologies move backward in the system, such as from manufacturing to manufacturing, or horizontally from one R&D laboratory to another [2]. The literature on technology transfer emphasizes that it is a multidimensional process, often involving movement of ideas, information, or