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# Innovation und Entrepreneurship

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Patrick Figge

# Collective Knowledge

How Teams and Larger Social Systems  
Learn, Remember, and Invent

With a foreword by Prof. Dr. Carolin Häussler

 Springer Gabler

Patrick Figge  
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# Foreword

Novelty is a critical feature of creative ideas, yet new ideas often build on existing knowledge which is increasingly dispersed among individuals. The sole inventor has become a rare phenomenon whereas collective knowledge production is becoming omnipresent. Collective knowledge refers to the sum of knowledge bits that specialized individuals possess. This type of knowledge can be powerful but requires adequate processes to coordinate and leverage the knowledge pool of specialized and differentiated communities and experts.

Yet, how collective knowledge and collective knowledge processing effectively work is far from being understood. The precise mechanisms behind turning collective knowledge into new and promising inventions as well as the factors and contexts, which are favorably for exploiting collective knowledge, need to be investigated. Research has only just started to address these issues.

In his dissertation, Patrick Figge makes a significant contribution. Based on a deep understanding of the field and thorough empirical work, he provides insights into how social systems learn, remember, and invent. His research proceeds in three steps. First, he investigates to what extent individuals with a unique combination of skills, experiences, or traits can have a critical impact on collective knowledge processing. In particular, his research focuses on how firm founders impact the ability of inventor teams to deviate from previous technological trajectories. Second, he theoretically and empirically examines if and to what extent social exchange rules as well as organizational design elements influence collective knowledge. Third, he elaborates on how digitalization changes the way social systems process knowledge, and in doing so, how digitalization challenges basic assumptions of the theory on transactive memory systems.

This book is Patrick Figge's doctoral thesis at the University of Passau, and it marks the starting point of a promising academic career. I am certain that the insights of his research will find the attention of researchers and practitioners alike.

Passau, March 2018

Prof. Dr. Carolin Haeussler

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Given that much of this dissertation falls into the area of team research, I am all the more aware of how important several ‘teams’ were in the endeavor to write this dissertation. I want to thank the teams (and friends) that challenged and supported me, while making my time writing this dissertation much more fun: the ‘Three-River Team’ (at the University of Passau), the ‘Gauchos’ (at the University of California, Santa Barbara), and the ‘Kralingse Team’ (at the Rotterdam School of Management, Erasmus University).

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Patrick Figge



# Contents

- Foreword.....V**
- Acknowledgements..... VII**
- Contents.....IX**
- List of Tables.....XIII**
- List of Figures ..... XV**
- List of Abbreviations..... XVII**
  
- Chapter 1: Introduction to the Dissertation ..... 1**
  - 1.1 Relevance..... 1
  - 1.2 Definitions ..... 4
  - 1.3 Contributions ..... 6
  - 1.4 References ..... 11
  
- Chapter 2: Firm Founders and Novelty ..... 13**
  - 2.1 Abstract..... 13
  - 2.2 Introduction ..... 14
  - 2.3 Theory..... 17
    - 2.3.1 The Influence of Company Founders ..... 17
    - 2.3.2 Inventor Teams ..... 20
  - 2.4 Hypotheses..... 21
    - 2.4.1 Founder-Inventors and Novelty ..... 21
    - 2.4.2 Interaction between Founder-Inventors and Experience ..... 26
      - 2.4.2.1 Individual Experience ..... 27
      - 2.4.2.2 Experience Variety..... 28

2.4.2.3	Team Experience.....	29
2.5	Methodology.....	31
2.5.1	Data .....	31
2.5.2	Measurements .....	32
2.5.3	Descriptive Statistics.....	34
2.5.4	Endogeneity .....	37
2.6	Results .....	38
2.6.1	Direct Effect of Founder-Inventors.....	41
2.6.2	Interaction Effects .....	42
2.7	Discussion.....	44
2.8	References .....	49
2.9	Appendix .....	56
<b>Chapter 3: Developing Transactive Memory Systems.....</b>		<b>57</b>
3.1	Abstract.....	57
3.2	Introduction .....	58
3.3	Theory.....	61
3.3.1	Transactive Memory Systems.....	61
3.3.2	Reciprocity .....	63
3.4	Hypotheses.....	64
3.4.1	Transactive Memory Systems and the Costs of Reciprocity .....	64
3.4.2	The Moderating Influence of Organizational Design .....	66
3.4.2.1	Formalization of Roles and Procedures .....	67
3.4.2.2	Organizational Slack Resources .....	68
3.4.2.3	Supporting IT Infrastructure.....	70
3.5	Methodology.....	71
3.5.1	Data Collection .....	71
3.5.2	Sample Characteristics.....	71

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3.5.3	Non-Response Bias .....	72
3.5.4	Common Method Bias .....	73
3.5.5	Interrater Agreement .....	75
3.5.6	Measurement Scales .....	75
3.6	Analyses .....	82
3.6.1	Regression Results .....	82
3.6.2	Interpretation of the Interactions .....	83
3.6.3	Post Hoc Analysis of Company Size .....	86
3.7	Discussion .....	87
3.7.1	Theoretical Implications .....	87
3.7.2	Practical Implications .....	89
3.7.3	Limitations and Future Research .....	91
3.8	References .....	93
3.9	Appendix .....	100
<b>Chapter 4: Transactive Memory Systems in the ‘Digital Age’ .....</b>		<b>101</b>
4.1	Abstract .....	101
4.2	Introduction .....	102
4.3	Methodology .....	106
4.4	Transactive Memory Systems .....	108
4.4.1	Definition .....	110
4.4.2	Constituent Parts .....	111
4.5	Digitalization .....	114
4.6	Current Premises of TMS Research and Changes due to Digitalization .....	119
4.6.1	Blurring Boundaries .....	119
4.6.2	Transparency .....	123
4.6.3	Information Overload .....	126
4.7	A New Research Agenda .....	129

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4.7.1	Expertise Inference and Credibility Assessment .....	130
4.7.1.1	Cues for Inference .....	135
4.7.1.2	Scope of Judgment .....	138
4.7.1.3	Actors in Assessment Process .....	140
4.7.2	Meta-knowledge: A Connective Structural Element .....	144
4.7.3	Referring: A New Transactive Process .....	152
4.8	Discussion .....	157
4.8.1	Contributions to TMS Literature .....	158
4.8.2	Contributions to Organization Theory .....	160
4.8.3	Limitations and Future Research .....	162
4.9	Conclusion .....	163
4.10	References .....	165
4.11	Appendix .....	179
4.11.1	Appendix 1: Proliferation of TMS Research .....	179
4.11.2	Appendix 2: Selected Sources for Review of TMS Literature .....	182

# List of Tables

Table 2.1: Variable Descriptions..... 35

Table 2.2: Descriptive Statistics..... 36

Table 2.3: Regressions on Technological Novelty (2SLS, 2nd Stage) ..... 40

Table 2.4: First Stage of IV Regressions and CF Approach ..... 56

Table 3.1: Industry and Company Size ..... 73

Table 3.2: Confirmatory Factor Analysis for TMS Measurement..... 78

Table 3.3: Descriptive Statistics..... 80

Table 3.4: Correlation Matrix..... 81

Table 3.5: Regressions on Organizational TMS (OLS) ..... 84

Table 3.6: Interpretation of Interactions..... 86

Table 3.7: Regressions on Organizational TMS (OLS) – Sample Split by Company Size ... 100

Table 4.1: Overview of Expertise Inference and Credibility Judgment..... 134

Table 4.2: Search Results for TMS Journal Articles..... 179

# List of Figures

Figure 2.1: Interaction of Founder-Inventors and Individual Experience..... 43

Figure 2.2: Interaction of Founder-Inventors and Team Experience ..... 44

Figure 3.1: Interaction of Formalization and the Costs of Reciprocity ..... 85

Figure 3.2: Interaction of Organizational Slack and the Costs of Reciprocity ..... 85

Figure 4.1: Constituent Parts of TMS ..... 113

Figure 4.2: Search Results for TMS in Books ..... 180

Figure 4.3: Venn Diagram of Identified Sources from Two Major Literature Reviews..... 183

## List of Abbreviations

2SLS	Two-Stage Least Squares
CAGR	Compound Annual Growth Rate
CF	Control Function
ESN	Enterprise Social Networks
GMM	Generalized Method of Moments
IT	Information Technology
IV	Instrumental Variables
LIML	Limited Information Maximum Likelihood
MIPS	Million Instructions per Second
OLS	Ordinary Least Squares
R&D	Research and Development
S.D.	Standard Deviation
TMS	Transactive Memory Systems
TMT	Top Management Teams