

CSR, Sustainability, Ethics & Governance

Series Editors

Samuel O. Idowu, London Metropolitan University, London, UK
René Schmidpeter, Cologne Business School, Cologne, Germany

In recent years the discussion about the relationship between business and society has made immense progress. This has in turn led to a broad academic and practical discussion on innovative management concepts, such as Corporate Social Responsibility, Corporate Governance and Sustainability Management. This series offers a comprehensive overview of the latest theoretical and empirical research and provides sound concepts for sustainable business strategies. In order to do so, it gathers together the experience and in-depth contemplations of leading thinkers in the fields of management theory and the social sciences. It makes highly innovative management approaches accessible to academics from various disciplines, business leaders and interested students alike. Furthermore it brings together different perspectives from all over the world and thus contributes to the interdisciplinary and intercultural discussion on the role of business in society. The underlying intention of this series is to contribute to the world's most challenging problems by developing new management concepts that create value for both: business and society. It has been developed to suppose those managers and researchers who are willing to contribute to creating sustainable business approaches for our common future.

CSR, Sustainability, Ethics & Governance is accepted by the Norwegian Register for Scientific Journals, Series and Publishers, maintained and operated by the Norwegian Social Science Data Services (NSD).

More information about this series at <http://www.springer.com/series/11565>

Samuel O. Idowu · Henk J. de Vries ·
Ivana Mijatovic · Donggeun Choi
Editors

Sustainable Development

Knowledge and Education
About Standardisation

 Springer

Editors

Samuel O. Idowu
Guildhall Faculty of Business and Law
London Metropolitan University
London, UK

Ivana Mijatovic
Faculty of Organizational Science
University of Belgrade
Belgrade, Serbia

Henk J. de Vries
Rotterdam School of Management
Erasmus University
Rotterdam, The Netherlands

Faculty of Technology, Policy
and Management
Delft University of Technology
Delft, The Netherlands

Donggeun Choi
Korean Standards Association
Seoul, Korea (Republic of)

ISSN 2196-7075 ISSN 2196-7083 (electronic)
CSR, Sustainability, Ethics & Governance
ISBN 978-3-030-28714-6 ISBN 978-3-030-28715-3 (eBook)
<https://doi.org/10.1007/978-3-030-28715-3>

© Springer Nature Switzerland AG 2020

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Foreword

Education is a socially constructed phenomenon. And as a process core to what happens in societies, it plays a crucial role in socializing human beings into the norms and values surrounding behavior, individually and as individuals interact in groups. Notably in the UK, policy makers at the time of writing have drawn attention to an over-emphasis on a technocratic view of education and measures of success, encouraging educators to pay attention to a more comprehensive frame of reference for evaluating this important activity.

Norms and values are at the heart of what standardization may involve in education. It is important, by the way, to disentangle education from training, although the two may reasonably be viewed as complementary activities. Training enables skills development; education potentially transforms people's outlooks and modes of behaving—as it enables them to understand what their induction into the human race has involved to the point of conscious reflection on these experiences. And an aspiration to move them forward in particular ways—not only in terms of general education but building on that in following specialist pathways.

Achieving and maintaining practices across educational institutions leading to sustainability in the world they serve depend on public warrant. Being a legitimate process based on certain commonly accepted components. Monitoring and evaluating such components' evolution in practice can benefit from standardization to make common norms available to facilitate these processes, albeit with the caveat to avoid the myopic thinking referred in the opening paragraph. Therefore, mitigating risks that standardization may be harmful; in particular, if it lacks transparency in surfacing the norms and values derived from the interest groups (including education “professionals”) involved in determining it.

This recognizes that standardization in education (as in other aspects of social life), and its association with arguments about sustainability in terms of maintaining consent and resources to continue educational processes, is contested terrain. Which is why it is valuable to have a volume such as the present one to bring together systematically for critical imbibing and appraisal the debates contemporarily taking place in the field.

In their introduction, the editors set the scene by reference to “the art of teaching” and, consistent with this enshrining feature, indicate the strategic choice that has been made for contributions to the volume largely to focus bottom-up on ideas and practice. While socialization can be a top-down process, if one considers the institutional processes involved as an art form, then it logically follows to place weight on what emerges from agency and interactions between participants. From which emergent standards may be identified to complement any values-based standards identified in a more deontological manner. As contributors point out, education as *communication* between social actors to enable shared understanding around issues in, e.g., the legal, political, and technological spheres, across the sub-strata of socioeconomic life is needed. In turn, arriving at a standardized basis for agency. Underpinned by attention to what are perceived to be the needs of industry and society, themselves socially constructed phenomena and thus open to contestation.

The contributions to this volume address these challenges and offer readers a wide range of perspectives and focal points from which to engage with the field—elevating attention to its importance in education specifically and for society and industry generally. Not only are the factors delineated and critically appraised, the strategic significance of the terrain is suitably emphasized, along with avenues to understanding and steps to act on such understanding.

January 2019

Stephen J. Perkins, D.Phil. (Oxon)
Emeritus Professor
London Metropolitan University
Senior Research Fellow
Global Policy Institute London

Preface

There is no easy way to address different and specific roles of education and research for sustainable development. Having said this, there is a general consensus that education and research are highly important. Standards and the processes of their development and standardization continue to shape all businesses operating in a globalized world. The impacts of standards development and standards' implementation on economies, societies, and the environment are evident and numerous, albeit, still not fully understood. Many actors, with different intentions and interest, develop standards which can be more or less successful in the market for instance; they might compete in the market for industry acceptance or being referenced in regulations. Engaging in sustainable development issues is not possible without having adequate standards in place. Knowledge and education about standardization can be understood as one of many prerequisites for sustainable development.

Many global actors have called for more education about standardization. In 1970, the UNECE Government Officials Responsible for Standardization Policies (the predecessor of WP. 6) developed recommendations that urged governments to include standardization in the curricular of educational institutions. Almost all standards development organizations (SDOs) have called for education about standardization and activities to support education on standardization. The need for cooperation among industry, academia, and standard organizations is essential in order to promote, initiate, and foster education about standardization in the globalized world.

Despite such initiatives, little attention is paid to the formal education about standardization. The 13 chapters of this book are focused on knowledge and education about standardization in higher education, and this we believe is the first attempt to address these issues in one book. We hope that this book will be valuable

to those who are teaching or would like to teach modules on standards and standardization or for those who would like to understand more clearly specific aspects of education on standardization.

London, UK
Rotterdam, The Netherlands
Belgrade, Serbia
Seoul, Korea (Republic of)

Samuel O. Idowu
Henk J. de Vries
Ivana Mijatovic
Donggeun Choi

Acknowledgements

Editing a book is not an easy task but with support from a number of willing scholars, many of the tasks involved are made a lot easier. This was the case with this book. For this reason, these four editors owe a load of thank you to all our contributors who have supported us with their innovative chapters in this book. Despite their busy schedules, they felt obliged to help in putting together this very fine informative addition to the literature on standardization. These four editors are grateful to you all.

We would also like to express our gratitude to a few people starting with Professor Stephen J Perkins, Emeritus Professor, and Senior Research Fellow, London Metropolitan University, who wrote a very fine foreword to the book. We are also grateful to our families and colleagues for their support during the process of editing the book.

The lead editor and the editorial team of the book would like to thank the publishing team at Springer headed by the Executive Editor, Christian Rauscher, Barbara Bethke, and other members of the publishing team who have supported this project and the lead editor's other projects.

Finally, we apologize for any errors or omissions that may appear anywhere in this book, and please be assured that no harm was intended to anybody.

Introduction

Regular readers of this book series may wonder: Why a book on knowledge and education about standardization? Isn't standardization a phenomenon for engineers? Indeed, the vast majority of standards still address products or technology-related processes such as testing. However, the scope of standardization is broadening. The number of standards for services and management systems has been increasing for three decades already, and this increase continues. More recently, standards for complex technical and societal systems are being added. And last but not least, the increased attention for sustainability as reflected in the United Nations Sustainable Development Goals brings sustainability to the company management agenda (Van Tulder, 2018) and brings standards to the societal agenda (De Vries et al., 2018). Standards used to be applied to facilitate for-profit activities and to mitigate negative externalities for, in particular, workers, consumers, and the environment, but the increased attention for societal issues makes that new standards need to be developed taking the starting point at the side of the societal issues. Some standards are available already, and the United Nations Sustainable Development Goals are expected to trigger additional standardization activities (ISO, 2018; Jachia, 2018).

Standardization is and continues to be a major instrument for private goods and services in for-profit market environments. These markets get increasingly intertwined with private non-profit initiatives (e.g., fair trade) and public non-profit initiatives (governmental policies). Common goods are shared between these three, but these suffer from the "tragedy of the commons." Dealing with common pool problems requires the involvement and positive actions of all societal actors: companies, governments, and NGOs. Standards and subsequent conformity assessment are important instruments to avoid a tragedy of the commons, and the involvement of all stakeholders is essential for the development and market acceptance of these standards. These stakeholders need to be well prepared, and this requires education and training. And therefore, this book is needed, in this book series.

Frankly, this book project was a challenge because it aims to bridge three worlds: sustainability, standardization, and education. Most of the papers we received combine standardization and education and are written by academic

experts in standardization, experienced in teaching in this field and/or in stimulating education about standardization. Just one paper, written by Wright et al., starts at the sustainability side, and therefore, we decided to start with that one because it moves from sustainability to standards and then to teaching about sustainability standards, using three case studies, on a standard to solve a sustainability issue, carbon footprints, and lifecycle assessment. Also, the next chapters present cases of teaching about standards and standardization: Van den Bosche on standards for electric vehicles, Fomin on standardization for informatics and information systems, and Van de Kaa on battles between competing standards. The last case on teaching, by de Vries, describes a case in which standardization is related to innovation management. Interestingly, he shows that systematic course design makes that sustainability issues are being addressed automatically.

The second part of the book takes a country perspective: Bulgaria (Vasileva) and Romania (Puiu). We intended to have papers about other countries as well, but unfortunately we had to reject several of such papers during the review process.

The third part of the book is about stimulating education about standardization. This starts with the need for it in the market. This is the topic of the first paper, written by Blind and Drechsler. Also, the next paper, by Jachia et al., addresses market needs, by referring to a guide developed by the International Federation of Standards Users IFAN. This guide shows who in a company should know what about standardization. But their paper offers more, and it also provides an overview of initiatives to stimulate education about standardization in different parts of the world and then focuses on the role the United Nations Economic Commission for Europe plays in doing this: by emphasizing the need in the form of a Recommendation to the member states and by means of a model program for education about standardization. Next, De Vries et al. show the role communities of practitioners can play in developing and exchanging standardization knowledge. The author of the next paper, Kanevskaia, discovered that practitioners in standardization may be limited in their view on the topic and then cannot put their standardization activities into perspective. She argues that a multidisciplinary education approach is needed. Then, the challenge is to bring this message also to new generations—Mijatovic shows how “generation Z” can be addressed in education about standardization.

The last chapter discusses the foregoing chapters, draws conclusions, and provides recommendations.

Henk J. de Vries
hvries@rsm.nl

References

- De Vries, H. J., Jakobs, K., Egyedi, T., Eto, M., Fertig, S., Klintner, L., ... Scaramuzzino, G. (2018). Standardization—Towards an agenda for research. *International Journal of Standardization Research*, 16(1), 52–59.
- ISO (2018) *Contributing to the UN Sustainable Development Goals with ISO standards*. Geneva: International Organization for Standardization. <https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100429.pdf>.
- Jachia, L. (2018). *Standards for the sustainable development goals*. Geneva: United Nations Economic Commission for Europe.
- Van Tulder, R. (2018). *Business & the sustainable development goals—A framework for effective corporate involvement*. RSM Series on Positive Change Vol. 0. Rotterdam: Rotterdam School of Management, Erasmus University.

Contents

Cases of Education About Standardization

Standards in the Classroom: A Vehicle for Sustainability Education	3
Laurence A. Wright, Julie Sinistore, Mike Levy and Bill Flanagan	
A Look Behind the Curtain: Standardization Education for Engineers from the Electric Vehicle Standardization Shopfloor	17
Peter Van den Bossche	
From Boring to Intriguing: Personal Perspective on Making Education About Standardization Appealing to Students	31
Vladislav V. Fomin	
Mutual Enforcement of Research and Education—The Case of Structured Inquiry-Based Teaching of Standardization	45
Geerten van de Kaa	
Addressing Sustainability in Education About Standardisation—Lessons from the Rotterdam School of Management, Erasmus University	57
Henk J. de Vries	
Cases of Countries	
Education About Standardization in the Context of Sustainable Development	79
Elka Vasileva	
Strategies on Education About Standardization in Romania	95
Silvia Puiu	

Stimulating Education About Standardisation

Necessary Competences of Employees in the Field of Standardization 113

Knut Blind and Sandra Drechsler

UNECE Initiatives on Education on Standardization 139

Lorenza Jachia, Serguei Kouzmine and Haiying Xu

The Need for Multi-disciplinary Education About Standardization 161

Olia Kanevskaia

Learning in Communities of Standardisation Professionals 179

Henk J. de Vries, Jeroen Trietsch and Paul M. Wiegmann

Teaching Standardization to Generation Z-Learning Outcomes Define Teaching Methods 191

Ivana Mijatovic

Summary

Sustainable Development: Knowledge and Education About Standardisation—Discussion 211

Henk J. de Vries

Index 215

Editors and Contributors

About the Editors

Samuel O. Idowu, Ph.D. is Senior Lecturer in Accounting and Corporate Social Responsibility at London Guildhall School of Business and Law, London Metropolitan University, UK. He researches in the fields of corporate social responsibility (CSR), corporate governance, business ethics, and accounting and has published in both professional and academic journals since 1989. He is a freeman of the City of London and a Liveryman of the Worshipful Company of Chartered Secretaries and Administrators. He is Deputy CEO and First Vice President of the Global Corporate Governance Institute. He is Editor in Chief of three Springer's reference books—the Encyclopedia of Corporate Social Responsibility, the Dictionary of Corporate Social Responsibility, and the Encyclopedia of Sustainable Management (forthcoming)—he is Editor in Chief of the International Journal of Corporate Social Responsibility (IJCSR), Editor in Chief of the American Journal of Economics and Business Administration (AJEBA), and Associate Editor of the International Journal of Responsible Management in Emerging Economies (IJRMEE). He is also Series Editor for Springer's books on CSR, sustainability, ethics, and governance. One of his edited books won the most Outstanding Business Reference Book Award of the American Library Association (ALA) in 2016 and another was ranked 18th in the 2010 Top 40 Sustainability Books by, *Cambridge University, Sustainability Leadership Programme*. He is Member of the Committee of the Corporate Governance Special Interest Group of the British Academy of Management (BAM). He is on the Editorial Boards of the International Journal of Business Administration, Canada, and Amfiteatru Economic Journal, Romania, and a few more. He has delivered a number of keynote speeches at national and international conferences and workshops on CSR and has on two occasions 2008 and 2014 won Emerald's Highly Commended Literati Network Awards for Excellence. To date, he has edited several books in the field of CSR, sustainability and governance and has written ten forewords to CSR books. He has served as External Examiner to the following UK Universities—Sunderland, Ulster, Anglia

Ruskin, Plymouth, Robert Gordon University, Aberdeen, Teesside University, Middlesbrough, Sheffield Hallam University, and Leicester De Montfort University. He has also examined Ph.D. theses for a few non-UK Universities from across the globe.

Henk J. de Vries (1957) is Professor of Standardisation Management at the Rotterdam School of Management, Erasmus University in Rotterdam, The Netherlands, Department of Technology and Operations Management, Section Innovation Management, and Visiting Professor at Delft University of Technology, Faculty of Technology, Policy and Management, Department of Values, Technology and Innovation, Section Economics of Technology and Innovation. His education and research focus on standardisation from a business point of view. From 1994 until 2003, he worked with NEN, Netherlands Standardization Institute, in several jobs, being responsible for R&D during the last period. Since 1994, he has an appointment at the Erasmus University's School of Management, and since 2004, he has been working full time at this university. He is (co-)author of more than 380 publications on standardization, including several books. See www.rsm.nl/people/henk-de-vries. In 2009, the International Organization for Standardization ISO awarded his education about standardization as best in the world. He is President of the European Academy for Standardization EURAS.

Ivana Mijatovic is Associate Professor at Faculty of Organizational Sciences, University of Belgrade. For much of her academic career, she has focused on standardization and quality management. She is Passionate Teacher; on bachelor studies, she teaches standardization 1, quality engineering and quality planning; on master and Ph.D. studies, she teaches standardization 2 and ICT standardization. In 2018/2019, she is Chair of the Board of the International Cooperation for Education about Standardization ICES (<http://www.standards-education.org/>). Since 2017, she has been serving as Member of working group related to EU Joint Initiative on Standardization (JIS Action 3). Since 2015, she is Member of the STARTed team (Team of Specialists on Standardization and Regulatory Techniques—education on standardization) of The United Nations Economic Commission for Europe (UNECE). She serves as Vice President on the board of the European Academy for Standardization (EURAS, www.uras.org), and she was Member of the Balkan Coordination Committee for Standardization, Prototypes, and Quality (BCC). She is Member of national technical committee KS II/07—Software engineering, IT for Education and Internet at Institute for Standardization of Serbia (national mirror committee in relation with ISO/IEC JTC 1/SC 7 Software and systems engineering; CEN/TC 353 Information and Communication Technologies for Learning, Education and Training; CEN/TC 365 Project Committee—Internet Filtering; ISO/IEC JTC 1/SC 36 Information technology for learning, education and training and ISO/IEC JTC 1/SC 40 IT Service Management and IT Governance). She developed the course standardization 1 and wrote a text book with ten case studies standardization 1 (2015). Her current academic work addresses questions of standardization, education about standardization, teaching quality, and quality aspects of technology-enhanced learning.

Donggeun Choi is Chief Researcher in Korean Standards Association (KSA) where he joined in 2000. He holds a Ph.D. in Technology and Innovation Management from Sungkyunkwan University of Korea. He also serves as Secretary of International Cooperation of Education about Standardization (ICES). He is Proponent and Editor of APEC standards education initiative which completed in 2007–2011, and he recently proposed a new APEC project titled “Inspiring Next Generation of Standards Professional Development: Phase I. Identifying Stakeholder Requirements.” He has published research articles and policy reports in the area of standardization (governance, patents, and education) and technology innovation.

Contributors

Knut Blind Faculty of Economics and Management, Fraunhofer Institute for Open Communication Systems FOKUS, Technische Universität Berlin, Berlin, Germany

Henk J. de Vries Rotterdam School of Management, Erasmus University, Rotterdam, The Netherlands;

Faculty of Technology, Policy and Management, Delft University of Technology, Delft, The Netherlands

Sandra Drechsler Institut Für Produktentwicklung, Karlsruher Institut Für Technologie (KIT), IPEK, Karlsruhe, Germany

Bill Flanagan Aspire Sustainability, Albany, NY, USA

Vladislav V. Fomin Vilnius University, Kaunas, Lithuania

Lorenza Jachia UNECE Working Party on Trade and Standardization Policies, Economic Cooperation and Trade Division, UNECE, Geneva, Switzerland

Olia Kanevskaia Tilburg Law and Economics Center (TILEC) and Tilburg Law School (TLS), Tilburg, The Netherlands

Serguei Kouzmine UNECE, Geneva, Switzerland

Mike Levy First Environment, Sacramento, CA, USA

Ivana Mijatovic Faculty of Organizational Sciences, University of Belgrade, Belgrade, Serbia

Silvia Puiu Faculty of Economics and Business Administration, University of Craiova, Craiova, Romania

Julie Sinistore WSP, Portland, OR, USA

Jeroen Trietsch Knowledge Network for Continuous Improvement, 's-Hertogenbosch, The Netherlands

Geerten van de Kaa Delft University of Technology, Delft, The Netherlands

Peter Van den Bossche Vrije Universiteit Brussel, Brussel, Belgium

Elka Vasileva University of National and World Economy, Sofia, Bulgaria

Paul M. Wiegmann Technical University of Eindhoven, Eindhoven, The Netherlands

Laurence A. Wright Warsash School of Maritime Science and Engineering, Solent University, Southampton, UK

Haiying Xu Intern, Economic Cooperation and Trade Division, UNECE, Geneva, Switzerland