

Cognitive Diversity, Managerial Characteristics and Performance Differences across the Cleantech Firms

Jukka-Pekka Bergman, LUT University, Lappeenranta, Finland

Pasi Luukka, LUT University, Finland

Ari Jantunen, LUT University, Lappeenranta, Finland

Anssi Tarkiainen, LUT University, Lappeenranta, Finland

ABSTRACT

Continuous change in the energy sector towards more sustainable solutions has raised the importance of managers' abilities to interpret changes in their environments and translate those perspectives into strategic choices. This study examines managerial interpretation on changing business environment opening the relationship of cognitive diversity, board composition, and performance differences across the cleantech firms. The authors' empirical study employs both indirect and direct cognitive measures for analysis of cognitive maps collected through surveys from the cleantech firms. The study utilizes the hybrid cognitive mapping technique with distance ratio to investigate cognitive diversity and bridges it with the firms' performance. The study also advances and operationalizes the distance ratio as a measure for the analysis of cognitive maps to utilize more information available in the maps. The results indicate that the managerial characteristics showing firm-level economic expertise creates high-level cognitive diversity and high financial volatility in performance among the cleantech firms.

KEYWORDS

Cleantech Industry, Cognitive Mapping, Demographics, Distance ratio, Sustainability

INTRODUCTION

Today's ambiguous and rapidly changing business environment is increasing interest in strategic cognition research, especially in top managements' perceptions on their environment (see for review, Kaplan, 2011; Narayanan et al., 2011; Gavetti & Warglien, 2015; Bromiley & Rau, 2016). Research in managerial cognition and organizational theory has long noticed the fundamental importance of cognitive structures studying interaction of organizations and changing environment. The literature has provided several interesting research strands to investigate, e.g. systematic bias in interpretation and decision making (Kahneman & Lovallo, 1993), cognitive maps and cognitive categories (Axelrod, 1979; Porac et al. 1989; Tyler & Gnyawali, 2009), managerial attention and sense making (Dutton & Duncan, 1987; Weick, 1995; Ocasio, 1997), managerial dominant logic (Prahalad & Bettis, 1986; Nadkarni & Narayanan, 2007b; Targowski, 2014), and organizational behaviour and performance (Cyert & March, 1993; Tripsas & Gavetti, 2000; Powell et al., 2011). However, recent research has been advocating more comprehensive approaches with multiple methods to investigate the role of

DOI: 10.4018/IJKBO.2020010101

managerial cognition in organizational outcomes (Powell et al., 2011; Gavetti & Warglien, 2015; Bang & Phadtare, 2017).

When an environment is uncertain and ambiguous, managers continuously receive and interpret new information triggering them to adjust their assumptions of competition. These assumptions are bounded by managers' existing beliefs influencing the manner in which they frame external changes and thus how they search for and enact the information (Daft & Weick, 1984; Tripsas & Gavetti, 2000; Vecchiato, 2017). Studies have shown that managers' cognitive structures developed across time enhance as well as limit organizational sense making and actions responding to external stimuli (Kaplan & Tripsas, 2008; Salisbury, 2014; Martignoni et al., 2016). In organizational settings, managers act in groups gathering, sharing, and attending to relevant information and jointly analyse and integrate it establishing a shared understanding on a certain issue or situation (Daft & Weick, 1984; Klimoski & Mohammed, 1994). They also interact within the particular business environment and become influenced by their stakeholders' beliefs and behaviours (Bogner & Barr, 2000). Consequently, managers begin to share a worldview with their stakeholders that holds commonly accepted beliefs on the business environment creating similarities in organizations' strategies and future operations across the organizations (Porac et al., 1989; Nadkarni & Narayanan, 2007b, Gavetti & Warglien, 2015). For managerial cognition studies, an important question has been the extent to which individual managers within the organization and a wider population have similarities or differences in their cognitions and their linkages to firms' outcomes and environmental changes (Lyles & Schwenk, 1992; Hodgkinson et al., 1999; Tyler & Gnyawali, 2009; Martignoni et al., 2016).

As managers' cognitions are unobservable and therefore difficult to measure, empirical research has provided varying support in results concerning the effects of managerial cognitions on organizational outcomes (Walsh, 1995; Kaplan, 2011; Narayanan et al., 2011; Bromiley & Rau, 2016). Investigating managers' cognitive structures as 'lenses' to their information environment, prior research has separately applied either indirect managerial characteristics or direct cause-effect descriptions as indicators of diversity in organizational cognitions (Kilduff et al., 2000; Cho & Hambrick, 2006; Tyler & Gnyawali, 2009; Heft, 2013). The use of indirect managerial characteristics as proxy variables in order to explain cognitive diversity among a certain cohort, for example, decision-making group enables the collection of wide data sets for comparison of several different organizations. This approach rests on an assumption that the difference in background variables, such as demographics, is a source of cognitive diversity. To our knowledge, validity of this assumption has been relatively rarely tested with direct cognitive measures in managerial cognition studies. On the other hand, the studies that apply direct measures of cognitive diversity (such as cognitive maps) provide deeper understanding of actual cognitive diversity (compared to, for example, demographical diversity), but these studies are quite often limited to studying a single organisation. These studies cannot efficiently assess the correlation of cognitive diversity, and consequently such studies are quite descriptive in nature and the results show lack of operationalization (Tyler & Gnyawali, 2009; Nakagawa et al., 2010). Thus, in managerial cognition research, there is still a need for more comprehensive approaches investigating cognitive diversity to increase knowledge on how cognitive structures vary between the organizations and are connected to their performance.

The studies have provided compelling results that managerial cognition is an important factor on firm actions (Bogner & Barr, 2000; Kaplan, 2008; Kiss & Barr, 2015). In our study, the aim is to investigate the decision makers' interpretations on changing business environment with regard to the strategic sustainability issues by building an outline for an empirical research framework to advance research on cognitive diversity in firms' upper echelons across the organizations. Our study focuses on those firms operating within the cleantech industry in Finland, as one of the key actors of the EU countries in the field (EU Commission, 2016; Sworder et al., 2017). During the research period, the Government of Finland along with other EU countries was developing the 'National renewable energy and climate strategy 2030' to meet the EU climate targets and established a series of strategic projects in clean solutions triggering firms and other actors to channel their operations towards sustainable

24 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/cognitive-diversity-managerial-characteristics-and-performance-differences-across-the-cleantech-firms/241873

Related Content

Examining the Role of Technology Leadership on Knowledge Sharing Behaviour

Anugamani Priya Srivastava and Yatish Joshi (2018). *International Journal of Knowledge Management* (pp. 13-29).

www.irma-international.org/article/examining-the-role-of-technology-leadership-on-knowledge-sharing-behaviour/213942

Exploring the Dynamics of Justification in the Wake of a Rumor Outbreak on Social Media

Anjan Pal, Alton Y. K. Chua and Snehasish Banerjee (2022). *International Journal of Knowledge Management* (pp. 1-15).

www.irma-international.org/article/exploring-the-dynamics-of-justification-in-the-wake-of-a-rumor-outbreak-on-social-media/291100

A Framework for Synthesizing Arbitrary Boolean Queries Induced by Frequent Itemsets

Animesh Adhikari (2013). *International Journal of Knowledge-Based Organizations* (pp. 56-75).

www.irma-international.org/article/framework-synthesizing-arbitrary-boolean-queries/77884

Four Express Service Cooperation Modes for B2C E-Commerce: Models and Analysis

Ningning Wang, Xi Cheng and Qinglong Gou (2015). *International Journal of Knowledge-Based Organizations* (pp. 1-18).

www.irma-international.org/article/four-express-service-cooperation-modes-for-b2c-e-commerce/133148

IS Support for Knowledge Management and Firm Performance: An Empirical Study

Michael J. Zhang (2009). *Knowledge Management, Organizational Memory and Transfer Behavior: Global Approaches and Advancements* (pp. 234-254).

www.irma-international.org/chapter/support-knowledge-management-firm-performance/25064