

The human dimension of open innovation

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The most recent innovation models increasingly postulate external relationships of innovators in many different shapes including the acquisition and incorporation of knowledge and technology from outside the organization. Such knowledge and technologies can be either publicly accessible or privately owned by other companies, individuals or research institutions. Furthermore, external knowledge and technologies are available either in a codified and published or personal and unpublished, undisclosed, form. R&D service providers and public and private research institutions, and increasingly training institutions contribute much to build, develop and diffuse existing, publicly available “knowledge and technology pools.” The company’s internal R&D activities – as part of the innovation process – is available in the company’s knowledge and existing technologies which are not only a prerequisite for implementing in-house innovation activities, but also for the use of external sources for innovation (Baird and Meshoulam, 1988; Chesbrough, 2006).

While the current open innovation paradigm remains dominant in innovation model thinking, we argue that even this innovation understanding and model (and thus innovation processes) needs to be extended by the human resource (HR) dimension and the meaning and impact of organizations’ innovation milieus. A company’s innovation milieu is strongly interrelated with HRs management and policies for attracting and retaining talent (Meissner and Shmatko, 2017, 2018). Frequently, attracting talent to companies for innovation is less problematic than keeping talent on board and motivating people to perform outstandingly. This is challenging because firms lack staff who have capabilities that are not only directly related to actual innovation activities (e.g. often related to R&D), but also capabilities in management and legal affairs (Cascio and Aguinis, 2005; Van de Vrande *et al.*, 2009). Firms need these additional competences in light of the increasingly external nature of innovation (Del Giudice and Della Peruta, 2013; Del Giudice *et al.*, 2017). Furthermore, the economic pressure on companies leads to higher expectations by the corporate leadership from the innovation related activities by all company units (Gassmann *et al.*, 2010; Lichtenthaler and Lichtenthaler, 2009; Meissner *et al.*, 2017). The instruments used for monitoring and assessing innovation projects are improving considerably. Firms’ needs for innovation-related competences and corporate management’s higher expectations for innovation are very important determinants of current corporate activities, although both inherit the danger that innovation is understood a self-fulfilling prophecy. In other words, once companies invest in innovative projects, the corporate leadership expects returns on investment in ever-shorter periods to meet externally imposed expectations. Accordingly, it is important to reconsider how innovation and HR management are organized internally to create an organizational climate, which prepares staff to respond to these challenges. Recently, organizations’ innovation climate is frequently discussed in literature as an important prerequisite for firm’s innovation success. However little is known what the features and drivers for organization’s climate supporting innovation are and how these can be designed.

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Following those premises, this special issue has been taken inspiration from the observation of this scenario and intends to improve the understanding of meaning of organizations culture and climate for HRs and innovation models looking at two main directions. First, according a human dimension of knowledge management, the analysis of antecedents and consequences have been provided from an international point of view, emphasizing the drivers of organizations' innovation climate that impact on the innovation results of organizations.

Second, in broader decision making for use in corporate strategy implementation, micro-level conditions contributing to shape the broader innovation ecosystem has been investigated by a systemic approach at both national and international level in order to engender the "when, how, why and what" attitude which can be designed as qualitative and quantitative metrics supporting higher quality and quantity of innovation in organizations.

Conscious of many underexplored factors especially at the human level in the realm of the open innovation, this special issue aimed at analyzing the empirical and practical applications of best practices, comparative analyses, cross-studies, network analyses and synthesize the prior theoretical literature.

With this in mind, based on the papers gathered for this special issue, this volume aims at contributing to upgrade the state of art based on human and individual side of knowledge management circulation by providing transversally insights on the adoption of open innovation perspective.

Several research questions stemmed out from the articles selected and we may hardly summarize them. Submitted papers consisted of theoretical and applied research in topics addressing the benefits and criticalities of business management worldwide. Moreover, this special edition presents original research findings aiming at supplying, at a practical level, new knowledge for both researchers and managers interested in the use of the cross-cultural practices for managing innovation under the knowledge guidance.

The selected papers witnesses research collaborations between scholars from different nations as well as include contributions worldwide and discuss empirical findings across multiple levels of analysis from a wide range of organizational archetypes. The research methodologies used for gathering empirical data vary from quantitative surveys to exploratory case studies based on qualitative data. Several rounds of blind peer review resulted in the final form of this volume for publication were undertaken. We aimed at selecting papers reporting on the application of innovative methods to real world problems. We searched for research studies containing both some form of novel innovation as well as a documented application. We looked for contributions, which should widely focus on the application of innovative methods to practical problems of the modern enterprise. Nevertheless, all the selected articles demonstrated predictable applications coming from the cross-cultural management aimed at discovering the phenomenon of innovation within the business organizations. Readers of this special issue should be technically savvy, scientifically demanding, and drawn to practically relevant phenomena.

This volume opens with a quantitative paper by a South American research team composed by Miguel Espallardo Hernandez, Fabian Osorio-Tinoco and Aususto Rodriguez-Orejuela, titled "Improving firm performance through inter-organizational collaborative innovations. The key mediating role of employees' job-related attitudes." This study provides empirical evidence that contributes to the scarce research in the open innovation arena about how HRs influence performance in interorganisational collaborative innovations. In particular, it offers strong support for the key mediating role of the employees' job-related attitudes in the relationship between complementary capabilities and innovation culture as value creating conditions, and the participating firm's ultimate sales and financial performance.

The contextual resource-based dimensions improve the participating firm's performance through its impact on the job-related attitudes of the firm's personnel. This research contributes to open innovation literature. It posits the employee's attitudes toward collaborative innovations as a factor of the utmost importance in determining how the external collaboration affects internal performance. Hypotheses were tested using structural equation model to analyze a set of data collected through surveys among a sample of Colombian manufacturers.

The second article, entitled "HR practices for explorative and exploitative alliances: evidences from Smart City managers' perspective," is written by Alberto Ferraris, Gabriele Santoro, Stefano Bresciani and Elias G. Carayannis. This paper aims at investigating how multinational enterprises (MNEs) manage HRs in explorative and exploitative alliances in Smart City projects (SCPs). In this paper, the authors adopted an explorative and qualitative approach based on multiple case studies thanks to the interviews with 21 Smart City managers of MNEs involved in SCPs. Authors found that MNEs use different partnerships and "temporal separation" in many cities all around the world in order to maximize the benefits of both exploration and exploitation. Moreover, MNEs implemented HR practices intentionally targeted toward managing social relations among internal and external employees involved in SCPs. This paper gives useful insights in improving the effectiveness of MNEs in SCPs. The development of alliances has a key role in strengthening and complementing firms' exploration and exploitation agendas in SCPs. Thus, this paper provides guidelines to MNEs in order to adapt HR practices and to rethink the role of HR within and across corporate boundaries in an emergent context of analysis.

"How innovation climate drives management styles in each stage of the organization lifecycle: the human dimension at the recruitment process" is the third selected article joining this special issue, written by Ignacio Danvila-del-Valle, Francisco J. Lara, Edmundo Marroguin-Tovar and Pablo Zegarra Saldana. Generally, organizations offer services based on knowledge and innovation consider their recruitment process as strategic. This research considers that organizational lifecycle is related with the management styles through innovation climate and human dimension of recruitment. It understands that organizational lifecycle is related with the management styles through innovation climate and human dimension of recruitment. Results show that the majority of organizations balance open innovation and control, trending to the first one. During the first stages of the organizational lifecycle, decision-making principally relays on the founder's open innovation strategies, whereas in the last stages administrative-based control is predominant.

The fourth article in this volume has been authored by a Spanish group: Marta Peris-Ortiz, Carlos Alberto Devece-Caranana and Antonio Navarro-Garcia and it is titled "Organizational learning capability and open innovation." The purpose of this paper is to investigate the relationship between open innovation and radical and incremental innovation success in knowledge-based companies. The company's HRs and organizational learning capability are considered as the fundamental nexus of this relationship. At the conceptual level, the article analyzes the relationships between dynamic capabilities and open innovation and between open innovation and innovation success. Fuzzy-set qualitative comparative analysis (FsQCA) was used to study how innovation is implemented in 29 companies. FsQCA identifies combinations of factors that facilitate incremental innovations. These combinations reveal the path to implementing company policies that enable incremental innovation and foster radical innovation. The FsQCA identifies combinations of factors that facilitate incremental innovations. Scarce literature links organizational learning factors and open innovation to different types of innovation, thus making this manuscript particularly interesting for increasing the state of the art of the researches in this field.

“Uncovering the role of virtual agents in co-creation contexts – an application to the online wine business” is the fifth paper selected for the special issue authored by a French research group composed by Sylvaine Castellano, Insaf Khelladi, Justine Charlemagne and Jean-Paul Susini. The article aims at understanding the role of virtual agents in a virtual co-creation context by exploring their influence on online trust. An empirical study is conducted in the French online wine business to analyze the impacts of different dimensions of virtual agents on generating online trust. Primary data were collected through a questionnaire targeting French online wine shoppers. The results demonstrate a positive effect of the utility and hedonic functions of virtual agents on online trust. The findings also confirm the moderating role of the perceived risk. The study contributes to a better understanding of the human dimension of co-creation by examining the different roles of virtual agents as sources of customers’ online trust.

The research perspective completely changes with the sixth article, as it presents one of the first studies in the literature that is thinking about the engagement of citizens for open innovation activities. An Italian team composed by Luca Dezi, Paola Pisano, Marco Pironti and Armando Papa have authored a quantitative research titled “Unpacking open innovation neighborhoods: The milieu of the lean smart city.” This research aims to satisfy a clear gap in the main field of open innovation research whereabouts a very little scholarship try to analyze the mechanisms of Innovative milieu down smart cities environments by applying through innovative projects that seem to support efficiently the entry of private firms and citizens in public collaborations. The research performed an exploratory and qualitative evaluation based on the case study method built on the evaluation of organizational behavior and urban boosting innovation through Smart City initiatives. The paper invigorates managerial debates concerning the urban and social aspects of open innovation ecosystems which represents in our minds a superior level of open innovation, testbeds of positive knowledge and stimulus of knowledge dissemination process around the city.

“Open Innovation and the human resource dimension: an investigation into the Italian manufacturing sector” is the seventh quantitative article accepted for the special issue and it is co-authored by an Italian team composed by Angelo Natalicchio, Antonio Messeni Petruzzelli, Silvio Cardinali and Tommaso Savino. The present study aims at understanding if and how the adoption of an open innovation strategy, that is acquiring externally developed knowledge, influences the innovation performance of firms and how this relationship is moderated by the recruitment of highly educated employees and the implementation of employee training activities. The study reveals that acquiring externally developed knowledge positively affects the innovation performance of firms. The present research confirms the positive effects of the adoption of open innovation strategies on the innovation performance of firms and, additionally, shows that implementing employee training activities may negatively influence the abovementioned relationship. This study contributes to the open innovation literature, by showing the positive effects of the acquisition of externally developed knowledge on the innovation performance of firms and by analyzing the moderating role of HRs management practices, which is an aspect scantily discussed in the literature.

The following paper is the eighth one, namely “Managing virtual teams for open innovation in Global Business Services industry” and it is co-authored by an international group of researchers with Lee Heng Wei, Ramayah Thurasamy and Simona Popa. The paper investigates the impact of human dimensions, team climates, and technological features on Global Virtual Team (GVT) performance in Malaysian Global Business Services industry. Attention has also been paid to examine the moderating effect of team diversity and the extent of virtuality on GVT performance.

This paper found that team climates like team cohesion, team confidence, and team knowledge, skills, and abilities demonstrated different impact on the human dimensions

which include trust and creativity. Besides, team diversity which comprised of three major components that include age diversity, functional diversity, and attitudes/values diversity was found to moderate the relationships between the antecedents and consequent.

The ninth article, “Developing a Competency Model for Open Innovation: from the Individual to the Organisational Level” has been written by Daria Podmetina, Klas Eric Soderguist, Monika Petraite and Roman Teplov. This exploratory research combines theory-based deductive identification of competency classes and inductive model development, supported by data from a large-scale structured survey of European companies. Using factor analysis and ANOVA for group comparison, the analysis extracts open innovation activity and competency categories and relates them to each other, providing an empirical basis for development of the Competence Model of Open Innovation. The study builds linkages between HR, competency and innovation management and provides insights for managers of different levels and functions. An empirically grounded open innovation competency model is proposed to support HR development for OI across industries and countries.

“Managing skills for open innovation: the case of biotechnology” is the tenth paper made by Alina Lavrynenko, Natalia Shmarko and Dirk Meissner. The paper explores the composition of skillsets in biotechnology from the perspective of employers and its relation to open innovation processes in the sector. The study is based on job advertisements content analysis and in-depth interviews with chiefs of research and development companies. It uses biotechnology as an example of industry where open innovation practice implementation is expanding. The present paper enriches literature on employee skills for open innovation. It gives comprehensive lists of biotech skills in-demand divided into hard, digital and soft categories and interprets them within the context of employee cognition and behavior. The new insight into employee skills articulated by the companies as a strong element of organizational culture is presented.

“CEO turnover and the new leader propensity to open innovation: agency-resource dependence view and social identity perspective” is the eleventh article selected for the special issue, written by an Italian team by Anna Maria Biscotti, Elisabetta Mafrolla, Manlio Del Giudice and Eugenio D’Amico. This paper theorizes and empirically verifies how the CEO turnover and some socially relevant characteristics of the old and the new CEO may impact firms’ propensity toward open innovation under an integrated agency-resource dependence view and social identity perspective. This is the first study that theorizes why CEO turnover might impact the propensity of the firm toward open innovation. We use an integrated agency-resource dependence perspective, and the results from the empirical analysis mostly support our predictions. Moreover, we adopt the social identity theory to show that the organizational identification of the CEO matters in the decision of engaging in open innovation.

The 12th article in this volume has been authored by a Spanish group: Bernardo Castela, Fernando Ferreira, Joao Ferreira, Carla Margues and it is titled “Assessing the innovation capability of small and medium sized enterprises using a non-parametric and integrative approach.” The aftermath of the recent financial crisis has shown that the ability to innovate is a vital management skill and that the methodologies used to evaluate innovation capability within small- and medium-sized enterprises (SMEs) should be as holistic and integrative as possible. This study sought to address this issue through the combined use of cognitive mapping and the Analytic Hierarchy Process (AHP). This study confirms the usefulness of integrating cognitive mapping and the AHP to facilitate evaluations of SME innovation capability.

The 13th article in this volume has been authored by Nicola Miglietta, Enrico Battisti and Alexeis Garcia-Perez and it is titled “Shareholder value and open innovation: evidence from Dividend Champions.” The purpose of this paper is to analyze companies listed on

the US Stock Market in order to investigate for the selected companies, called the Dividend Champions, the introduction of an open innovation practice. This study reveals seven listed companies that, for more than 60 years, have regularly paid growing dividends and, at the same time, have beat the yield of the market (i.e. six out of the seven companies). The latter include: American States Water, Dover Corporation, Emerson Electric, Genuine Parts Co., Parker-Hannifin Corporation, and Procter & Gamble Co. All of these corporations have adopted or implemented a practice of open innovation. This paper highlights the fact that US-listed companies can create more value for shareholders over a long period and, at the same time, beat the market by adopting difference open innovation practices.

The 14th article in this volume has been authored by Jose Belso-Martinez, Daniel Palacios-Marques and Norat Roiq-Tierno and it is titled "Building resilient clusters through HRM systems: a multiple mediator model." There is a growing research interest in the relationships between networks and the firm's assets and between networks and innovation. This study advances our understanding of the mechanisms underlying the relationship between HRM systems and innovation. From an academic perspective, this study enriches the cluster literature by better integrating HRs with innovation processes. Furthermore, this study creates research opportunities by disentangling the role of different managerial practices and refining the operationalization of the mediating variables. The findings can also help managers develop HRs and innovation strategies.

The 15th paper selected, namely "HRM and product innovation: Does innovative work behaviour mediate that relationship?" is written by Raguel Sanz-Valle and Daniel Jimenez-Jemenez. The aim of this paper is to empirically analyze the mediator effect of innovative work behavior between the firm, HR management system and product innovation. Data were collected from 225 Spanish manufacture companies. Hypotheses were tested using structured equation modeling. Findings supported the idea that employees innovative work behavior mediates the relationship between HR management and product innovation. This paper shows that companies seeking to foster product innovation should pay attention to their employees' behavior. In particular, they should promote that employees engage in innovative behaviors, and that adopting high-performance HR management practices can help in this line.

The 16th selected paper has been authored by Luca Vincenzo Ballestra, Stefano Fontana, Veronica Scuotto and Silvia Solimene and it is titled "A multidisciplinary approach for assessing open innovation model impact on stock return dynamics: the case of Fujifilm company." This study aims to propose a new statistical approach to evaluate complex open innovation projects on a quantitative basis. A holistic case study is applied to analyze the effect of open innovation projects on a corporate company's stock price dynamics. The scope is to identify two different scenarios pre- and post-adoption of an open innovation model by a multinational company, Fujifilm. In particular, a stochastic model, namely the log-normal model, is applied along with three statistical tests: Kolmogorov-Smirnov, Cramer von Mises, and F test for equal variances, in order to verify if the adoption of an open innovation model causes any significant change in the stock price dynamics of the corporate company. This research is limited to a single case study, but it can be extended to other stock market companies and therefore improve on the present study.

Last but not least the closing paper which has been co-authored by an international research team composed by Peter Stokes, Patrick Manning, Christopher Rowland, Shlomo Tarba and Visser Max.

The paper investigates the processes of open innovation in the context of a fraudulent organization and, using the infamous Bernie L. Madoff Investment Securities fraud case, introducing and elaborating upon the concept of dark open innovation. Significantly, this

paper represents an important inter-disciplinary collaboration between academic scholars variously informed by business and history subject domains. This paper outlines a case of dark open innovation. Finally this paper provides valuable insights into the organizational innovation processes especially involved in relation to dark open innovation contexts, thus introducing novel notion of dark open innovation.

In the end, we are taking this occasion to thank all the colleagues who contributed as reviewers to the development of this issue. A special acknowledgment goes to the Editors in Chief of Management Decision, Professor Andy Adcroft and Professor Patrick J. Murphy, for their insightful support and patient guidance: this issue would never see the light without their precious advices, support and if they had not thrilled for the research topics we proposed.

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Further reading

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