

Emerging perspectives on business process management (BPM): IT-based processes and ambidextrous organizations, theory and practice

The BPM has considerably developed over the recent years. The practices, systems and tools available have been scientifically investigated and, in most occasions, positioned in practice, thus making several of these BPM capabilities similar to commodities.

Most recent innovation models increasingly postulate an opportunity-rich IT-based atmosphere, and hastily emerging digital disruptions require novel BPM capabilities including the acquisition and incorporation of knowledge and technology from outside the organization (Alavi and Leidner, 2001; Trkman, 2010). Deeply rooted in an unceasing improvement crusade, BPM has proven its value for refining business processes (BPs), knowledge creation and innovation within present enterprises.

Drawing upon the idea that dynamic capabilities are process-driven competence of the firms and are rooted in both exploitative and explorative processes, BPM can be focusing on the evidence that business practice should simultaneously emphasize process efficiency as well as flexibility which is beneficial for organizations in unstable, ambiguous and casual environments. Then, actually, emerging studies on management innovation have hypothesized intriguing relationships between novel BPM competencies and organizational ambidexterity. Organizational ambidexterity, in fact, defines the co-existing business abilities of running the current processes as well as being able to acclimatize constantly the organization to a mutable environment. In a nutshell, an ambidextrous organization shows, at the same time, both exploitative and explorative strengths (Junni *et al.*, 2013). In this regard, while the current open innovation paradigm remains dominant in innovation model thinking, according to BPM point of view, the innovation process tries to ensure transactional excellence with a concentration on net cost reduction, whilst the latter centers on transformational excellence aiming at net revenue generation. Anyway, most BP offices within organizations are currently populated by more analytical, inside-out thinking profiles due to the traditional focus of BPM on strong modeling and analytical capabilities. Present BPM practices do not seem to be sufficiently equipped to harvest the potential of the increasingly opportunity-rich native environment of the ambidextrous organizations. The importance of this misfit of BPM competences is increasing when considering the considerable changes in the global digital space affording new design promises and which have seen both the development of digital public assets with exponential growth and the ability to outsource structures, data and, finally, processes into the cloud. This will expose BPs to the potential of disruptive innovation and reduce process innovation latency (Scutto *et al.*, 2016, 2017). Therefore, it is very likely that ambidextrous organizations will need IT-based tools and processes in order to translate technological opportunities into new process design and successful BP optimization (Vergidis *et al.*, 2008; Van den Bergh *et al.*, 2014). Then, moving ambidextrous BPM out of the trough of disillusionment will be a key challenge for all BPM researchers and practitioners in the upcoming era of IT-based process thinking and corporate change (Lopez-Nicolas and Soto-Acosta, 2010; Cegarra-Navarro *et al.*, 2016).

Following those premises, this special issue takes inspiration from the observation of this scenario and intends to improve understanding on how entrepreneurial IT capabilities and complementary BPM capabilities might help to build an ambidextrous state in BP activities referring to the following main research question:

RQ1. How do IT-based BPM tools drive innovation and breakthrough decision making within ambidextrous organizational settings?



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

With this in mind and based on the interesting research offered for this special issue, this volume aims at contributing to upgrade the impact dynamics of IT and firm ambidexterity on BPM, by stating that ambidexterity perspectives of process management influence organizational adaptation and innovation process.

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 here. We aimed at selecting papers reporting on the application of innovative methods to real-world problems. We were looking for 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 research by Alberto Ferraris, Filippo Monge and Jens Mueller titled “Ambidextrous IT capabilities and business process performance: an empirical analysis.” This study provides empirical evidence that contributes to acknowledge that organizational performance is affected by ambidextrous and IT capabilities. Nevertheless, BPs are essential to the value generation process for converting IT investment into performance. In the literature, this focus on the impact of IT capabilities at the BP level is still under investigated. So, in this paper, the authors test the effects of explorative and exploitative BPIT capabilities on BP performances and the positive moderator role of BPM capabilities via an OLS regression analysis on a sample of 404 firms operating in hotel industry. The study identifies distinct effects related to exploration and exploitation and finds a moderating effect of BPM capabilities, explaining their positive impact on BP performance. Accordingly, the main purpose of the paper is to contribute to the area of BPM by demonstrating the importance of both explorative and exploitative IT capabilities for a BP as well as the managerial capabilities at the process level.

The second article, entitled “Ambidextrous organization and agility in big data era: the role of business process management systems,” is written by Riccardo Rialti, Giacomo Marzi, Mario Silic and Cristiano Ciappei. The aim of this research is to explore the effect of big data analytics-capable business process management systems (BDA-capable BPMS) on ambidextrous organizations’ agility. The ways in which the functionalities of BDA-capable BPMS may improve organizational dynamism and reactivity will be explored. As a consequence, a theoretical analysis of the potential of BDA-capable BPMS in increasing organizational agility, with particular attention to the ambidextrous organizations, was performed. A conceptual framework was subsequently developed and applied to a real-world context. Especially, the research proposes a framework highlighting the

importance of BDA-capable BPMS in increasing ambidextrous organizations' agility. Moreover, the authors apply the framework to the cases of consumer-goods companies that have included BDA in their processes management. The principal limitations are linked to the need to validate quantitatively the proposed framework. The value of the proposed framework can be found in its ability to help managers to fully understand and exploit the potentiality of BDA-capable BPMS. Moreover, the implications show some guidelines to ease the implementation of such systems within ambidextrous organizations. The research offers a model to interpret the effects of BDA-capable BPMS on ambidextrous organizations' agility. In this way, the research addresses a significant gap by exploring the importance of information systems for ambidextrous organizations' agility.

"Big data for big pharma: harmonizing business process management to enhance ambidexterity" is the third selected article joining this special issue, written by Giuseppe Festa, Imen Safraou, Maria Teresa Cuomo and Ludovico Solima. This study explores the impact of big data on BPM in the pharmaceutical sector, critically investigating 15 most important big pharma companies worldwide. This impact can assist big pharma in increasing process efficiency (which is related to the research and development pipeline) and process efficacy (related to product portfolio management). However, given the paucity of studies related to this phenomenon, the present research originates from the theoretical framework reconstructed by a grounded theory, which constitutes a powerful strategic tool to support executives and managers of big pharma in organizing BPM for their ambidextrous organizations using big data. The study, thus, has allowed the generation of a theoretical framework based on the (direct) relationship between knowledge process standardization (as the dependent variable) and big data (as the independent variable) in organizations oriented toward ambidexterity, such as big pharma in the specific scope of this research. As big data utilization becomes widespread along the pipeline (or even along the value chain/supply chain), BPM increasingly uses (or tends to use) standardization, adopting process standardization as the main coordination mechanism to manage big knowledge. An enterprise oriented toward structural ambidexterity (such as big pharma) that uses big data will require increased process standardization to manage big knowledge. Alternatively, an enterprise oriented toward contextual ambidexterity that uses big data will require increased output standardization.

The fourth article in this volume is authored by Elena Laurenza, Michele Quintano, Francesco Schiavone, and Demetris Vrontis and it is titled "The effect of digital technologies adoption in the healthcare industry: a case-based analysis." The purpose of this paper is to contribute to the extant literature regarding the exploitation of digital technologies by illustrating how this type of IT can influence BP improvements in the healthcare industry. The research reports an illustrative case study for MSD Italy, the Italian subsidiary of the USA-based company Merck & Co., Inc. The group sells drugs for human use in Italy but is also active in the veterinary (MSD Animal Health) industry, with Vree Health, and in solutions and software-based services for the healthcare industry. The results show that the adoption of digital technologies could improve the performance of main healthcare BPs, particularly those processes that can be simplified with the adoption of information technology. More specifically, digital technologies could increase efficiency and, at the same time, allow for the delivery of better quality and reduced response times, with many benefits for several stakeholders, such as national health systems, clinicians and patients. Although some studies report the need for effective BPs for sustainable healthcare systems, there is a lack of literature regarding the specific implications of the adoption of such digital technologies for the BPM of healthcare firms.

"Business process management (BPM): how complementary BPM capabilities can build an ambidextrous state in business process activities of family firms" is the fifth paper selected for the special issue authored by Elisa Giacosa, Alberto Mazzoleni and Antonio Usai. Although

BPM is a critical issue and small- and medium-sized family firms (SMFFs) frequently adopt process organization, very little literature focuses on the processes by which family firms remain distinctive on their approach to BPM. The current research aims to fill this gap by analyzing dynamic companies' attitudes to process-driven ability that concern exploitative as well as explorative processes. The purpose of this research is to identify which kinds of dimensions may build an ambidextrous state in BPM in SMFFs, also favored by entrepreneurial IT capabilities and influenced by a stable but changeable context. By referring to vom Brocke *et al.*'s study, the authors offer an empirical analysis on small family firms. Specific cultural and cognitive aspects, values and abilities affect the company behavior of SMFFs in terms of BPM, and this is influenced by the connection between the family and the business. Therefore, the results confirm that the family is a missing variable in organizational research, also in BPM. Hence, the research emphasizes the relevance of transactional excellence with a focus on net cost reduction and transformational excellence based on net revenue generation. The research thus contributes thus to literature on BPM through theoretical implications, in particular two main implications. First, the research emphasizes the impact of familiness on good BPM practice. Family appears to be a missing variable in organizational research on BPM, even though familiness affects process specificity and mechanisms. Second, the research is based on certain category dimensions that characterize management models common in the literature, allowing the application of BPM in FFs by taking advantage of their confidence and adaptability.

The research perspective completely changes with the sixth article based on service and technology industry. A team composed by Gabriele Santoro, Luca Dezi, Heger Gabteni and Anna Claudia Pellicelli have authored a case study research and it is titled "The role of big data in shaping ambidextrous business process management: case studies from the service industry." This research aims to explore how big data can shape ambidextrous BPM in terms of exploitation and exploration. A qualitative methodology involving case studies was chosen to explore the impact of big data deployment on exploitative and explorative BPs. The results of case studies offer some opportunities and challenges for service firms related to both the exploitative and the explorative aspects of BPM driven by big data. The deployment of big data in BPs has attracted a large amount of interest recently. However, previous studies are mostly conceptual, so empirical research about this complex relationship is quite rare, especially research with specific arguments regarding exploitative and explorative activities. This paper aims to fill this gap by offering empirical evidence for big data-driven BPs.

"The indirects effects of performance measurement system and organizational ambidexterity on performance" is the seventh quantitative article accepted for the special issue and it is co-authored by Severgnini Elizandra, Valter Vieira and Edwin Cardoza Galdamez.

A performance measurement system (PMS) has long used for monitoring and improving administrative performance. In parallel, organizational ambidexterity refers to firms that manage different organizational functions and various demands to generate performance. This paper proposes that three dimensions of PMS increase organizational ambidexterity and consequently they influence organizational performance. In this framework, organizational ambidexterity mediates the relationships between three dimensions of PMS and organizational performance.

The data were collected on a sample of 227 Brazilian software companies through a structured questionnaire based on PMSs and organizational ambidexterity. Software companies can use strategic decision making to control existing strategies and establish new ones for legitimizing ambidexterity within organizations. The results provide four main findings. First, three dimensions of PMS were individuated: business focus-oriented; legitimization; and strategic decision making as leverages of the organizational ambidexterity. Second, organizational ambidexterity has a major effect on organizational performance. Third, organizational ambidexterity mediates the indirect effects of on

organizational performance. Finally, the fourth result shows that exploration and exploitation – as two dimensions of organizational ambidexterity – mediate the indirect effect of the above PMS dimensions on organizational performance.

The following article is entitled “Managing the exploration-exploitation paradox in healthcare: three complementary paths to leverage on the digital transformation” and it is co-authored by Francesco Appio, Luca Gastaldi, Mariano Corso and Andrea Pistorio.

To understand how digital technologies can help healthcare organizations to improve the exploration-exploitation paradox over time, the authors explore inputs, processes and outcomes of implementing digital transformation programs. The authors, thus, conducted multiple case studies via 107 semi-structured interviews aimed at 14 Italian hospitals between 2009 and 2011. As a result, three complementary paths emerged as fundamental to balance exploratory and exploitative efforts in healthcare: assets digitalization within hospitals; digitally-based process integration; and disruptive decision making through analytics. Intra- and inter-path characteristics are discussed to show how digital transformation can both move hospital within the exploration–exploitation space. Especially, this study sheds new light on how digital technologies are actually adopted and adapted in healthcare contexts. It does it by entailing a longitudinal perspective.

The ninth article, “Impact of enterprise mobile system implementation on organizational ambidexterity mediated through BPM customizability” written by Choudhary Praveen, Monika Mital, Pani Ashis, Armando Papa and Francesca Vicentini examines if the use of enterprise mobility system (EMS) positively impacts the organizational ambidexterity, which, in turn, affects the employees’ perceived internal locus of control. The study also tests the mediation role of BP customizability on the relationship between frequent use of EMS by individuals and organizational ambidexterity. As an outcome, the study finds complete mediation between frequent use of EMS and organizational ambidexterity. Importantly, the study can lay a claim to a significant new contribution to literature with respect to interactions between enterprise mobile systems usage, BP customization due to enterprise mobile systems and organizational ambidexterity. The impact on organizational ambidexterity in the context of enterprise mobile system usage is a significant contribution of this study, which was hitherto unexplored. Also, for the practitioners, the study explores new opportunities to further progress in EMS implementation, given its positive effect on organizational ambidexterity.

Moreover, Enrico Battisti, Elias G. Carayannis, Antonio Salvi and Nicola Miglietta offer a study on “Capital structure and business process management: evidence from ambidextrous organizations.” The aim of this research is to investigate the relationship between capital structure and BPM within ambidextrous firms. In particular, referring to the listed companies in the Mercato Telematico Azionario (MTA) and Market for Investment Vehicles (MIV) markets with large and mid-sized capitalization, divided into ambidextrous and non-ambidextrous companies, the authors examined the capital structure to fill a gap in the current literature. This study uses a mixed-methods sequential exploratory design. In particular, a quantitative study was conducted to identify some Italian-listed companies, called ambidextrous firms, which have implemented incremental (exploitative) and radical (explorative) innovations in an ambidexterity perspective of process management. A qualitative study was designed to provide insights into the different degrees of leverage of the listed companies selected by the quantitative analysis. The research is based on an empirical analysis undertaken with 69 companies listed on Italian markets (starting from the MTA and MIV Italy 100 — large- and mid-sized capitalization). In particular, the authors highlight 11 companies that, based on the literature, can be defined as ambidextrous organizations. As emerged, these companies have more leverage than non-ambidextrous ones. Considering that firms today need to constantly revisit their portfolio of debt and equity, ambidextrous organizations could evaluate the largest debt

available in order to implement new BPM tools. To the authors' knowledge, this is the first exploratory study based on capital structure and the simultaneous exploration and exploitation of knowledge (ambidexterity) that also is informed by a BPM perspective. The paper presents evidence from Italian-listed companies that are referred to as ambidextrous and have different degrees of leverage.

In conclusion, the last article, "The influence of production, IT, and logistics process innovations on ambidexterity performance" developed by Lorenzo Ardito, Ekaterina Besson, Antonio Messeni Petruzzelli and Gian Luca Gregori analyses the relationship between three types of process innovations: innovation in production, IT and logistics processes and ambidexterity performance. Specifically, the authors attempt to examine whether changes in BPs help companies to reconcile exploration and exploitation learning activities within the firm domain. This research is based on data of 2,843 manufacturing firms whose data are available from the Italian Innovation Survey (period 2010–2012). Hypotheses are developed and then tested by using a Tobit regression approach. Innovation in production and IT processes favors ambidexterity performance, whereas changes in logistics activities, despite being positive, are less relevant. This is one of the first attempts to offer empirical evidence about the relationship between process innovations and ambidexterity performance (without engaging in domain separation), hence providing additional insights into the ambidexterity literature and the literature on process innovation.

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Further reading

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