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Editorial: Information, knowledge, and technology in developing economies in times of crises

1. Introduction

Studies on information, knowledge, technology, innovation and sustainability have gained momentum in the academic, economic and business landscape (Xiao *et al.*, 2017; Jordão *et al.*, 2020; Secundo *et al.*, 2020; Jordão *et al.*, 2022). Information and knowledge management (IKM), intellectual capital (IC) and innovation have been considered the main source of competitiveness, sustainability and value in a knowledge-based economy (Jordão and Novas, 2017; Xiao *et al.*, 2017; Agostini *et al.*, 2020; Calabrò *et al.*, 2020). In addition, economic, political, social, legal, organizational, technological and environmental pressures have challenged organizations, cities, regions, countries and even trading blocs to establish technological and innovative initiatives that lead to sustainable development. At the same time, the ongoing digital transformation and its accompanying processes of artificial intelligence are putting new challenges for information and technology academics and practitioners.

One of the great contemporary managerial challenges is to understand the impact of information, knowledge and IC on innovation, sustainability and value (cf. Jordão and Almeida, 2017) and analyze how the relationship between information and technology can boost business results, also supporting organizations to create alternatives and strategies that help to overcome moments of crisis – like the current one, arising from the COVID-19 pandemic followed by a war between Russia and Ukraine.

Information, knowledge and technology are essential in overcoming difficulties in times of crisis. They empower, provide technical experience, help in solving problems, support performance measurement and evaluation systems, and contribute to innovation and organizational development. IKM and technology support the management necessary to meet social demands on a global and cross-border scale by offering strategic solutions for developing economies. These issues have significant implications for all types of businesses and organizations. So, the forms, technologies and models of management and decision-making processes in a knowledge-based economy need to be rethought, from a strategic, informational and managerial perspective, particularly in developing economies and even more in times of crises, to encompass the idiosyncratic aspects that characterize this new digital era and its consequences. In this sense, research on the topic becomes paramount.

The above-mentioned aspects demand new studies that help us understand the reality of organizations, mainly from developing economies, in these turbulent times of crises, giving rise to this Thematic Issue – which presents a selected set of theoretical-empirical research in developing economies in times of global pandemic and war.

While celebrating 35 years of *The Bottom Line* and its new and perfected editorial line, this Thematic Issue seeks to bring out a reflection on alternatives and actions that can be considered by organizations, businesses and economies of all types and sizes not only to survive but also leverage growth and development.



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2. Thematic issue commemorating the 35th anniversary of the bottom line

Since its founding in 1988, *The Bottom Line* has been a multi and trans-disciplinary journal, publishing research at the intersection of Librarianship and Information Sciences (its focus at the origin) and Business, Administration and Accounting (the focus into which it has evolved). Over the years, *The Bottom Line* has been publishing a wide range of subjects in both the fields of management, economics and business, as well as information, science and technology.

Information remains one of the most critical elements for connecting people, organizations, economies and societies. Even so, the informational challenge is now less about managing activities related to collecting, storing, using and disseminating information, but rather about transforming data and information into useful knowledge for decision-making. Technology has led to changes in the way people use information for knowledge-focused activities. Furthermore, scholars and professionals (e.g. executives, consultants, lawyers and economists), as well as world leaders, policymakers and international organizations have recognized the importance of information, technology, innovation, knowledge and IC as key drivers for economic, social, managerial and corporate development in a knowledge-based economy.

The term "knowledge economy" was popularized by the famous consultant and professor of management Peter Drucker, first in his 1966 book, *The Effective Executive*, gaining prominence as the title of Chapter 12 of his 1969 book *The Age of Discontinuity* (Cf. Drucker, 1969). Since then, many debates, articles, discussions and controversies have been coined in the field of organizational studies. Over the years, this research field has been growing a lot, especially considering its recent developments, including the sharing economy, digital economy, the network society, digitalization and business models based on new technologies.

Another equally famous Harvard professor published the article "On Competition" in *The Bottom Line* at the beginning of this millennium. Among other issues, Porter (2000) analyzes how competition affects the company and sector strategies and what alternatives can be adopted by organizations and even countries to find viable solutions to pressing economic, social and political issues. In this sense, Porter (2000) offers a series of significant insights from his analysis, noting that to compete in the global economy, companies must continually innovate and improve their competitive advantages. His conclusions call attention to the critical role of knowledge and IC by emphasizing that innovation and updating (technological, informational and competitive) come from sustained investments in physical and intangible assets – stressing the role of human capital, employee competencies and relationships with stakeholders (such as suppliers) on the competition.

A few years earlier, William Jefferson Clinton, who presided over the longest period of economic expansion in peacetime history in the USA (1993–2001), wrote an article also published in this journal. Jefferson Clinton (1993) gives stress on the role of technology investment in economic and social development – based on the case of the USA. He emphasized the need to have a clear governmental strategy that promotes the integration between science and technology, also encouraging investments in education, research and economic and social growth to improve the competitiveness and sustainability of a country and increase people's quality of life. Therefore, integration between government (academy) and private companies to develop and profit from innovations and the knowledge derived from them has been encouraged.

These two manuscripts are just two excellent examples of the quality and impact of research published in *The Bottom Line* – which can bring important lessons for economies in times of crisis, mainly the developing ones. In fact, over the years, *The Bottom Line* became a multidisciplinary international top leading journal publishing cutting-edge

research that explores theoretical and practical aspects of information (and technology), knowledge and innovation and examines how sustainability and value are derived from these aspects by different actors from business and society. Therefore, the journal has been focusing on high-quality and impactful articles that can contribute to the advancement of theory and practice in the subject.

While recognizing the importance of the topic in the current competitive context and even more the need to start thinking and treating information, knowledge and technology as a single integrated discipline, one cannot fail to highlight the practical difficulties of creating strategies (for organizations at developing economies) that are essential in times of crisis and remain relevant over time. In this Thematic Issue, we intend to offer a collection of articles that may offer important insights into some of these issues. More than that, we want to thank all the authors, reviewers, associate editors and the entire team at *The Bottom Line* and Emerald who have contributed to making this work possible. We also thank those who preceded us, not just the previous Editors-in-Chief, but all those who worked and contributed so that *The Bottom Line* could be back among the best journals in the world.

In this opening editorial, marking the new phase of *The Bottom Line*, efforts were dedicated to analyzing some of the central elements discussed in the previous literature, presenting the contributions to the problem from the analysis of the articles that make up this edition and identifying lessons learned and key issues that still require further development in future research. We hope that everyone can have a pleasant reading and that these contributions can shed light on aspects of academic and professional interest in the area of information, knowledge and technology and inspire researchers and managers in their next endeavors.

3. Information and knowledge management: are these two sides of the same coin?

Contributions to this special issue have offered significant advances in our theoretical, practical and managerial understanding of the field of information, knowledge and technology. In the first paper, Al-Hattami, Abdullah, Kabra, Alsoufi, Gaber and Shuraim (2022) examine the influence of accounting information systems (AIS) success on planning process effectiveness (PPE) in small- and medium-sized enterprises (SMEs) of Yemen. Empirical results revealed that AIS success positively affects PPE when these companies focus on system information and AIS quality, user satisfaction and usage. The theoretical model developed by the authors and tested in 325 SMEs helps to broaden the understanding of the topic, especially in less developed nations, providing information that can help SME owners and managers, policymakers and systems designers/providers to analyze the work of SMEs and their contribution to economic development and assess the role of information as well as contributions of SMEs' AIS on business and managerial success.

In the second paper, Trivedi and Srivastava (2022) analyze the role of KM processes in leveraging competitive strategies to achieve innovation in knowledge-intensive service organizations in India. The results of the hypothesis test with data from 293 employees showed that KM processes have a significant and positive relationship with competitive strategy and innovation in these types of companies. In addition, the mediating role of competitive strategy in the relationship between KM and its processes with innovation and competitiveness was perceived. This provides a better cost-benefit ratio and organizational differentiation capacity. A differentiation strategy has a stronger positive relationship with KM processes and innovation than a cost-effective strategy. The results, more than corroborating the contingent view of KM in emerging economies such as India, suggest that managers adopt IKM processes (such as creating, acquiring and sharing information and knowledge) in line with corporate strategies so that companies generate greater economic benefits, differentiate themselves from their competitors and leverage their innovation performance.

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Learned lessons: in the so-called information society and knowledge-based economy, there is less dependence on physical inputs and natural resources. In contrast, information, knowledge and technology have been seen as the cornerstones of modern organizational and economic growth. This seems to indicate that even though information and KM are not necessarily two sides of the same coin, as they can be worked independently, the potential and real benefits of this integration are more than evident, impactful and significant. According to Al-Hattami et al. (2022), information in general and AIS, in particular, have been contributing a lot to organizational development, helping to generate useful knowledge that has increased the analytical capacity and decision-making quality of managers. analysts, policymakers and entrepreneurs. In the same vein, Trivedi and Srivastava (2022) emphasize the role of information and knowledge and their strategic management as major generators of organizational, financial, technological and innovative benefits, resulting in greater competitiveness and value creation in line with previous findings of Jordão et al. (2017) and Jordão et al. (2020). Taken together, based on inductive reasoning, the first two papers help us develop metaphysical foundations (Cf. Gupta et al., 2019) for making sense of information, knowledge and technology research, leading us to the following proposition.

P1. Formative growth produces innovative knowledge. Companies that can better use their information and innovate, incorporating more knowledge and technologies into their products, could generate more value (creating IC) and provide long-term competitive advantages.

4. Information systems, science and (new) technologies

In the third paper, Moraes, Pelegrini, Marchi, Pinheiro and Cappellozza (2022) analyze the factors that may influence the intention to use data science supported by big data analytics (BDA) by future managers of companies in the Brazilian context. The results indicated that it was positively influenced by expected performance, social influence and cost-effectiveness, and negatively by resistance to using. The article helps in understanding the phenomenon in a developing country, offering a theoretical model with new latent variables for the theme and revealing that both the technical dimensions of the BDA, as well as the organizational and human ones, need to be analyzed together. Although there seems to be a strong technical predominance and future managers understanding that investments in information and new technologies allow gains and better planning, issues related to privacy, security and ethical aspects were considered fundamental to minimize user resistance.

In the fourth paper, Gani, Rahman, Faroque, Sabit and AbdeFattah (2022) analyze the determinants that affect the adoption of e-Pharmacy in behavioral intention and the moderating role of technology discomfort in this relationship. The quantitative results of the analysis of 255 responses using the UTAUT-2 model in the Bangladeshi context revealed that website information, medical care, performance expectation, return policy, social influence, perceived trustworthiness and facilitating conditions are significantly related to the adoption of e-Pharmacy as well as technological- and informational-related resources. The moderating effect of technology that drive this relationship between behavioral intention and actual usage behavior was not perceived. The authors noted that it is information systems and technology that drive this relationship, arguing that managers and decision-makers need to make strategic decisions to overcome any difficulties in their practical implementation. Gani *et al.* (2022) also noted that the government of Bangladesh has already taken several initiatives to develop an online health-care system but draw attention to the need for greater use of information systems, science and technology to expand health policies and services.

Learned lessons: According to Moraes *et al.* (2022), the digital transformation taking place in companies and the emergence of technological innovation generate opportunities to

improve the analytical resources necessary to manage information effectively to improve the data science process and managerial decision-making capacity. In addition, Gani *et al.* (2022) concluded that governments and policymakers in developing economies such as Bangladesh need to improve their services and provide for the expansion of informational and technological resources such as e-Pharmacy and invest more to improve literacy and knowledge of computing and technological resources through different development projects. However, the central issue is that both authors observed that better use of information-based systems supported by advances in data science and new technologies could expand data processing capacity and generate greater analytical and predictive power for analysts, managers, governors and other decision-makers. So, the joint analysis of the findings of these authors allows us to axiologically make the following proposition.

P2. Technology and value-accruing information multiply the benefits of normative growth. The development of science, systems and technology has supported an exponential increase in data processing and information generation capacity. However, it is the translation of these into useful knowledge that can bring more benefits to organizations, societies and governments.

5. The role of technology and Web-based information in management

In the fifth paper, Kaur and Kaur (2022) examine factors influencing job-seeker's intentions and the moderating role of gender differences in e-recruitment adoption through the application of the technology acceptance model in India. Based on data collected through various online channels such as social networks, LinkedIn, and email from 364 final-year students, the results indicated that perceived usefulness (PU) and perceived ease of use (PEOU) had a direct impact on attitude (AT). The former influenced the behavioral intentions (BI) of job seekers, but the latter did not. AT leads directly to BI and partially mediates the relationships between PU to BI and PEOU to BI. In addition, the findings showed that gender significantly moderates all relationships between the constructs, except for the influence of AT on BI. The importance of PEOU and PU in AT and BI implies that job seekers tend to embrace e-recruitment when it is easy to use and helps them carry out their tasks easily and efficiently. Furthermore, gender has a vital moderating influence on erecruitment adoption. In the case of females, the effect of the PEOU is stronger and, in the case of males, the PU has a substantial impact on the adoption of this tool.

In the sixth paper, Abdullah, Anumudu and Raza (2022) analyze the role of mission and vision statements on the websites of fast-growing Malaysian and Singaporean SME companies in building a distinct digital organizational identity, examining the similarities and differences between 170 SMEs based on Aaker's five brand personality scales' perspectives. The results showed that there were explicit discrepancies between Malaysian and Singaporean SMEs and that most of these companies did not communicate their unique brand personality by declaring their mission and vision to stakeholders. The findings also revealed an increase in this communication, as well as the need for more efforts by managers and technicians to develop their brand and digital organizational identity, using them as a strategic asset to sustain their corporate reputation and become more competitive.

Learned lessons: According to Kaur and Kaur (2022), developers and recruiters must provide meaningful information related to salary, location and job profile in e-recruitment to increase the adoption rate of tools such as online recruiting. In addition, system developers should encourage greater usability (considering gender characteristics and preferences) because users prefer them when they are easier to use and operate. Following Abdullah *et al.* (2022), the advancement of the evolution of digital technologies in the current stage of the knowledge economy has required a growing need to adapt organizations and their practices

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to deal with the continuous challenges of this new reality, forcing them to innovate and use technology and Web-based information to support and refine their corporate strategy and management. The aggregate analysis of the results of these authors allows us to the following proposition.

P3. Transformative growth activates strategic force. Web-based information and technological advances, such as digital technologies, have been increasingly central in the analysis, management and implementation of organizational strategies. Transforming an organization in-sync with the ongoing Web developments is key to accruing value from Web-based digital intelligence. Therefore, its knowledge has become an element of strategic action and a corporate need.

6. Final remarks

The changes resulting from the knowledge-based economy and digital transformation derived from it have caused ruptures in the contemporary management paradigm. How organizations (public and private, for-profit or not) are managing their information, knowledge and IC has been a decisive factor in their competitiveness, and capacity to generate innovation, wealth and performance, which is a central theme for a sustainable society, where technology is placed at the service of good and people. It is necessary to (re)think about how to transform the set of technologies and ideas, information and innovative practices into knowledge and intellectual property, generating IC and value.

Although the results of a study cannot be indiscriminately generalized and are circumscribed to its context, what is expected to generalize, according to the classic premises of Eisenhardt (1989), are not the findings themselves, but the research contributions to theory and the knowledge of the topic. According to Jordão *et al.* (2014), the research relevance and impact come from its contributions to a substantial segment of society. In this sense, it is expected that the set of articles presented here may have brought important lessons to managerial, economic and business theory and practice, as well as informational and technological ones.

A closer look at the relationship between management and the areas of "engineering and innovation" and "science and technology" aims more than achieving operational and managerial excellence, including also understanding to what extent the so-called digital economy (5.0) or the sharing economy, innovation and new technologies such as artificial intelligence are and can be used strategically, generating the need for a new look at production systems and processes, especially in developing economies.

From a legal, economic and managerial perspective, it is essential to understand how organizations can and should use their information and knowledge, capitalizing on innovation to stimulate business development. From a technological and managerial point of view, intellectual property, including trademarks, patents, trade secrets and copyrighted materials, has become increasingly valuable to companies in the knowledge economy than in earlier times. A recent study by Ocean Tomo LLC (Ocean Tomo, 2021) revealed that intangible assets accounted for 17% of the S&P500's market cap in 1975, rising to 68% in 1995 and reaching 84% in 2015. COVID-19 has accelerated the trend of increasing the share of such assets, accounting for more than 90% of the market value of these companies in 2020 with a bullish bias. As this is a consolidated trend in developed economies, one cannot think differently from emerging markets – in which organizations and businesses increasingly tend to depend on information, knowledge and technology to survive and to create alternatives and strategies that allow them to grow and develop.

Last but not least is the opportunity to encourage new studies and research that collaborate to understand the effect of information, knowledge and technology on

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innovation in all forms and contexts, especially in developing economies, as well as the metaphysical sequence of forming growth through knowledge systems. It is also hoped that such studies will help individuals, organizations and governments to develop strategies and support and drive sustainability through innovation and technology still offering the opportunity to critically reflect and create alternatives and strategies that help to overcome the period of crisis as we now live.

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