Introduction for the special Issue on BIG DATA

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Today we live in the era of Big Data Revolution, overwhelmed with data, information and knowledge that is spread all over the web, in social media sites, in smartphones contributing so in creating a large base of big data.

In their best seller book Big Data: A Revolution That Will Transform How We Live, Work, and Think (Mayer-Schönberger and Cukier, 2013) argue that thanks to the internet, social networking, smartphones and credit cards, more data is being collected and stored about us than ever before and this has created an opportunity for firms and managers to easily and cheaply capture and store massive amounts of data in a way that was simply impossible before.

In this scenario the winners will be those that have the abilities, the intelligence, the creativity and the tools to elaborate these data for grasping insights and knowledge from the available data and to be able to use and exploit them for continuous innovation, for improving firms performance, for creating new products and services as well as for establishing new innovative business models.

According to a study realized by McKinsey (Manyika et al., 2011) to analyze the impact of big data analysis for innovation, competition, and productivity they argue that there are 5 broad ways in which using data can create value:

1. Big data can unlock significant value by making information transparent and usable at much higher frequency.

2. As organizations create and store more transactional data in digital form, they can collect more accurate and detailed performance information on everything from product inventories to sick days, and therefore expose variability and boost performance.

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3. Big data allows ever-narrower segmentation of customers and therefore much more precisely tailored products or services.

4. Sophisticated analytics can substantially improve decision-making.

5. Big data can be used to improve the development of the next generation of products and services.

On the other hand, the availability of big data has created a new era also for data analysis and elaboration to discover unknown patterns, to find out what customers want, what they evaluate, to get closer to customers, to gain a wealth of information about their behaviours and preferences, as well as to identify new market trends and new opportunities to remain competitive.

The ability of firms to aggregate, elaborate and analyze the data is becoming a key competitive advantage resource. Different researches have evidenced the role and the outcomes that the big data analysis could bring to firms in terms of innovation, efficiency, productivity, quality and customer satisfaction. In a survey study of more than 3,000 business executives, managers and analysts from organizations, MIT Sloan Management Review, in collaboration with the IBM Institute for Business Value found out that executives are oriented toward managing the business based on data-driven decisions and it is the use of business information and analytics that differentiates them within their industry (LaValle et al., 2013).

Moreover, the content and information that customers create in web 2.0 platforms constitute a valuable asset for firms to directly tap into the customers preferences and needs, as the most valuable source for attaining direct and reliable market information. In this environment, more and more firms are building their competitive advantage on their ability to collect, analyze and act on data. Therefore, the capability of firms to tap into data, to analyze and interpret them to gain insights and to ensure a more effective decision making process has become an essential ingredient towards innovative thinking and creativity.

Therefore, there is a need of matching the analytical capacities with the creativity in order to interpret big data in an innovative way. It is in this aim that we have realized these special issue of the journal to publish some research articles that use statistical and analytical models to elaborate big data for a large range of issues and sectors and for establishing new innovative insights. The issue presents four research papers that focus on providing practical cases of exploiting big data for grasping new insights and opportunities. In particular:

- The article on **Big Data and Knowledge-intensive entrepreneurship: trends and opportunities in the tourism**, the authors Del Vecchio et al., focuses on the growing relevance of Big Data as valuable source of knowledge impacting on the creation and execution of knowledge-intensive entrepreneurship. The article provides a detailed description regarding the opportunities offered by Big Data by demonstrating, with practical applications from the tourism field, how the large

amount of knowledge distributed in the web can support the conception and execution of an entrepreneurial process more aligned with the customers' needs and focused on the actual market's trends.

- Carpita and Simonetto in the article **Big Data to Monitor Big Social Events: Analysing the mobile phone signals in the Brescia Smart City** present the implications that big data analysis could provide for Municipal administration to plan future events, and more generally to develop policies for the smart city. They use the statistical methods to process and assess really high mass of data and information extracted from mobile phone signals in order to improve the quality of the big social events that take place in the city as well as to create the conditions for developing useful reports for territorial marketing.

- The paper on **Ontological analysis for dynamic data model exploration** by Hobbs et al., explores the expressive approaches to data analysis. The authors provide an aggregate model that utilizes ontological tools to create domain models in a way that it allows for a distributed and parallel implementation necessary for big data analysis.

- In the article **Implementation of a Web-based Application for Predicting Best Training Recommenders for Princess Norah University Employees** the authors Mohammad and Alhaidey propose the realization of a recommender system that would help in the decision making process and planning of the training course offered by organizations for their employees. The recommender system is based on using data mining techniques that allows the observer to discover specific patterns and knowledge from large databases and carrying out predictions for outputs.

References

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