

論文 / 著書情報
Article / Book Information

題目(和文)	
Title(English)	A Study on Big Data's Knowledge Base for Public Broadcasting Services
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出典(和文)	学位:博士(技術経営), 学位授与機関:東京工業大学, 報告番号:甲第11211号, 授与年月日:2019年3月26日, 学位の種別:課程博士, 審査員:宮崎 久美子,梶川 裕矢,辻本 将晴,妹尾 大,出口 弘,木嶋 恭一
Citation(English)	Degree:, Conferring organization: Tokyo Institute of Technology, Report number:甲第11211号, Conferred date:2019/3/26, Degree Type:Course doctor, Examiner:,,,,,
学位種別(和文)	博士論文
Category(English)	Doctoral Thesis
種別(和文)	要約
Type(English)	Outline

Thesis Outline

Student: Santiago Ruiz Navas

The doctorate thesis titled, “A Study on Big Data’s Knowledge Base for Public Broadcasting Services” consists of 5 chapters.

CHAPTER 1: Introduction - Introduces the background and motivation, objective, theoretical background of this research and brings up the objective and the research questions. The main objective is to understand emerging technologies knowledge bases applied for the case of big-data and the sub-objective is to study the big data knowledge base and identify its use in public broadcasting services.

CHAPTER 2: Theoretical Background, Framework and Method - Presents the review of previous research and secondary source material used to propose the theoretical framework of the thesis and the background of the three proposed methodological contributions. The theoretical framework is built by drawing on the concepts of emerging technologies, theory of industrial convergence and the characteristics-based approach. A general definition of big data and data products is presented in this chapter. Finally, this chapter presents an overview of the methods implemented in this research. The main methodological assumptions are that scientific documents are a medium that contains scientific knowledge and that keywords are an indicator of the knowledge contained in these documents.

CHAPTER 3: Understanding Big Data’s Knowledge Base - Develops the steps taken to achieve the main objective of this research. This chapter explains the techniques used to model the big-data knowledge base and to detect the knowledge converging around big-data. Two original methodological contributions are proposed. An emerging technology’s knowledge base is understood by the creation of a lexical query to study the emerging technology, and using the document set retrieved by the lexical query to identify the knowledge convergence around it. These two steps are applied to the case of big-data by the creation of a big-data lexical query and a proposed technique to study the knowledge converging around the big-data knowledge base using keywords. From the applications of these methodological contributions an updated big-data lexical query with improved recall and a list of Keywords Proxy of Knowledge Convergence (KPKC) around the big-data knowledge base were obtained. Furthermore, these KPKC were disambiguated and visualized as a network providing eleven clusters of KPKC where AI was the most central.

CHAPTER 4: Analyses of the Big data Knowledge Base for Public Broadcasting Services Introduces the techniques and analyses carried out to achieve the sub-objective of this research. This chapter describes a new approach to use keywords to identify the trajectories emerging from the convergence of the big-data and public broadcasting’s knowledge bases, and the analysis of the applications derived from the identified trajectories emerging from the convergence. The big-data knowledge base is understood as all the documents retrieved by the big-data lexical query and the public broadcasting knowledge base as the papers published by NHK (Nippon Hoso Kyokai) and BBC (British Broadcasting

Corporation). The previous analysis is taken further and by using publicly available data, the innovations emerging from the interception of the knowledge bases of big-data and broadcasting are identified for NHK and BBC. Both public broadcasters presented common and different trajectories.

CHAPTER 5: Discussion and Conclusions: Presents the summary, conclusions and describes the contributions and implications of the findings of this work. The thesis contributes to theoretical and methodological advancements and derives insights into the paths towards innovation emerging from the ongoing process of convergence between big-data and the public broadcasting knowledge bases. Two original techniques are proposed and applied to understand the big-data knowledge base and the knowledge converging around it. Furthermore, it points out the trajectories emerging from the convergence of big-data and public broadcasting's knowledge bases and the applications and innovations derived from them. As a main finding, a framework to study ongoing processes of convergence with IT described by DBD (Data and Big Data) "products" is proposed. This framework offers the possibility to create innovations from DBD "products" by nonlinearly combining DBD "products" data sources and technologies.

In summary, this doctorate thesis provides a comprehensive study for understanding the emerging technologies' knowledge bases such as big-data and analyzes the paths towards innovation emerging from the convergence of the public broadcasting and big-data knowledge bases. It identifies the keywords proxy of knowledge converging around the big-data knowledge base. From the analyses of the big-data knowledge base and the identification of trajectories, applications and innovations emerging from the convergence of the big-data and public broadcasting knowledge bases, it makes conceptual/theoretical and methodological contributions and obtains implications relevant for the organizations related to the public broadcasting sector. For these reasons, this thesis is considered valuable as a doctorate thesis in the field of Management of Technology.