Chapter 23

Application of Mixed Method Research in Studying the Use of Artificial Intelligence for the Management of Records

Ngoako Solomon Marutha

https://orcid.org/0000-0002-5679-4394
University of South Africa, South Africa

Mashilo Modiba
University of South Africa, South Africa

ABSTRACT

This study sought to share experiences and challenges in the application of mixed-method research in studying the use of artificial intelligence for the management of records. Artificial intelligence is a complex and emerging technology in the Fourth Industrial Revolution. Therefore, it requires a robust research approach for one to come up with empirical and reliable results. The study relied on the literature review and the research experience of the researchers with the application of mixed-method research in studying the use of artificial intelligence for the management of records. The study discovered that applying a single approach in studying the use of artificial intelligence for the management of records may produce results with some gaps which may result in the study findings and recommendations being unreliable. Mixed-method research was found to be the most appropriate approach that may be applied in studying the use of artificial intelligence for the management of records to close possible research gaps.

INTRODUCTION AND BACKGROUND

There are complex topics in research that cannot be studied using a single approach. Such topics encompass multidisciplinary themes that cut across various subjects. Mixed-method research (MMR) can be used for such complex research topics that cannot be investigated with a single methodology. For instance,

Ngulube (2020) attests that MMR is the best suited approach for complex research problems comprising of many components, or people and contextual factors that cannot be fully accounted for by using one methodology. Such research topics include, for instance, the application of artificial intelligence (AI) in the management of records. The application of AI for the management of records is complex and includes broad topics that can be properly researched using MMR. Researchers in the field of information science are however, hardly utilising the MMR to conduct their research, (Ngulube, 2020; Ocholla & Ocholla, 2020). This results in the researchers opting for either quantitative or qualitative research to investigate their research problem. Consequently, MMR becomes neglected and is not utilised in the research, (Ocholla & Ocholla, 2020).

Context of artificial intelligence

Artificial intelligence was first instituted as an academic discipline in 1955 and in the years since it has experienced numerous waves of optimism, followed by discontent and the loss of funding (which is identified as AI winter), and after that, new approaches, success and renewed funding (Liao, Deschamps, Loures, & Ramos, 2017). AI once again attracted widespread global attention in 2015 (Liao, Deschamps, Loures & Ramos, 2017). AI became popular across the universe in the era of the fourth industrial revolution (4IR) (Manesh, Pellegrini, Marzi, & Dabic, 2020). 4IR is about the world where individuals move around digital spheres and electronic actuality with the operationality of linked technology such as blockchain technology, artificial intelligence, robotic machines, Big Data, the Internet of Things and the Web of Things to control their daily activities in life (Xu, David, & Kim, 2018). AI is demonstrated by robotic machines, unlike the natural intelligence (NI) exhibited by humans and animals, which includes consciousness and emotionality (Broy & Precht, 2017).

AI refers to computer systems that are able to perform tasks that are considered to require NI, that is, cognitive tasks. AI also refers to machine learning, natural learning processing (NLP), black box and deep learning that can be utilised to perform different kinds of activities better and faster than NI (Atzori, Lera, & Morabito, 2010). In the 21st century, AI techniques have experienced a resurgence following simultaneous advances in computer power, large amounts of data, and theoretical understanding; and AI techniques have been a vital part of the technology industry, assisting to solve many challenging problems in computer science, software engineering and information science (Manesh, Pellegrini, Marzi, & Dabic, 2020).

In the field of archives and records management, AI is used to efficiently manage the records (Jarrahi, 2019). AI provides effective retrieval, storage, maintenance, and digitisation of both paper-based records and electronic records (Ahmat & Hanipah, 2018; Modiba, Ngoepe, & Ngulube, 2019). However, conducting scientific research on AI and records management related topics requires sophisticated research methods to ensure that the desired outcomes are achieved. Since AI is a new trend in the field of archives and records management in South Africa, it is incorporating different aspects that might not be dealt with effectively by a single research method. AI topics on their own are complicated and lead to a much broader problem statement that would require multiple methods to be applied concurrently to effectively attend to the proposed research topic and problem (Ocholla & Ocholla, 2020). As a result, in order to study topics related to AI and records management, researchers are required to utilise mixed methods research (MMR) to ensure that the proposed problem is decisively dealt with. Therefore, this study intends to assess the application of MMR in investigating the use of AI for the management of records.

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