Big Data Project Management Challenges and Specialized Skills

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Abstract

Recently, much attention has been given in organizations in a wide variety of industries to the potential benefits of big data projects. Though these projects often have the potential for high returns, they also come with high risk and often high cost. The research in progress seeks to identify those characteristics of big data projects that present particular challenges to project managers, gather insights from shared experiences of successful project managers in this realm, and, to the extent possible, make recommendations regarding training of project managers without big data experience to increase their chances of managing successful big data implementation projects. In addition to the core project management skills common to all projects and risk management, initial interview results have identified that project managers of big data projects are more successful if they have a heightened awareness of patterns.

Keywords: project management, big data, challenges, skills

Big Data Project Management Challenges and Specialized Skills

Recently, much attention has been given in organizations in a wide variety of industries to the potential benefits of big data projects. Though these projects often have the potential for high returns, they also come with high risk and often high cost (Hadoop Solutions, nd).

As a new field of study, research related to project management of big data projects is limited (Saltz, Shamshurin, & Connors, 2017). As such, research is needed to determine the similarities and differences of big data projects compared to other types of projects. Knowledge of challenges faced by project managers can inform training and other tools to support the successful management of projects.

This research study in progress seeks to identify those characteristics of big data projects that present particular challenges to project managers, gather insights from shared experiences of successful project managers in this realm, and, to the extent possible, make recommendations regarding training of project managers without big data experience to increase their chances of managing successful big data implementation projects.

Literature Review

Big data projects address the four Vs: volume, velocity, variety, veracity (Data Intensity, 2015; IBM, nd). As a project manager, each of these has a challenge. Volumes of data require a means to organize the data to be able to use the data such that a project manager is thinking about more than storage of the data. The velocity of the data requires planning by the project manager for processes on how to move the data from its source to implementation in projects. The variety of data has been found to often be in different forms and structures within databases that have limited abilities to communicate with each other. Veracity of the data is a matter of trust in the data. The project manager needs to create processes to test the quality of the data.

Communication to stakeholders of the assurance of the data should be grounded in these processes.

The steps that a project manager and project team take in a big data project include acquisition, information extraction, cleaning, data integrations, modeling, analysis, interpretation, and deployment (Jagadish et al., 2014). The challenges for big data projects are based upon the context within the project and have been examined related to analytical, team, organizational, and data contexts (Saltz, Shamshurin, & Connors, 2017). Comparison of these steps and contexts to the Project Management Body of Knowledge (PMI, 2013) revealed that the steps and contexts were common to many project types and were reflected within the body of knowledge. The challenges of the projects have been identified to be most similar to fields such as software development and information systems projects (Data Intensity, 2015).

Big data project managers complete tasks that are common to other projects, however, the challenges faced are likely to not be the same. Additional information is needed to be found through research to identify the challenges for project managers of big data projects.

Methods

To complete this research study, the researchers will interview project managers of big data projects and those who are proposing to begin leading big data project teams. The two researchers hold Project Management Professional® certifications through the Project Management Institute (PMI) and are familiar with core project management challenges, skills, and processes of projects in a variety of contexts. The primary participants for the interviews are project managers who are or are planning to be engaged in big data projects and are members of either the Dallas or Fort Worth PMI chapters.

The research in progress seeks to identify those characteristics of big data projects that present particular challenges to project managers, gather insights from shared experiences of successful project managers in this realm, and, to the extent possible, make recommendations regarding training of project managers without big data experience to increase their chances of managing successful big data implementation projects.

Results

Initial work has confirmed that core project management skills common to all projects and risk management are necessary for managers of big data projects. The researchers have identified in pilot administrative questions that heightened awareness of patterns within the project adds to the success of a project manager of a big data project. Institution Review Board approval is being sought to be able to interview participants and gather more than administrative data.

References

Data Intensity. (2015). Characteristics of big data – part one. Retrieved from http://www.dataintensity.com/characteristics-of-big-data-part-one/

Hadoop Solutions (no date). Big data projects. Retrieved from http://hadoopproject.com/big-data-project/

IBM. (no date). The four V's of big data. Retrieved from https://www.ibm.com/analytics/us/en/technology/big-data/

Jagadish, H. V., Gehrke, J., Labrinidis, A., Papakonstantinou, Y., Patel, J. M., Ramakrishnan, R., & Shahabi, C. (2014). Big data and its technical challenges. *Communications of the ACM*, *57*(7), 86-94. DOI: 10.1145/2611567

Project Management Institute. (2013). A guide to the project management body of knowledge (PMBOK® Guide), Fifth edition. Newtown Square, Pennsylvania: Author.

Saltz, J., Shamshurin, I., & Connors, C. (2017). A framework for describing big data projects. In W. Abramowicz et al (Eds.) BIS 2016 Workshops, LNBIP 263, pp 183-195, Springer International Publishing AG 2017. doi:10.1007/978-3-319-52464-1_17