

**BIG DATA IN CONSTRUCTION INDUSTRY:
A MODEL OF DETERMINANTS AFFECTING THE
ACQUISITION INTENTION**

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Degree of Master of Science

Department of Civil Engineering

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DECLARATION

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Name of the supervisor: Prof. A.A.D.A.J. Perera

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Abstract

Big data is defined based on 3V's namely volume, velocity, and variety. Big data is a new paradigm used for exploring and analyzing extremely large amounts of data, which can be structured, unstructured or semi structured. Due to rapid digitalization and technological revolution, construction industry is exceptionally experiencing huge amount of data. Acquisition of big data technologies and catch up with the fourth industrial revolution in construction industry remains at a nascent stage. There is a research gap on identifying the association between construction industry and acquisition intention of Big Data. This research fills the gap and proposes a model to identify the determinants affecting the acquisition intention of Big Data.

This research uses quantitative analysis of data collected from structured questionnaire targeting managers in different areas in construction industry. The data was analyzed using the partial least squares (PLS) method of applying structural equation modeling (SEM). The latest version, Smart PLS 3.3.5 was used to test the research hypotheses of the proposed model. This research identified nine core variables affecting the acquisition intention namely, absorptive capacity, data quality issues, external support, leadership focus, competitive pressure, level of awareness and understanding, perceived benefits of big data, perceived cost of big data and perceived risk of big data. Among the factors, only level of awareness and understanding has significant effect on acquisition intention of BD. Other factors have insignificant effect on acquisition intention. The possible reason for the insignificant effect of perceived benefit of BD is that the main concept and the technology are new to the respondents. Perceived benefit of BD, perceived cost of BD and perceived risk of BD was identified as the mediation variables. According to the mediation analysis, only perceived risk of BD act as mediator. Perceived benefits of BD and perceived cost of BD did not mediate the identified relationships. Finally, this research developed a model to identify the factors that affecting on acquisition intention of BD services in the construction industry.

Keywords: Big Data, Construction Industry, Innovation, Acquisition Intention

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LIST OF ABBREVIATIONS

BD	Big Data
BDA	Big Data Analytics
IoT	Internet of Things
AI	Artificial Intelligence
PLS	Partial least squares
SEM	Structural Equation Modelling
DQ	Data Quality
BIM	Building Information Modeling