Big Data Concept Awareness in the Construction Industry of the Dominican Republic

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BIG DATA

Big Data is defined as a data set or database whose characteristics in terms of Volume, Velocity, Variety and also capture, storage, transmission and analysis, exceeds the capacity of traditional tools for their management (Tamiminia et. al., 2020).

Traditional Analytics

Diagnostic and descriptive analysis
Limited datasets
Preestablished and structured data
e.g.: SAS, Apache Spark, Excel

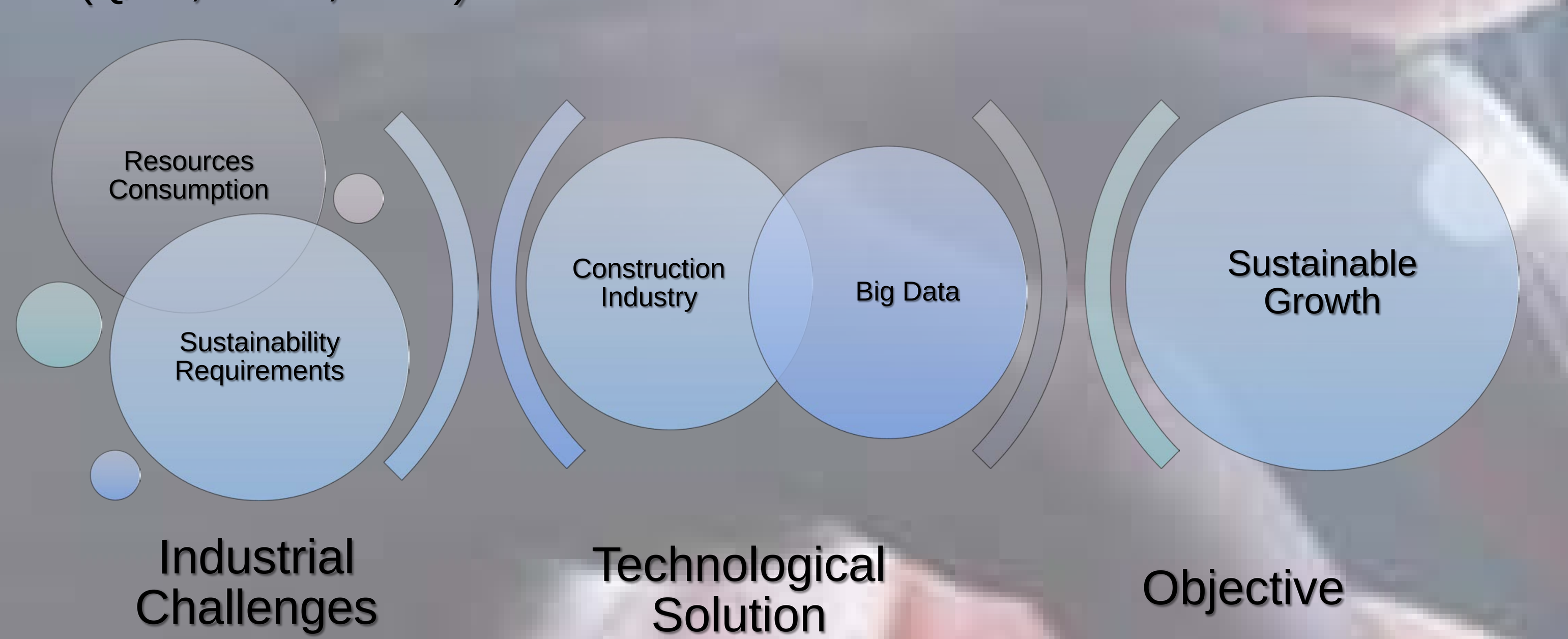
Big Data Analytics

Predictive and prescriptive analysis
Large scale datasets
Unstructured real time data analysis
e.g.: Xplenty, CDH, Cassandra

The biggest difference between traditional data analysis and Big Data is that while TA can help you understand the past, BD will help you predict what is most likely to happened in the future, providing a big competitive advantage to those who achieve it.

CONSTRUCTION INDUSTRY

There are many aspects driving change to construction industry, such as exponential growth of digital technologies, the increasing impacts of climate change, and social and environmental pressures, to name a few (Qian, et. al., 2021).



The construction industry is one of the main characters in the economic growth of the countries as well as resources consumption and is been challenged by the sustainable requirements that governments and society in general have been imposing in the last decades, thus generating a great demand for technological developments. Being that the case, it sometimes falls short of other industries in terms of implementation of such developments. At the same time, massive volumes of digital information are produced daily in the construction industry, collecting, analysing and understanding those large volumes of available data can improve decision making, refine goals and focus efforts.

RESEARCH AIM AND OBJECTIVES

The aim of this research is to develop a framework for the adoption of Big Data Concepts in the DR Construction Industry. This framework will provide guidelines for the adoption of concepts leading to sustainable development. To achieve this aim, the following objectives have been identified.

1.To critically analyse the concept of Big Data (BD) and its implementation.	To evaluate BD implementation initiatives for industry-wide execution.	To explore and document the awareness of Big Data concept and its characteristics in the Construction Industry of the Dominican Republic.	To identify and explore the key enablers for the adoption of the Big Data concept in the Construction Industry.	To explore potential benefits of Big Data Concept adoption.	To develop and evaluate a framework for the adoption of Big Data Concepts.

METHODOLOGY

Sampling Technique
- Non-Probabilistic

Data Collection Method
- Semi-Structured Interviews

Research Approach
- Qualitative Research

The Data Analysis was performed using the Endsley's Model of Situational Awareness, considered "the only direct and objective situation awareness measurement tool" (Dishman, et. al., 2020). This method is the most generally accepted interpretation of situation awareness and it possess industrial applications in areas such as healthcare and manufacturing to by exploring and solving problems presented in each occasion. A modification was introduced to account for the participants with no awareness of BD and its characteristics

Level 0 – No Awareness
- No knowledge of the Big Data topic

Level 1 – Basic Awareness
- Basic knowledge or perception of the Big Data topic

Level 2 – Intermediate Awareness
- Mediumknowledge or comprehension of the Big Data topic

Level 3 – Advanced Awareness
- High knowledge or projection of the Big Data topic, applications and future implementations.

FINDINGS

The study demonstrated that both the concept of big data and its characteristics, are widely known within the industry which agrees with much of the literature indicating that in recent years there has been an exponential increase in the use of both the term and the technology (Wang et. al., 2020). However, the study shows that the depth of this knowledge is still very little, evidenced by the need to further explore not only the concept but all aspects of this technology including its application in other industries which could be translated in a better general understanding of the technology .

Moreover, the basic elements for data accumulation are either not known or not implemented within the construction companies, or in some other cases known but not recognised as such by the decision makers.

The study also showed that the industry has the desire and the ability to invest in new technologies which can demonstrate a positively impact in production and management, but it is faced with the barrier of lack of understanding and implementation of the elements necessary for its execution.

Actions must betaken to satisfy the current needs of the industry in terms of technological development. In order to tackle this need the following recommendations are presented:

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- ✓To boost the promotion and understanding of the concept and its characteristics,
- To provide training and education to the professionals who lead the industry in the future.
- To promote of the use and applications of the technology not only in the construction industries but also in other areas that could serve as an example, improving this way general understanding.

MOVING FORWARD

The next step of this study is to develop and validate the framework to facilitate the adoption of Big Data Concepts within the Construction Industry. Further research is needed to understand the determining factors of Big Data Adoption outside the context of the Dominican Republic's Construction Industry and similar countries.

KEY REFERENCES

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