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Role of Big Data in Decision Making

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ABSTRACT

Massive amounts of data, also known as big data, have been produced by information systems working with the internet, cloud computing, mobile devices, and the Internet of Things. It is made up of data warehouse, OLAP, ETL, and information and encompasses a variety of structured, semi-structured, and unstructured real-time data. Academics and business organisations have developed original strategies for extracting value from large data. Large datasets have a lot of potential as an additional input for decision-making. The paper's goal is to investigate how big data can be used in these fields to aid in decision-making. In this article, we examine how big data may be used to quickly and intelligently make decisions that will improve company outcomes. A survey of the literature and secondary data are used in the paper to give a conceptual overview of the potential applications of big data in decision-making. The notion of big data, its function in decision-making, and big data's competitive advantage for various organisations are all covered in the article. A methodology for handling data in decision-making is also covered in the article. To make better judgements for businesses that will provide high-quality information, the issue must be addressed.

INTRODUCTION

Compared to previous analytics methods, the big data revolution is more potent. Managers can make better judgements by using big data by basing them on facts rather than gut feelings. Businesses are gathering more data than is necessary for any purpose because big data enables them to make more accurate predictions and deft judgements. Big data is used by executives across all industries to improve managerial procedures. Numerous studies have been done in specific fields, such as big data in the supply chain, social media, and transactional data. However, a comprehensive analysis of the decision-makers' access to big data is lacking. We investigate the function of various large data in various decision-making scenarios in response to this need. By completing the following goals, this essay fills in the following gaps:

1. To examine the role of big data in making strategic, tactical, and operational decisions. To examine the literature that already exists on the fundamental principles of big data and its function in decision making.

2. The study is helpful for using large data to make significant judgements. Big data is currently being employed in many commercial and academic fields. Making better predictions and decisions as a result.

RESEARCH METHODOLOGY

PURPOSE OF RESEARCH

This methodology chapter's goal is to discuss the approach that was selected, and it provides details on the procedures and tools utilised to collect the data for this thesis.

Research types

Finding out anything is what research is all about (Babbie, 2007). The researcher requires a strategy because the "something" could be anything. A strategy, usually referred to as a study design, may serve a variety of objectives. Babbie (2007) lists three of the most typical aims as exploration to look into a relatively unexplored area for the researcher, description to describe a specific occurrence or observation, and explanation to explain why a specific event or observation occurs. The researcher must then decide which units of analysis to use. In addition, there are a variety of technologies available to aid in the information gathering process. For instance, a survey can address who, what, where, how many, and how much questions, whereas an experiment and an interview can allow a research to address how and why questions (Yin, 2009). All of these tools can only provide qualitative data if a category solely contains non-numerical data; otherwise, they will only produce quantitative data (Babbie, 2007). To ensure that the results are reliable and repeatable, it is crucial to thoroughly detail each step.

MODELING AND ANALYSIS

Big Data is a relatively new term with a variable and somewhat hazy definition. This thesis must therefore distinguish between and choose from a variety of analytical units. Organisations that are transitioning to Big Data use as a method to extract more value from the data already accessible and to Business Intelligence use as a way to make it more regularly used for new insights and choices make up the initial unit of analysis. People or organisations with extensive experience in big data or business intelligence make up the second unit of analysis. For instance, a professor at a university who specialises in big data or a company like Booking.com that has already built a best practise method.

Data collection tools and data analysis

Interview

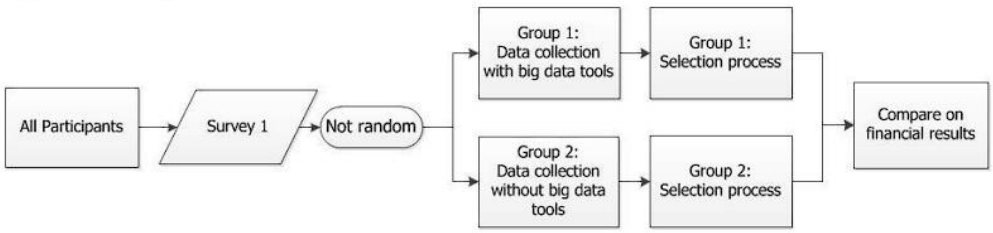
As was already noted, the major research issue of this thesis begins with a how inquiry, and in-depth interviews are ideal for how and why questions (Yin, 2009). As a result, interviews with various analytical units are chosen as the method of choice for data collecting. Nine interviews will be done in all. The interviews were designed to gain a deeper understanding of Business Intelligence and Big Data and go beyond the buzzword since the aim of this thesis is to provide an organisation with a set of recommendations on how to extract more value from the available data with the help of Big Data and to make more decisions based on data with the help of Business Intelligence. For the purposes of this study, it is crucial to understand how different employees within an organisation define big data and business intelligence, why they want to or do not want to use it, and how these concepts can add value for various business units.

Experiment

Yin (2009) claims that an experiment is also ideal for how and why queries. Along with the interviews, an experiment was conducted to assemble even more information for this thesis. The experiment was best suited for the first unit of analysis, which is an organisation that is transforming to start with big data to get more value from the available data and to optimise the business intelligence process so that it will be used more frequently for new insights and decisions. This experiment's initial idea was that "during the day, customers would search on their mobile devices and complete their orders in the evening on desktop computers." As a result, this experiment was carried out among HotelSpecials employees with the goal of raising awareness, exploring how Big Data could help the entire organisation get more value from the data at hand, and how this could encourage HotelSpecials employees to use Business Intelligence to make more decisions based on data. To make the experiment more "fun" and to increase awareness and insights, it was really presented as a game. A week prior to the experiment, volunteers could sign up via an internal memo. The experiment was conducted on a typical business day. Additionally, the researcher explicitly stated in this internal memo that all participation was voluntary, that all results would be made anonymous, and that there was no intention to harm the participants (Babbie, 2007). Babbie (2007) claims that a research can select from a variety of experiment designs, albeit a traditional experiment is the most popular option. This kind of experiment looks at how an independent variable affects a dependent variable. The independent variable in these experiments is frequently a stimulus that is present in the experimental group but not in the control group (Babbie, 2007). In the experiment, the usage of big data analytics tools is the independent variable, and the dependent variable is whether or not this results in improved performance or, more specifically, whether or not it results in increased value from the data already accessible. Because this is the standard practise, the experimental group may use new Big Data analytical tools that give the user access to more and newer data, such as Kibana, an Elastic big data visualisation tool, for new insights and decisions. In contrast, the control group may only use

traditional Business Intelligence, such as Excel, for new insights and decisions. The choice the

Figure 2: Design of thesis experiment



participants had to make and the criteria used to determine whether or not it was successful are discussed last. The decision of which hotel, hostel, or bed and breakfast to list on the outlet page—a webpage where HotelSpecials compiles 20 offers they believe will appeal to their customers—had to be made by both the experimental and control groups. The sole prerequisite was that HotelSpecials' website should provide the hotel, hostel, or bed & breakfast. Figure 2 was made as a summary and illustration of the previous information. A detailed description of the layout of this thesis experiment is provided in Figure 2.

Reliability and Validity

Big Data is still a new concept, and because it is subjective and occasionally ambiguous, it may have issues with validity and dependability. This is why it's crucial to get a definition of big data from each interviewee and experiment subject. This will improve the results' dependability and make it simpler to replicate them.

Since this was the only information the researcher had access to, it is only possible to conduct this research on the e-commerce market for hotel accommodations. As a result, this can be a thread connecting the authenticity and dependability of the information obtained for this thesis.

The interview framework was carried out with the aid of theory in order to obtain trustworthy and genuine data and gain a better grasp of the issues covered in the methodology section.

The participants were also required to take part in a brief survey (see Appendix C) in order to identify and control the experiment for variables other than the dependent and independent variable, also known as third variables. Participants in this survey were required to respond to questions on their prior experience and decision-making methodology. As a result, any third factors could be recognised and controlled for in this experiment.

Interview results

The interviews' findings will be presented in this chapter. The definition and fundamentals of big data will be described in section 4.1.

Finally, all respondents concurred that deploying Big Data tools should be the next action an organisation should take.

· Making a list of all Big Data technologies that adhere to the magnetic, agile, and deep requirements is the first substep that an organisation should take. A company might, for instance,

use free Big Data tools like Hadoop to store data and enable self-learning algorithms or Kibana from Elastic to perform big data analytics.

· Second, a list of needs must be created before selecting the appropriate Big Data technology. An organisation might want to create a self-learning recommendation system based on previous data, for instance. If this is the case, the chosen Big Data tool should be able to collect all of this historical data as well as detect data contamination, for instance, if the organisation implements this recommendation algorithm on January 1st, 2015, the tool should also be able to detect if the behaviour of the users has changed after January 2015 as a result of implementing this algorithm. To give an example, if someone buys a pair of shoes before January 2015 and then buys a pair of jeans because the recommendation algorithm told them to, this algorithm should be able to tell that the person was not, by definition, looking for a new pair of jeans.

Thirdly, the company shouldn't concentrate on creating more advanced Big Data algorithms or systems than its rivals. Do not attempt to remake the wheel, as one respondent said. Make an effort to build on the tools and information that are currently at your disposal. However, a company should concentrate on gathering more data than its rivals because more data will ultimately defeat a really clever algorithm.

Lastly, there is unanimity among respondents that Big Data does not aim to replace an organization's current warehouse and Business Intelligence platforms. In actuality, the key is to enhance the warehousing and business intelligence platforms. As an illustration, Hadoop functions flawlessly alongside conventional warehouse systems.

Explanatory analysis

Big Data is still mostly regarded as a novel topic and field of study. For instance, almost all interviewees said that they regard big data as a "buzzword" throughout the interviews. However, there are enough cases and examples in the literature to go beyond the buzzword. For example, a company that was founded in the digital age may have vast databases derived from a single source, such as clickstreams, and use them for targeted advertising or offer optimisation (Boyd & Crawford, 2012; Cohen et al., 2009). The 3Vs of McAfee & Brynjolfsson (2012) - Volume for the vast amounts of data, Velocity for the rate of data generation, and Variety for this data's unstructured nature - are another way that most experts define big data. The majority of responders concur with this viewpoint, but they also include Veracity for the information's reliability and Value for its usefulness in generating new business chances. As a result, it may be inferred that these respondents instinctively or subconsciously refer to Big Data as a buzzword since their definitions of it are exactly the same and, in principle, there is sufficient material to support this.

This explanatory analysis's goal is to relate the results of the experiments with interview findings.

Conclusion

Research on numerous aspects of big data, business intelligence, and decision making was done for this thesis. The major goal of this research was to develop a collection of suggestions that will assist an organisation in utilising Big Data to maximise the value of the data already in existence and utilising business intelligence in a way that would increase its utility for novel insights and decisions. The study question that matched this objective was: How can an organisation begin using big data to maximise the value of the information already at hand and streamline the business intelligence procedures so that it is used more frequently for decision-making? The outcomes for business intelligence, big data, and decision-making are as follows:

· Big Data is still regarded as a relatively new topic and field of study in general. For instance, almost all interviewees said that they regard big data as a "buzzword" throughout the interviews. An organisation should establish a precise definition of big data to combat this. The 3Vs of McAfee & Brynjolfsson (2012), which stand for volume (the vast amounts of data), velocity (the rapid rate of data creation), and variety (the unstructured form of this data), are how most scholars define big data in the literature. The majority of responders concur with this viewpoint, but they also include Veracity for the information's reliability and Value for its usefulness in generating new business chances.

 Furthermore, because they still view big data as a new field of study, the respondents also see different capabilities of big data. Big Data, Business Intelligence, and Decision Making are regarded as three closely related research fields in the literature (Simon, 1977). However, two streams can be identified based on the respondents. People with no prior experience in IT, such as computer Both the investment cost and the cost of providing Cloud Computing services must be considered by businesses. Private clouds are essential when migrating to public clouds is impossible due to legal constraints and renting out more IT space becomes practical. Researchers have looked into the price of cloud data centres and believe that prices may be kept to a minimum by optimising server, infrastructure, power, and networking costs. For instance, constructing compact data centres and running them at cooler temperatures can reduce bandwidth costs (Greenberg et al., 2009, p3).

The second stream of answers are those with an IT background who see Big Data as a catalyst for artificial intelligence, self-learning software, and smarter algorithms. Science and software engineering claim that Big Data is connected to Business Intelligence and Decision Making.

· In order to begin using Big Data, Business Intelligence, and Decision Making, an organisation could (i) choose a test department with a manager who is open-minded and data friendly (ii) identify and select no more than five opportunities that can be solved with Big Data within five weeks (iii) launch an innovation process with the following steps: experimentation, measurement, sharing, and replication (iv) and, if possible, send out some analytic challenges on their Big Data t The outcomes also show that a company needs to: (v) educate staff on the capabilities of big data (vi) Begin with big data and learn about tools for big data implementation and usage. (vii) compile a list of all Big Data tools that adhere to MAD's standards. Choose the best tool for your organization's needs (viii) and avoid concentrating on creating Big Data systems or algorithms that are more intelligent than your rivals.

· Adding to this, the findings show that an organisation shouldn't replace its current platforms if it starts with Big Data, Business Intelligence, and Decision Making. Businesses should utilise it as

an addition to analytical inquiries that require a large amount of data in a short period of time.

· According to the interview findings, it's critical to develop an evidence-based culture. Employees are encouraged to characterise the issue, formulate a hypothesis, then gather information to support or disprove this theory in this evidence-based culture. Additionally, when management of an organisation develops a vision and alignment between business strategies, business model, and business intelligence tools, organisations are more likely to succeed with big data, business intelligence, and decision making.

· The findings of this thesis experiment showed that prompt decision-making and customer knowledge might result in a significant improvement in performance. The experiment in this thesis, for instance, was based on the data that was available and the assumption that "customers were searching on their mobile during the day and would finish the order on their desktop in the evening." The results of the trial supported this theory, showing that starting to understand customers can significantly improve an organization's performance. Therefore, a company should consider "why did it happen?" in addition to questions like "what happened?" and "what is happening right now?" Predictive analytics and "what will happen?" - prescriptive analytics.

Finally, the findings suggest that it is critical to maximise the visualisation of the data that is currently available. These visualisations ought to be provided in a clear and simple manner.

Limitations and future research

Due to time, budget, and methodological constraints, this thesis has some limitations. The case selection and sample size are the first constraint. The choice of cases and the sample size are crucial factors in determining how universal a thesis is. Due to the fact that this thesis only used two groups of cases, there is a possibility that these two groups do not fully represent the range of cases present across the entire community. Additionally, every case originated from a single nation and branch. Therefore, more cases, a larger sample size, and cases from various nations and branches should be used in future research.

References

Ariely, D. (2013). Big data is like teenage sex. Retrieved from

https://twitter.com/danariely/status/287952257926971392

Babbie, E. R. (2007). The practice of social research. Belmont, CA.: Thomson Wadsworth.

Bellman, R. E., & Zadeh, L. A. (1970). Decision-Making in a Fuzzy Environment. Management

Science, 17(4), B–141. http://doi.org/10.1287/mnsc.17.4.B141

boyd, danah, & Crawford, K. (2012). Critical Questions for Big Data. Information,

Communication & Society, 15(5), 662–679.

http://doi.org/10.1080/1369118X.2012.678878

Chaudhuri, S., Dayal, U., & Narasayya, V. (2011). An Overview of Business Intelligence Technology. Commun. ACM, 54(8), 88–98. http://doi.org/10.1145/1978542.1978562\

Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business Intelligence and Analytics: From Big Data to Big Impact. MIS Q., 36(4), 1165–1188