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A Look At The Potential Of Big Data In Nurturing Intuition In Organisational Decision Makers

Abstract

As big data (BD) and data analytics having gain significance the industry expects helping executives will eventually move towards evidence based decision making. The hope is to achieve more sustainable competitive advantage for their organisations. A key question is whether executives make decisions by intuition. This leads to another question whether big data would ever substitute human intuition. In this research, the 'mind-set' of executives about application and limitations of big data be investigated by taking into account their decision making behaviour. The aim is to look deeply into how BD technologies facilitate greater intuitiveness in executives, and consequently lead to faster and sustainable business growth.

Keywords: Big data; Decision making; Business intelligence

1. Introduction

Big Data (BD) is a term used to refer to digital data that is huge in size, usually in terabits, comes from various sources, such as, media and digital, and keeps on increasing in size. The three dimensions of BD are referred to as 'volume', 'variety' and 'velocity'. Organisations have used this data to generate insights and used it to grow their businesses at an unprecedented rate, and across markets that never were thought to exist before. For example, Amazon have used the data gathered from the data collected from the visitors of their site, and used it to transform their organisation completely (Davenport, 2006).

Initially success of BD started from internet based companies, who started mining for data to increase their market share or differentiate themselves in the market (Davenport, 2006). BD based IT technologies used for strategic decision making seemed to have resulted in gaining remarkable insights that lead to building a sustainable competitive advantage (Anderson & Rainie, 2012). These technologies can help executives in the developing competitive institutions that can stimulate innovation, consequently accelerating economic development (Alves de Mendonça, Freitas, & de Souza, 2010).

However, executives do not always make right decisions, the most notorious being the investment decisions that lead to the financial crunch of the late 2000s, and, decisions within organisations have also gone wrong. Examples include, yahoo deciding to let go of the opportunity to buy Microsoft, and General Motors bringing the wrong cars to the market. An explanation presented is that decision making process is a 'black box' (Davenport, 2009) and therefore not subject to analysis and overhauling (Davenport, 2009). Surveys about opinions and plans about BD have indicated that executives see huge potential in using BD analytics to reveal unique insights that can help them to transform organisations and ultimately build a sustainable competitive advantage (Davenport, 2006). This seems to point out to the possibility that executives are actually overhauling the decision making process to base their decision on factual evidence.

Literature search suggests that there are various methods that lay down rules for rational and complete decision making. The most extensive one, perhaps, is the framework laid down in (Davenport, 2009), as it covers all aspects from multiple, perspectives, but also the psychological and behavioural perspectives that underlie decision making processes. However, the reality of human decision making is different, and subjected to many limitations. People usually make decisions by two cognitive means; first one is reasoning that involves defining the problem, defining the criteria of decision, and identifying the most important one, finding alternatives, evaluating alternatives based on the criteria, and finding the best alternative. The process hence requires time, conscious effort and logic (Bazerman & Moore, 2012). A similar method of identifying issues about which decision has to be made, prioritising them and getting diverse,

multi-disciplinary perspective to find the best alternative is also laid down by Davenport (2009). The second one is intuitive where decision making is subconscious. Executive decision making is usually intuitive because decisions by intuition are fast, automatic and do not require a lot of effort. Since executives are busy and have limited time on their hand, their decisions are mostly intuitive (Bazerman & Moore, 2012). Identification of this fact raises the question that is intuition-based decision making somehow inadequate method of decision making that always leads to problems. Previous research has found out that in reality executives only use intuition because their primary job is to interact and converse with many people during the day. Because of this they have limited time in which they are bombarded with diverse information (Kuo, 1998). Sterman (2000, pp. 598-603) explains that the human cognitive capability to process information is limited, and in most cases much smaller than that which the problem at hand requires. Because of this, excess information can overwhelm the attention. Despite these limitations, executives can effectively absorb and process even a little ambiguous information and make effective decisions. Executives can only manage this by employing intuition (Benbasat & Todd, 1993).

Intuition is the unconscious transfer of knowledge developed by past experiences. In complex, dynamic and unstructured scenarios, which real world scenarios mostly are, this unconscious transfer enables decision makers to analyse the situation and synthesise conclusions without need of analytical structures. Thus decision makers can make new conclusions, and take action on them, feeling as if they came across this by chance. In this context, perception and experience are at the core of intuition (Kuo, 1998)

Traditionally perception is defined as a psychological process that enables decision makers to extract information directly by using their senses to make a decision, but recent research has revealed that perception also enables decision makers to extract meaning from situations. This usually involves taking an overall 'bird's eye' view of the situation, and use cues to extract information. Intuition achieves this by simplifying a complex situation by subtracting irrelevant information, and filling in missing clues of information by adding abstract concepts. This results in perceptions translated immediately into action, based on the state of environment. This is also the reason why people transfer the intuitive insights in forms of 'metaphors' (Kuo, 1998). Therefore, intuition can be seen as a complex process that requires coordination of the decision makers' senses and also subconscious cognitive processes in the brain. These processes perform both inductive and deductive reasoning using mental models, the stored information about similar situations. This is achieved by practice and decision makers putting themselves in different situations. Thus, intuition is built by years of experience. By experiencing the situation in different environments, decision makers can immediately focus on the right information in the proper environmental context, and also combine different mental models based on where they are applicable. However, intuition, particularly the action taken as a result of intuition, is governed by values, goals and emotional state of the decision maker (Kuo, 1998).

The cognitive and psychological description of intuition suggests that the term intuition is actually interchangeable with knowledge. Davenport and Prusak (1998) have differentiated between data, information and knowledge to present a working definition of knowledge. Data is a collection of facts, such as, the profit of a company or yearly revenue, and information is transfer of that data, along with the opinions about it. Thus, stating the company will earn the same amount of revenue this year because the product has the same demand, is information. Similar to intuition this information is interpreted is based on the mental models created from the perception of the environment, and the values and goals of the decision makers. Knowledge is defined as the process to receive and evaluate information using the mental models, values and goals, in order to take actions. Thus knowledge, like intuition, is also closest to action than data and information. Similar to intuition, knowledge is also developed by years of experience, as experience develops the contextual frames to absorb and interpret knowledge.

Intuition relies on perception, and generates bias. Therefore, intuition can become static and thus stop evolving, resulting in decisions being always wrong. Intuition is used by decision maker because it requires less time and less effort to process information and take decisions. This may result in executives compressing too much information and increasing the error in decision. If executives continue to rely on intuition they would never be able to look at their biases, and continue making the wrong decisions (Kuo, 1998). Knowledge on the other hand seems to be dynamic. Data and information are static parts of both the executive's experiences and environments, and as knowledge interacts with different environments the information and data processing evolves. Thus, if knowledge is static, it actually downgrades to data or information. So, knowledge would be developing by not only taking actions, but also evaluating the difference between the expected outcome and actual outcome, to get insights and develop new capabilities and competences (Davenport & Prusak, 1998)

Kuo (1998) acknowledges that managers apply both analytical and intuitive thinking in practice, they usually have to make a choice between the two. However, it seems that knowledge is careful combination of both analysis and intuition. By taking action intuition can be trained, and analysis can uncover and question the biases subconscious reasoning processes used to achieve that reasoning. Strategically, since knowledge is adaptive and difficult to develop, the knowledge of executives can be a sustainable competitive advantage, that would enable organisations to sustain profitability in rapidly changing environments (Davenport & Prusak, 1998).

Based on the understanding of intuition and knowledge, and comparing it to the research on BD and BI, and its use in decision making process, it can be seen that executive in Europe and US still rely on intuition to make decision. However, BD based BI also has the potential to provide insights that lead to new inductive and deductive conclusions. Perhaps BD could be a tool for knowledge development for executives, and therefore is an excellent tool for management development.

From literature review it can be seen that BD can be used as a learning tool for intuition development, and this can be done by deploying BI. The applications of BI range from policy making and accelerating economic development. By using BD based BI decisions can be evaluated in real-time. In realm of building competitive advantage, it can be used to rapidly iterate decisions till sustainability is achieved (Höchtel, Parycek, & Schöllhammer, 2016). However, the research on impact of BD based IT on development is theoretical in nature, employing theoretical models and their interaction (Höchtel, Parycek, & Schöllhammer, 2016).

2. Methodology

This research aims to take the practitioners point of view to whether employing BD based IT resulted in improving strategic decision making in Europe, and what lessons can be learned that can help implement BD based IT to accelerate economic development as well as human development in the context of nurturing intuition of executives. By doing this, the gap between theoretical literature and its practical relevance can be narrowed, as it has been found that only a very small number of this research has any practical relevance (Arnott & Pervan, 2008). This paper deals with decision making by executives, and exploring of their intuitiveness. Therefore, to ground this in reality, the opinions of executives about the potential and limitations of BD, and their plans with BD are going to form the foundation of analysis. This resonates well with the ‘interpretivist’ research philosophy, which insists that in real world scenarios, human ‘actors’ (Saunders, Lewis, & Thornhill, 2012, p. 137) and their behaviours are main determinants of actions.

Therefore, the mind sets and opinions of executives shall be collected and analysed. Using an interpretivist research paradigm, would also enable to critically analyse the state of human actors, and attempt to present a holistic framework adoption BD based IT for development. Choosing interpretivist research paradigm implies two important points; the sample size of the data selected is small, and the data investigation is in-depth and through (Saunders, Lewis, & Thornhill, 2012, p. 140). A small sample size, therefore, was chosen, with in-depth interviews. The interviews were objective and empathic to not only understand the mind-sets and opinions of executive, but also the source of their opinions.

3. Conclusion

BD based decision support systems are still new for the developed world, and the full spectrum of their application is still unknown. However, executive still make decisions starting from the highest view, and ultimately follow their intuition. Intuition leads the process of decision making, and the information should support a relaxed environment, such as filtered lights, to induce relaxed state in the executives, which is necessary for enabling intuition (Agor, 1986)

- Information systems should support BD and its visualisation to simulate the complete picture of the context, that is, the internal and external environment (Kuo, 1998)
- Information systems provide BD that confirm or refute the gut feelings of the executives, both in structured and unstructured ways (Rasiel & Friga, 2002)

As seen with other technologies, BD based IT for decision support systems may or not replace intuition, because business would always be dynamic, and business environment would stay complex. This research could gain important insights into intuition and applications of BD that the executives can use to develop their intuition, which can deliver positive results when deployed for development.

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