The Entrepreneur's Opportunities in Big Data Era
โอกาสของผู้ประกอบการในยุคอภิมหาข้อมูล

Supattanawaree Thipcharoen*

บทคัดย่อ

ในช่วงของการเติบโตทางเศรษฐกิจและการแข่งขันที่สูงขึ้น ผู้ประกอบการจำเป็นอย่างยิ่ง ที่จะต้องมีการปรับตัวอยู่เสมอ เพื่อให้สามารถดำเนินธุรกิจได้อย่างมีประสิทธิภาพ ปัจจัยหนึ่งที่ส่งผลให้ผู้ประกอบการต้องตระหนักนอกเหนือจากการพัฒนาด้านเทคโนโลยีต่างๆ ก็คือ การจัดการกับปริมาณข้อมูลที่มีเพิ่มมากขึ้น ทำให้ผู้ประกอบการต้องประสบกับปัญหาต่างๆ ไม่ว่าจะเป็นเรื่องของเนื้อที่ในการจัดเก็บ ตลอดจนถึงวิธีการเข้าถึงข้อมูลที่สะดวกรวดเร็ว จากปริมาณข้อมูลที่เพิ่มมากขึ้นนี้เองทำให้ช่วงของการดำเนินธุรกิจอยู่ในยุคที่เรียกว่ายุคอภิมหาข้อมูล แต่ในอีกด้านหนึ่ง หากมีการจัดการอภิมหาข้อมูลอย่างเป็นระบบ ตลอดจนมีเครื่องมือและวิธีการวิเคราะห์ที่เหมาะสมแล้ว แหล่งข้อมูลเหล่านี้จะนำมาซึ่งโอกาสเนื่องจากอภิมหาข้อมูลนั้นจะถูกสกัดจากสารสนเทศขององค์กร และสะท้อนให้เห็นถึงความรู้อันมีค่าซึ่งจะเป็นประโยชน์ต่อองค์กรมากกว่าการนำเสนอรายงานสรุปข้อมูลตามปกติ โดยจะสามารถบอกถึงความต้องการที่แท้จริงของลูกค้าในช่วงเวลาต่างๆ เช่น จากการวิเคราะห์ประวัติการทำธุรกรรม การวิเคราะห์และวางแผนอย่างรวดเร็วอันเนื่องมาจากรายงานที่ครบถ้วนสมบูรณ์ที่สรุปมาจากอภิมหาข้อมูล จะช่วยสนับสนุนการตัดสินใจของผู้บริหารในการกำหนดนโยบาย และกลยุทธ์ในองค์กรได้อย่างรวดเร็ว สามารถช่วงชิงโอกาสทางการแข่งขันได้อย่างมีประสิทธิภาพ โดยบทความนี้จะกล่าวถึงลักษณะขององอภิมหาข้อมูล องค์ประกอบในการวิเคราะห์อภิมหาข้อมูล การใช้เครื่องมือหรือระบบธุรกิจอัจฉริยะที่ใช้การวิเคราะห์อภิมหาข้อมูลเพื่อสร้างโอกาสหรือข้อได้เปรียบทางการแข่งขันของผู้ประกอบการโดยจะมีการยกกรณีศึกษาในด้านต่างๆ เพื่อให้เห็นภาพที่ชัดเจน

คำสำคัญ

อภิมหาข้อมูล การสร้างโอกาสของผู้ประกอบการ ระบบธุรกิจอัจฉริยะ ระบบสนับสนุนการตัดสินใจ

Abstract

In the high competition and economic growth time, that's important for the entrepreneur to improve their business. The one factor which the entrepreneur should realize except the catch up the new information technology is the data handling problem. There are many problems comes from the growth of volume data such as space limitation, access algorithms etc. The huge of data is called "Big Data". In the other hand, the efficiency of Big Data management can give the high opportunities for business. The knowledge

* Lecturer, Information Technology Department, Faculty of Science and Technology, The Far Eastern University
E-mail: supttanawaree@feu.ac.th

from Big Data is discovered from the information which produced the advantage or chance for business more than regular report for example the customer's requirement in period time from history of transaction. The effective analysis of Big Data by Business Intelligence (BI) tools will support the entrepreneur in high competition situation via Decision Supporting System (DSS). Therefore this paper reviews about the characteristic and analytics of the Big Data; include BI tools and also case studies to show how Big Data can create the advantage to the entrepreneur.

Keywords

Big Data, Entrepreneur Opportunities, Business Intelligence, Decision Supporting System

Introduction

Last 10 years, the aim of business is how to process data into information. The volume of data is not necessary factor. But now, information technology is improving. It's the reason of huge data are created. They come from many sources such as digital pictures, videos, posts to social media sites and purchase transaction records (See Figure 1). The trends indicate that the volume of business data will grow significantly every year. It's lead to be the "Big data". It has the potential to become a very significant driving force for innovation and value creation.

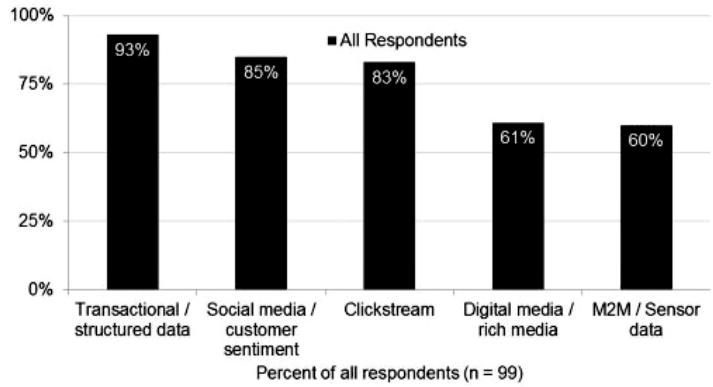

Figure 1: Top Five Most Important Big Data Source

Source: Rowe, 2012

Rowe (2012) explains the Figure 1. in "Business Intelligence and Analytics: Conquering Big Data" that structured data in relational databases, such as transactional information, while growing at over 36 per cent year-over-year, shows nowhere near the growth of other, internet-based data sources. However, 93 per cent of organizations reported that structured data is important or very important to their

overall big data initiative. Big data is focused on the new technologies, currently available or being developed, to specifically manage and analyze massive, varied data sets. To determine which of these powerful new tools provides the most value, the entrepreneur must identify current needs and articulate a long-term vision for the next evolution of their products or services. This shows that big data is effect on business. It transforms business from operational or traditional process into strategy and planning process. Aberdeen's research shows that there are several major technological categories with incredible growth potential that the entrepreneur should monitor, and determine if they can enhance their business (see Figure 2).

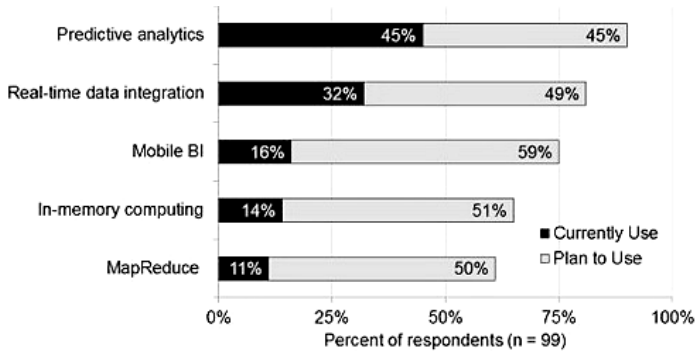

Figure 2: The Rapid Rise of Big Data Tools

Source: Rowe, 2012

From above, big data is valuable for business. It needs to be analyzed with the performance tools to process the data form the warehouse such as creating transparencies, discovering needs, expose variability, segmenting customers, replacing/supporting human decision making with automated algorithms - Innovating new business models, products, services.

This paper will present the opinion and discussion from the Business website or literature which relates the big data (definition, why big data so important? big data and analytic business intelligence, the new competitive advantage and chance for entrepreneur and also case study as follow (Rowe, 2012).

Definition of Big Data

Big Data refers to the massive amounts of data that collect over time that are difficult to analyze and handle using common database management tools. Big Data includes business transactions, e-mail messages, photos, surveillance videos and activity logs (Rowe, 2012). Another definition is the term for a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. The challenges include capture, curation,

storage, search, sharing, transfer, analysis and visualization (White, 2012) while Shaun Connolly purpose the definition that *"Big Data = Transactions + Interactions + Observations"* as Figure 3;

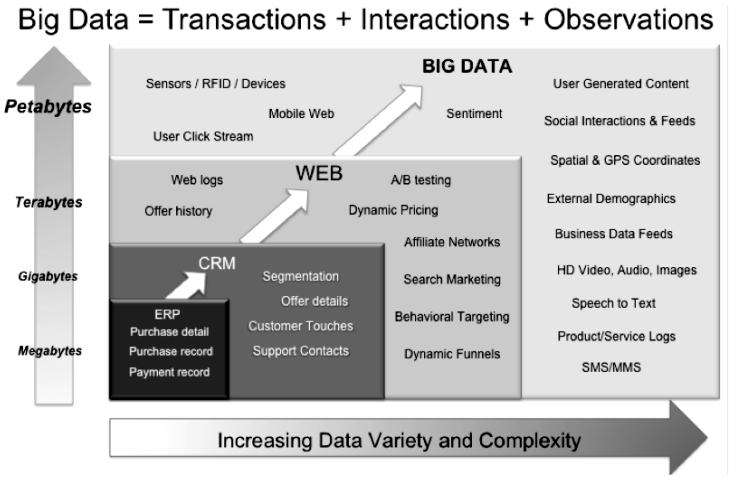

Figure 3. The Picture Explain Definition of Big Data
Source: Shaun, 2012

The transactions are classic examples of systems processing Transactions. Highly structured data in these systems is typically stored in SQL databases while interactions are about how people and things interact with each other or with the business. Observational data tends to come from the "Internet of Things" such as sensors for heat, motion, pressure and RFID and GPS chips within such things as mobile devices, ATM machines that output Observation data (Shaun, 2012).

Why and How to implement Big Data?

Because of big data can produce new insights that would otherwise be hidden and warrants innovative processing solutions for a variety of new and existing data to provide real business benefits more than normal database. But, processing large volumes or wide varieties of data remains merely a technological solution unless it is tied to business goals and objectives.

Hicks (2013) suggested in the GoGrid blog that Big Data project stay on track and help companies to understand how each project will impact their business. The understanding infrastructure requirements are very important the same as plan for implementation to understand what each Big Data project will mean to the organization. The steps for implement Big-Data can conclude as 8 steps:

1. Gain executive-level sponsorship: Team is very important because the process take time to scope. Dedicated project team leads chance to succession.

2. Augment rather than re-build: Consider the existing data warehouse first. The challenge is to identify and prioritize additional data sources and then determine the right and appropriate technology which need.

3. Make value to the customer a priority: In the identified and prioritized data sources process, the company has to connect the customers to the needs and desires of them.

4. Run an Agile shop and increment over time: This approach will let to adjust the operation incrementally and understand how to use data to influence actions throughout the company. It's okay to start slow, learn, adapt, and then move on to the next step.

5. Link customer data to company process: Push data-driven decisions into the organization at all level - from product development through to packaging, promotion, pricing, and advertising.

6. Create repeatable process and action paths: Big Data shouldn't mean data paralysis. Take a thoughtful approach to incorporating data sets. Ask team members what can be gained by adding the data set and what actions should be taken from the learnings.

7. Test, measure, and learn: With each data set, test the appropriately assumptions. The Big Data could show the responsive marketing systems which let company push personalized marketing out the door quickly with a variety of messages.

8. Map data to the customer's life cycle: By asking questions (When, How to discover or connect the product information?)

From above, the Big Data implementation needs the efficiency tools and technology which called Business Intelligence to improve and leads to be the new business.

Business Intelligence Concept for Big Data

Big data is growing fast as organizations devote technology resources to tapping the terabytes (if not petabytes) of data flowing into their organizations and externally in social media data and other sources. There are many organizations which transform into new business with big data such as Healthcare - a very sensitive area, Global personal location data - very relevant for mobile devices, Retail - obvious for large Web shops like eBay and Amazon, Manufacturing. It's very challenge for the business to balance the three factors: Data, Process, and Management. For data, the main challenge is how to deal with the size of big data and handle multiplicity of types, sources and formats while the data quality and data availability also considered. In the Process, the challenge is is how to analyse capturing data, transforming the data into a form suitable for analysis and understanding the output, visualizing and sharing the results, considering how to display complex analytics on a mobile device. The last challenge is management. The main management challenges are related to data privacy, security, governance, and ethical issues.

In order to balance three factors, tools for integrating advanced analytics for big data with Business Intelligent (BI) systems is an important step toward gaining full return on investment. Business Intelligence (BI) is a set of abilities, tools, techniques and solutions that help managers to understand business situation. BI tools get a view of previous, now and future situation to people. (Saeed; Sara & Seyed, 2012). Traditional BI tool architecture has analytical processing first pass through a data warehouse. In the new, modern BI architecture, data reaches users through a multiplicity of organization data structures, each tailored to the type of content it contains and the type of user who wants to consume it as Figure 4.

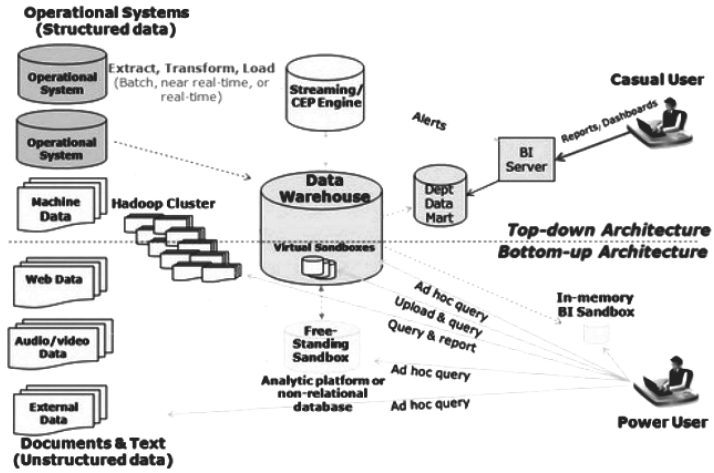

Figure 4: Big Data and BI Tools Architecture

Source: Walker, 2012

Figure 4 shows the objects in blue represent traditional data architecture. Objects in pink represent the new modern BI architecture, which includes Hadoop (is an open source software project that enables the distributed processing of large data sets across clusters of commodity servers and providing an innovative and cost effective foundation for the emerging landscape of Big Data processing and analytics solutions), NoSQL databases, high-performance analytical engines. Most source data now flows through Hadoop, which primarily acts as a staging area and online archive. This is especially true for semi-structured data, such as log files and machine-generated data, but also for some structured data that cannot be cost-effectively stored and processed in SQL engines (Walker, 2012). There's a new generation of data management technologies, advanced analytics and BI can be highly complementary; advanced analytics can provide the deeper, exploratory perspective on the data, while BI systems provide a more structured user experience. BI systems' richness in dashboard visualization, reporting, performance management metrics and more can be vital to making advanced analytics actionable. The contents of Big Data and Analytics Business Intelligence are shown in Figure 5.

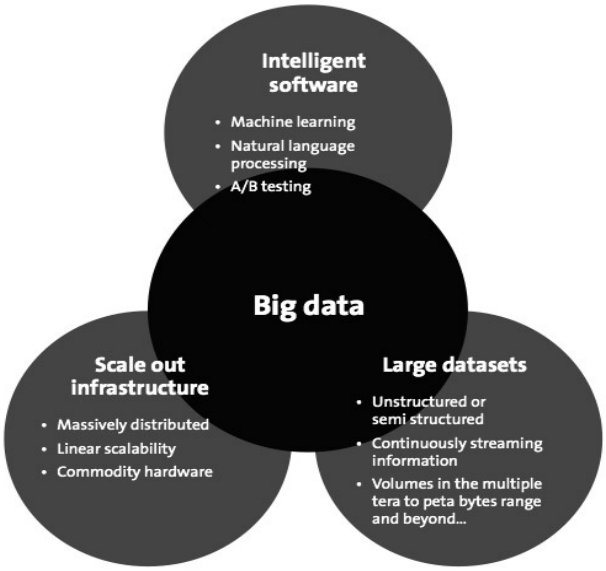

Figure 5: Big Data with BI Components

Source: Gonzalo, 2013

Frederic Gonzalo claimed in "Big data in tourism and hospitality: 4 components" that Big Data compose of three sections. First is intelligent software or BI. It relates with learning and testing with machine process. The second is scale out infrastructure such as distributed system, linear scalability and commodity hardware. The last is large datasets. It refers to huge various data (unstructured/semi structured/steaming). The tree sections should be collaborated together in the system (Gonzalo, 2013).

The same as Peter Wayner from InfoWorld, Survey the top tools for Big Data forexample; Jaspersoft BI Suite, Pentaho Business Analytics, Karmasphere Studio and Analyst, Talend Open Studio, Skytree Server, Tableau Desktop and Server, Splunk (Wayner, 2012). While another BI tools which focusing on "making Business Intelligence easy: Yellowfin" becomes to be interested by the entrepreneur. (Yellowfin International Pty Ltd., n.d.) Yellowfin is a business intelligence (BI), dashboard, reporting and data analysis software vendor. Yellowfin's software allows reporting from data stored in relational databases, multi-dimensional cubes or in-memory analytical databases. It has been developed to satisfy a range of BI needs - from small businesses, to massive enterprise deployments and software vendors. From data to dashboards Yellowfin delivers a brilliant analytical experience. The interface is more than beautiful - it provides all the data discovery features that user will need as Figure 6.

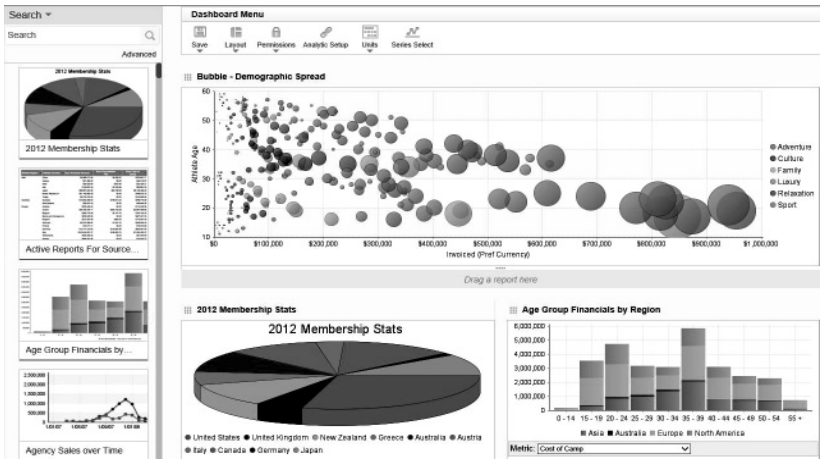

Figure 6: Yellowfin Program

Source: Yellowfin International Pty Ltd., n.d.

Big Data: The new competitive advantage and Entrepreneur's Opportunities

All companies need to take Big Data and its potential to create value seriously if they want to compete. David Kuketz claim in "The 7 Biggest Business Benefits from Big Data" that the potential business benefits from implementing an effective big data insights methodology include: Timely insights from the vast amounts of data. This includes those already stored in company databases, from external third-party sources, the Internet, social media and remote sensors. Real-time monitoring and forecasting of events are impact either business performance or operation. Ability to find, acquires, extract, manipulate, analyze, connect and visualize data with the tools. Identifying significant information can improve decision quality. Mitigating risk by optimizing the complex decisions of unplanned events more rapidly (Kuketz, 2012, 1). The same as Shaun Connolly, he gave the 7 Key Drivers behind the Big Data Market as Table 1.

Table 1

The 7 Key Drivers Behind the Big Data Market

Sections	Key Drivers
Business	1) Opportunity to enable innovative new business models 2) Potential for new insights that drive competitive advantage
Technical	3) Data collected and stored continues to grow exponentially 4) Data is increasingly everywhere and in many formats 5) Traditional solutions are failing under new requirements
Financial	6) Cost of data systems, as a percentage of IT spend, continues to grow 7) Cost advantages of commodity hardware & open source software

Source: Kuketz, 2012

The use of Big Data is becoming a crucial way for leading companies to outperform their peers. In most industries, established competitors and new entrants alike will leverage data-driven strategies to innovate, compete, and capture value. In healthcare organization, data pioneers are analyzing the health outcomes of pharmaceuticals when they were widely prescribed, and discovering benefits and risks that were not evident during necessarily more limited clinical trials. Other early adopters of Big Data are using data from sensors embedded in products from children's toys to industrial goods to determine how these products are actually used in the real world. Such knowledge then informs the creation of new service offerings and the design of future products. Big Data will help to create new growth opportunities and entirely new categories of companies, such as those that aggregate and analyze industry data. Many of these will be companies that sit in the middle of large information flows where data about products and services, buyers and suppliers, consumer preferences and intent can be captured and analyzed. Forward-thinking leaders across sectors should begin aggressively to build their organizations' Big Data capabilities.

In addition to the sheer scale of Big Data, the real-time and high-frequency nature of the data are also important. For example, 'nowcasting,' the ability to estimate metrics such as consumer confidence, immediately, something which previously could only be done retrospectively, is becoming more extensively used, adding considerable power to prediction. Similarly, the high frequency of data allows users to test theories in near real-time and to a level never before possible (McGuire, Manyika & Chui, 2012).

Moreover, Gary Spakes suggested that 4 ways big data can benefit entrepreneur's business are; (Spakes, n.d.)

1. Detect, prevent and remediate financial fraud.
2. Calculate risk on large portfolios.
3. Execute high-value marketing campaigns.
4. Improve delinquent collections.

Nathaniel Rowe presented in Business Intelligence and Analytics: Conquering Big Data that the future of Big Data is wide open and the possibilities are tantalising. New insights gleaned from data never before combined, and delivered faster to more users than ever before, represents only the tip of the iceberg. The role of the CIO in this new information revolution has never been more important, as it is their responsibility to manage the complex task of determining how Big Data can benefit their business, identifying untapped data sources, and selecting the technologies that are the best fit for the needs and goals of the enterprise (Rowe, 2012).

Case Study

Big Data for Business Field

IBM purposes the three things which must get right to transform your business, using big data and analytics: the first is to build a culture that infuses analytics everywhere. Empower all employees to make data-based decisions, instead of relying on instinct and past experience. The second is to be proactive about privacy, security and governance. Ensure that the data being analyzed is safe, secure and accurate and the last is the Investment in a big data and analytics platform that is tuned to the task of handling all types of data and analytics, regardless of form or function. More over in the IBM's website still show the Big Data and Analytics case studies which divide in Industries and Business needs topics as Figure 7.

Figure 7: Big Data Analysis from IBM's Case Studies

Source: IBM Corporation, n.d.

From Figure 7, there are many Big Data Analysis's case studies are presented. For Each case has the solution from IBM. This shows that the Big Data and Analytics become to grow up in the business world.

Big Data for Education: Yellowfin Business Intelligence Case Study: Macquarie University

This case study is about how to use BI tools for solving the Big Data's problem in the University (Lachlan, 2011). Macquarie University seeks to deliver competitive advantage through the strategic use of its data, empwering decision-makers from across the university to: Compile the most efficient and effective government reports and research grant submissions possible for regulatory bodies such as HERDC and ERA; Deliver the best student services possible; Develop effective marketing campaigns;

Underpin strategic planning and development. For the solution; Macquarie's reporting and analytics solution 'Datamart', powered by Yellowfin's Business Intelligence (BI) solution, addresses the need for deep, timely, accessible and accurate operational insight as Figure 8.

Figure 8: Yellowfin Business Intelligence Case Study: Macquarie University
Source: Yellowfin International Pty Ltd.,n.d.

Macquarie now has the capability to expose and utilize the breadth of its operational data. Users can access accurate data analysis independently, through a uniform interface, via the device of their choice, no matter their location.

Big Data for Thailand Business

Maas Virajoti (2014) refers "Big Data Evolution: Why Thai businesses should start collecting data" in the Nationmulitmedia that many businesses have taken a serious look at data to understand both their business and consumers better. This data can help shape many things including a deeper understanding of consumer patterns, and ultimately how companies can improve their products and services to serve consumers. New tools and services on big data utilisation have popped up in the past couple of years, offering services that gather and mine this data at a reasonable price.

Thai consumers have a different mindset than western consumers. The collecting big data in Thailand should be increased because Thais are very open when it comes to their personal information being collected by companies. The study revealed that Thais have an index which compared to the global standard when it comes to having no concerns about data privacy. The marketing and media industries in Thailand are excellent examples of sectors that have profited from big data utilisation. There are lots of players, ranging from content makers to marketers, with a large stake in both industries. Big data utilisation can be a knight in shining armour for these players. Japanese social applications like LINE App from NAVER Corp are utilising big data. Earlier this year, As for the media industry, there is a gigantic

opportunity to utilise big data. Given Thais by and large do not mind being tracked, TV ratings data - collection methods should be revamped in order to capture richer data to help determine many new findings and approaches. With the permission of consumers, set top boxes will be a media company's best friend as it will collect and track meaningful viewing patterns and behaviour.

For marketers, this type of data will help them formulate a better investment plan. This is the prediction of a way forward for the media industry. Other industries will also have new and surprising results if data is collected and mined just right. Thailand is heaven for big data collection for international and local companies. But do not be a follower and grab on to a piece of data revolution.

Conclusion

This paper reviews the topics which relates with Big Data and entrepreneur. For entrepreneurs, Big Data is an asset (data related to customer behaviors, sales funnels, website data and social media sentiment). It becomes to be knowledge to serve the organizations. Big Data Analytics required the Business Intelligent (BI) to be tools for process the data such as report, prediction etc. There are many BI tools serve each kind of business which make the business easy. The case studies part show that the Big Data can provide benefits to the organization before making important business decisions when making business choices. The wealth of data available through Big Data also enables marketing strategies to be improved and more accurately targeted such as more accurate data; improved business decisions; and marketing strategy.

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