

**THE VALUES AND CHALLENGES OF BIG DATA AND DATA
ANALYTICS IN RETAIL SECTOR IN THAILAND**

The image features a large, faint watermark of the Mahidol University logo in the background. The logo is circular, with a blue center containing a golden emblem of a stupa. The outer ring of the logo contains Thai text. Overlaid on this watermark is the author's name.

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THE VALUES AND CHALLENGES OF BIG DATA AND DATA ANALYTICS IN RETAIL SECTOR IN THAILAND

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ABSTRACT

Big data and data analytics tools are considered as the significant tools for retail company to grow in retail business in Thailand because of the main characteristics of big data, and analytics technologies that are able to analyze, detect and correct the large and various errors of data sets with the help of data cleansing. Therefore, the data analytics technologies can help retailers to improve the quality of data and consecutively advantages to both customers and retailers.

The qualitative method with doing the interviews are used by focusing on people who are working and used to work in retail sectors in Thailand more than one year. According to research framework, there are three propositions of big data and data analytics application. The first proposition is that the benefit of cost reduction has a relationship with high investment in analytics tools. The second proposition is that better decision making can be failure from incompetent data. The last proposition is that consumer behavior has a relationship with data privacy and security concern from consumers' perspective.

The result shows that there are three critical values and one critical challenge of big data and data analytics application in retail sector in Thailand. The critical values consist of understanding consumer behavior, ability to do products, services and promotions personalization, and cost reduction. However, these values are limited by one obstacle which is incompetent data and data analytics tools. Surprisingly, the challenges of data privacy and high investment have not mentioned in the interview as well as the value of better decision making.

KEY WORDS: Big data and data analytics/ Values and challenges/ Retail sector/
Thailand

53 pages

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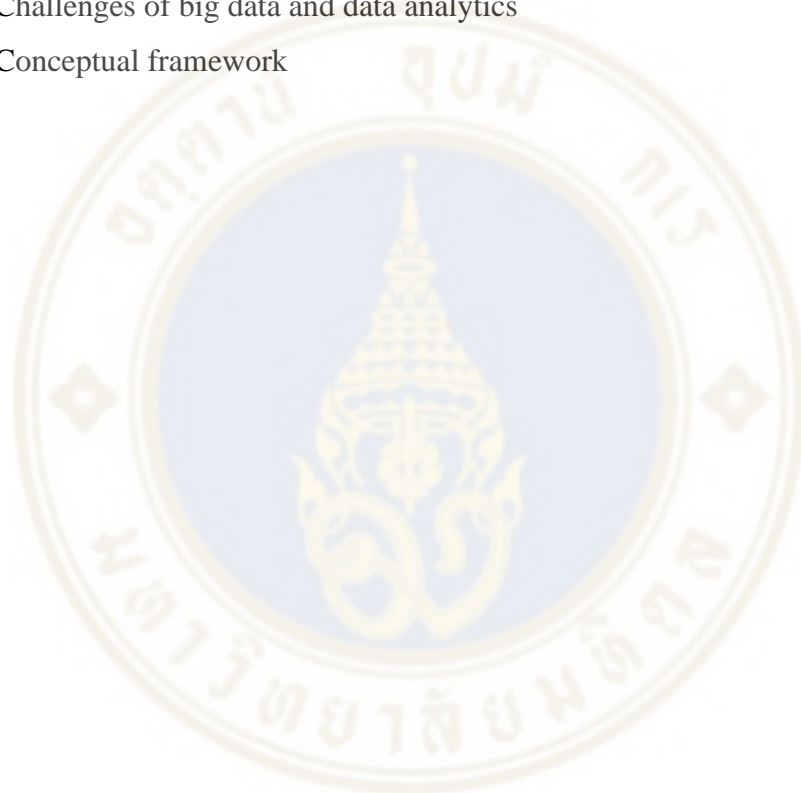
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CHAPTER I

INTRODUCTION

Nowadays, technology is significant on business operations. Technology provides a lot of benefits that can help companies to generate more money and produce the products or services according to customers' demand (Raja et al., 2018). Technology can save time and effort. In the era of technology advancement, internet plays an important role. The internet is a space that a great amount of data is added every day. The advancement of technology and internet is one of the critical factors that make companies collect data faster and easier. The most significant thing of big data is the ability and efficiency of using a great volume of data, of different type. Thus, big data becomes the famous topic in technology world in the recent years.

Recently, information technology becomes more and more important for organization. The most important part of IT is how the company generates the data to values and money. In the past, data mainly comes from one source. For example, data comes from the company itself. However, data sources are quickly growing. Due to the digitalization, data does not come from only a company itself, but also accumulates from online sources such as social media. Thus, we can call that it is an era of big data. Every coin has two sides as well as big data. Big data provides both benefits and limitations to use.

Since the recent year is the era of data, data can be collected and generated almost from everywhere. Big data can be used in all sorts of industry or business sector. Big data comes from and implements in many business sectors such as aviation, education, healthcare, and finance industry (Abbasi et al., 2016). In education sector, big data provides a lot of benefits. For instance, it helps teacher to analyze the students' ability and finds the effective technique to suit with each student. Technologies such as data mining or data analytics are able to share the fast feedback to teachers and students about their academic performances (Mervat et al., 2018).

Apart from education sector, the application of big data in healthcare industry provides a lot of advantages by saving human life. For example, big data collects the specific health data record of each population. So, public organization can use these data to prevent epidemics, cure disease, cut down costs, and etc. Nowadays, people live longer. One of the major changes comes from the evolution of data. It is important for doctors to understand the information or data of patient as much as they can. As fast as, doctors know patients' health information, it is possible to pick up warning signs of serious illness and treat the disease at an early stage before it is too late. With big data analytics, it allows doctor to find the prevention for each patient since prevention is better than cure (Peter, 2014). Moreover, insurance company is able to tailor the insurance package for each customer by drawing a comprehensive picture of a patient (Peter, 2014).

Another industry that has been applied big data in the businesses is banking and financial services. Financial services sector is one of the most data-sensitive sectors in the global economy. Therefore, the impact of big data in this sector is hard to overestimate. Banks have a huge customer data such as deposit or withdrawals record at ATMs, payment done online, and customer profile data. Therefore, the investment in big data is one of the crucial choices for them to manage their enormous data.

The other industry that uses big data and data analytics tools in its business is navigation companies. They use big data from sold navigation devices data to predict the traffic jam to offer alternative routes. Another business sector that applies big data to enforce its business is retail sector.

The retail industry is considered as one of the significant business sectors in the business world (Mordor Intelligence website, 2019). The main factor of the big growth in retail sector is the increasing number of middle-class populations. In retail sector, big data analytics is still significant due to the growth of e-commerce, m-commerce, and high competitors in customer loyalty. Amazon.com is the good example of retailer that uses big data to lead over rivals in online market. The famous retailer like Amazon.com steadily collects data and analyzes data in order to make critical decisions. Amazon takes customer data to make a real-time decision. The consistence of data collection, analysis, decision, and further data collection can

increase large volume of data. Apart from e-commerce or online channel, the traditional stores in retail sector also implement big data and data analytics tools to support their business. The example of offline or traditional store that starts to implement big data to tailor its merchandising mix is H&M. H&M uses algorithms to gain insights from purchase transaction, and data from loyalty cards to enhance its bottom line. (Mordor Intelligence website, 2019).

For retail business, big data allows retailers to greater understand consumer shopping habits. After understanding consumer shopping habits, retailers are able to find strategy to attract new customers. Today, retailers are not only the intermediaries who buy products from suppliers and sell to customers, but they serve as ecosystem by creating values of products and services and delivered to these values to customers. Therefore, retail sector is considered an important industry in the world economy including Thailand. Since people consume and purchase products and services every day, the activity of retailing is part of our economy. Purchasing transaction is happened every day. The retail sector is significantly contributed to the worldwide and Thailand economy (Chawanuan & Kittichai, 2015). Thailand is one of the largest economically stable countries in South Asia. The capital city of Bangkok is a social hub of Thailand with a booming retail industry market in both Thai and non-Thai residents. Thailand is one of the fastest growing retail markets in the world. GDP of Thai retail sector was increasing from \$25.5B USD in 2000 to \$63.3B USD in 2010 and accounting 20% of the country's GDP (Chawanuan & Kittichai, 2015). Thus, this thesis research is going to focus and explore on the opportunity and challenges of big data and data analytics tools of retail sector in Thailand.

1.1 Research objective

This study was created to explore the relationship of big data and analytics tools in both positive and negative aspects toward retail business in Thailand. The study aims to understand the values and challenges of big data and analytics tools application in retail business in Thailand.

1.2 Research questions

1. What is the significance of big data and data analytics tools of retail sector in Thailand?
2. What are the values and challenges of big data and analytics tools in retail business in Thailand?



CHAPTER II

LITERATURE REVIEW

2.1 Big data

Big data is large and complex data sets that have varied structure. The data sets are difficult to be stored, analyzed and visualized in further processes or results (Elgendy & Elraga, 2014). The sets of data are not only big volume, but also high in variety and velocity. So, it is difficult to use traditional tools and techniques handling it. (Elgendy & Elraga, 2014). Increasing data sources such as internet clicks, mobile transaction, and user content from social enable data to have larger volume and various sources. The other sources come from customer information and purchase transaction. Big data will generate greater value by using data analytics which is the application of advanced analytics technique on big data.

There are two data types of big data which are categorized into unstructured and structured data. Structured data contains of information that is well-managed by users. So, users can take structured data to analyze by analytics tools. The structured data is storage in the form of spreadsheet in Microsoft excel (Elgendy & Elraga, 2014). In the contrary, unstructured data is information that is unorganized such as voice message, pictures, and video (Elgendy & Elraga, 2014).

2.2 Characteristics of big data

To support big data analytics and management, there are 3 characteristics of big data which are called 3Vs. These 3Vs consist of:

A) Volume

Volume is the platform that is able to handle large volume of at-rest or streaming data. Volume of data is the scale of data amount that is available to use in

organization, as long as it can access. The data does not need to own by the organization (McAfee & Brynjolfsson, 2012).

B) Velocity

Velocity is referred to the speed which data can be generated. Velocity is the speeds of creation, streaming, and aggregation of data. In other words, velocity is the rate of data that enters the company data (Bala & Shivika, 2017).

C) Variety

Variety is the platform that can support wide variety of data. So, organization can manage the data by keeping the original format. The organization can convert and customize the original format of data to desired format by using transformation tools. Data variety is a measure of the richness of the data representation (Kamalendu, 2019). Data sources can come from message on website, images that are posted on social media which is read by sensors or GPS signals from smart phones (McAfee & Brynjolfsson, 2012). Regarding to the data analytics perspective, variety is the biggest challenge to effectively using large scale of volumes and incompatible data formats

2.3 Big data analytics

Nowadays, most of organizations use big data. In order to make big data to be more valuable, big data needs to be analyzed by advanced analytics techniques on dataset. Data analytics is the mathematic method application to gain valuable information from data which can be used to optimize process and make better decision. Data analytics tools that can analyze big data are able to deal with the larger set of data and more complex of data set (Nada & Elragal, 2014).

There are several methods of data analytics including descriptive analytics, diagnostic analytics, predictive analytics, and prescriptive analytics. There are a several technologies that help the users to generate the report or information according to users' preferences. The examples of big data analytics tools are machine learning, statistics, simulation, and optimization (Jens et al., 2018).

2.4 Values of big data and data analytics

Nowadays, data is flooded from everywhere. Regarding to technology advancement, data can be collected at unprecedented scales (Oguntimilehin & Demola, 2014). Previously, decision was made from estimation, possibility or on painstakingly constructed models of reality. At the moment, the decision can be made from the data itself (Oguntimilehin & Demola, 2014). Big data analysis drives most of industries such as retail manufacturing, mobile services, healthcare industry, education industry, and financial services (Oguntimilehin & Demola, 2014). Companies are always looking for solutions or tools to reduce cost, increase revenues, and gain competitive advantages. Capturing and harnessing data is one of the most crucial solutions to achieve companies' objectives.

Big data can provide a lot of advantages to every business sector. In retail business, the majority advantages of big data and analytics tools are to increase sales, reduce cost and understand customer's purchasing behavior (Venkatesh, 2019). In the digitalization world, retailers are able to make well-informed and efficient decision by utilizing data that gain from online and offline platform to discover and understand customers' purchasing behaviors in order to be able to create fantastic customer journey to satisfy and win customers' hearts. Data and information is a game changer for organizations by collecting data from various sources. Data analytics is not new thing for retail sector. Big data and data analytics can support the future growth of retail sector since it is able to analyze and provide micro customer information to retailers.

Retailers can take a lot of advantages from big data. In a hyper-connected digital world, big data is almost everywhere. The primary goals of big data and data analytics are to help the organizations to reduce cost, get the better decision-making, and understand consumer behavior by providing data analysts to analyze a huge volume of transaction data which cannot be solved by conventional business technology.

2.4.1 Cost Reduction

Big data can help companies to optimize operation cost by decreasing the operational cost and increasing productivity. Regarding to recent report by consultancy

group McKinsey about offshore oil and gasoline industry, the effective use of big data combining with digital technology to analyze data can reduce capital expenditures more than 20% and cut upstream operating costs by 3-5% (Mathew, 2016).

Due to the increasing in raw material price and labor costs, cost control becomes one of the biggest challenges for automobile manufacturer and suppliers. In the past, the increasing in raw material and labor cost makes the difficulty to traditional economic expansion model. The big data technologies enable automotive OEMs to make the production more efficient and reduce costs (Xinyu & Jonathan, 2014).

Companies are always looking for strategies or techniques to reduce their cost (Emel & Yuwei, 2017). A major reason why company owners decide to implement big data analytics tools is to reduce the cost. When the companies store a large amount of data, big data technologies such as Apache Hadoop and cloud-based analytics can help companies to reduce cost (SAS Website, 2020).

For example, in retail sector, there are three major activities in supply chain which are classifying product types, searching the inventories that are located nearby customer target, and providing value-adding services such as aftersales services (Xinyu & Jonathan, 2014). Big data is able to provide an efficient supply chain which is very important to every business including retail business. The effective supply chain enables retailers to reduce production and delivery cost by minimize pick up time and real time generate appropriate routes to drivers (Xinyu & Jonathan, 2014).

2.4.2 Better decision making

Big data can help organizations to make a better decision. Organizations can make a better decision from a large and various source of data. There is a great opportunity of using large datasets as an additional input for making a better decision (Shirish et al., 2017). Nowadays, there are a plenty of challenges in business world such as high competitor, rising labor cost, and shorter product life cycles. In the volatile environment, corporations need to continuously look for opportunities and risks. Due to globalization, corporations have to make a decision quickly based on available data. Therefore, big data has become an important tool to help corporations make a decision faster (Shirish et al., 2017). Regarding to the characteristics of big data, a large volume of datasets from variety sources in structure, semi-structure or

unstructured forms can support organizations to use these datasets to make strategic, tactical and operational decisions (Shirish et al., 2017).

Several visionary companies have developed real-time decision-making capabilities using supply and demand side (Shirish et al., 2017). To minimize pick up times and optimize customer experience of a ride, big data is a tool for transportation service providers such as Uber by searching for real time routing of (Shirish et al., 2017). Big data enables Uber and Ola to provide real-time information to both customers and drivers on Google map. They receive continuous stream of high-volume cab demand data and availability of cabs in different geographic areas (Shirish et al., 2017).

The transportation service in Singapore has introduced shared private transportation concept by using data analytics tools combining with mobile technology. This system is called Beeline. The system enables driver to make a better decision to select route during normal period and rush hour by using cloud sourced travel patterns, transportation data to identify travel routes and allocates bus routes based on travelers' demand. With big data and data analytics, Beeline is able to reduce travelling time and increase the use of shared transport services (Askari, 2015).

For retail industry, in order to be able to predict demand and allocate products, retailers need the key insights from business transaction data from big data and data analytics (Shirish et al., 2017). For example, Wal-Mart can redesign their isles and products placement in order to increase sales by learning from a pattern (Shaw et al., 2001). Analysis of terabytes of data coming from aircraft engine provides indicators of part failures thereby improving maintenance as well as safety (Shirish et al., 2017).

2.4.3 Understanding consumer behavior

Nowadays, business relies on data or called as data-driven business revolution. Companies gain more data from multi-channel and various sources such as social media content, clickstream data or internet search mobile devices, video data, and business to business transaction. Organizations are able to capture customers' interest, passion, and association from these channels and sources. Then, companies can utilize the data to optimize customer engagement process.

Besides, sensor-generated data can provide real time data which provides the most micro level of detail to companies. This micro level of detail provides predictive maintenance, product performance recommendation, and network optimization. Offline retailers are also able to gain benefits from online data to compete with other online retailers by using data from mobile devices such as location-based insight and sensor-generated data. The given data can help both online and offline retailers to improve customer shopping experiences (Davenport & Dyché, 2013). Big data and data analytics application enables organizations to analyze the current environment and help them to understand customer behavior and find the marketing strategy to capture customers heart (Davenport & Dyché, 2013).

Bank of America and Discover which is called Wells Fargo gets to understand its customer relationship by using big data that is gathered from various sources as described. The various sources are call center logs, website clicks, and online transactions. They create complete profile of customer journey by using a mix of structured, semi-structured and unstructured data from call center logs, website clicks, and financial transaction records. The profiles can help banks to understand reasons for the decreasing of customer number (Davenport & Dyché, 2013)

Table 2.1 Values of big data and data analytics

	<u>Values of Big Data</u>	<u>Description</u>
1.	Cost reduction	<ul style="list-style-type: none"> - Be able to control production, raw material, and labor cost by using real-time data analytics - Be able to provide efficient supply chain with real-time stock balance tracking
2.	Better decision making	<ul style="list-style-type: none"> - Be able to get real-time decision making and better decision making from variety and volume of data sources - Be able to predict product demand
3.	Understanding consumer behavior	<ul style="list-style-type: none"> - Be able to provide predictive maintenance, product performance recommendations, and network optimisation

2.5 Challenges of big data and data analytics

Recently, big data is accumulated from various areas such as healthcare, biochemistry, financial and retail sector. Even though big data provides a lot of values and advantages to organizations, it also poses a number of challenges and risks to the users. However, only few enterprises have strategically cultivated the benefit of big data. The majority reasons are that companies face challenges in financial risk, incompetent data analytics, and data privacy risk.

Big data can cause the risk to users. Firstly, the costs of big data and analytics tool are in every process including collecting, archiving, analyzing, generating report and managing big data. Therefore, small medium enterprises or SMEs think that big data is suitable for only big companies because big companies have a large volume of capital to afford it. The other disadvantages of big data is incompetent analytic. Without proper data analytics, big data becomes a pile of trash in the organizations. It is needed to have professional in technology skill resources to complete data analytics. The last but not least is data privacy. Big data can cause the biggest risk in data privacy of the organization. The organizations are not only lost the reputation but also lead to legal action and heavy penalties.

2.5.1 Financial risk

The financial risk is major concerned by small to medium sized organizations since they think that they are not able to afford the cost of hiring data scientists or investing in data analytics tool (Experian, 2017). With the growing of e-commerce platform and high competition in customer loyalty, both organizations can take benefit from the characteristics of big data to compete in the high competitive market.

The majority failure in big data application is to meet organizations targeted return on investment or ROI. Most of enterprises are facing the fact that big data cannot generate ROI as they expected. There is a load of reason that supports this fact. Unrealistic target and aggressive growth is one of the reasons that most of enterprises including retailers expect from big data application. Most of enterprises expect that big data is going to double sales or triple their valuation. So, they are going to set too high sales target. Moreover, the investment of cost for system development

can be intimidated which is ranging from \$5 million to \$100 million and the average investment is \$8 million. The majority cost comes from investment in skillful resources and technology to support big data (Experian, 2017).

2.5.2 Incompetent data and data analytics

Over the year, big data has become the hottest topic in technology world. Steve Colwill, CEO, Velocimetric said that there are two biggest challenges from using big data. The first challenge is how companies manage the large volume of data. The second challenge is how companies can generate large volume of data to draw meaningful conclusions from it. Even though big data allows companies to get a wider database especially customer database and purchase history in order to understand customers more and more, big data is just a pile of trash which is lying unnecessarily in the company if it doesn't analyze in the proper way. Data analytics is a tool that makes data that you have to be more meaningful by providing management valuable insights (Khan et. al., 2014). Thus, management team can utilize the valuable business insight from the past from descriptive analytics to make a better business decision and be able to plan strategies for company's growth.

With the aggressive data growing, it is unavoidable that there are trash and duplicate data from various sources. Companies that are lacking skillful staffs and appropriate technologies to analyze big data will lead to the risk in data management and data misinterpretation which can lead to negative impact such as wrong decision making.

2.5.3 Data privacy and security

While big data has become a great asset of many organizations in recent year, big data has increased the accessibility to sensitive information which can directly endanger the individual privacy and violate data protection laws. So, data controllers and data processors might be taken a response for non-compliance that can result the severe impacts such as bankruptcy.

The privacy of big data is another massive concern of users due to a massive set of databases. The uniqueness of big data's characteristics in e-commerce platform is one of the reasons that cause privacy security concern. The huge database

of big data can appeal hackers since big data provides a high volume and concentration of data. In addition, big data may be consisted of valuable and sensitive information due to the high data volume (Martin et al., 2017).

Recently, there are studies that indicate that consumers have a concern on their data privacy because the real time behavioral advertising and taking technologies such as Cookies (Thi & Shu-Yi, 2017). Even though there are a plenty of benefits of big data, the companies need to be careful with the gathering data because some data is very personal and have not consent from the owners such as patients' health record or customer data (Thi & Shu-Yi, 2017). So, the way to storage customer data is particularly important. Otherwise, it can raise issues. In order to secure the data, companies should compel high-security and encryption protocols that are unable to be breached.

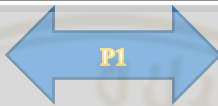
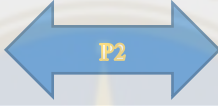
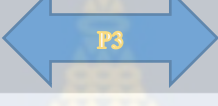
Due to the high diversity of big data information, third parties have opportunity to access and hack to companies' database especially when the organizations are lacking the skillful resources and professional to manage and store the data properly. If the third parties are able to access to the data, they may not asides by data protection regulation which will lead a bad impact to organizations' reputation (Inmann et. al., 2017)

Table 2.2 Challenges of big data and data analytics

	Challenges of Big data	Description
1.	High Investment	<ul style="list-style-type: none"> - Big data project might not be able to generate high ROI. - Company might set unrealistic target due to big data expectation. - Company can face high investment or cost of system development, skillful resources and technologies.
2.	Incompetent data analytics	<ul style="list-style-type: none"> - Big data becomes a pile of trash in your company if it doesn't analyze in the proper way. - Big data can be misinterpreted the massive set of data which can lead to wrong decision making
3.	Data privacy and security	<ul style="list-style-type: none"> - Big data can appeal hackers since big data provides a high volume and concentration of data such as customer data and transaction record. - Company can have bad reputation or image from letting cat out of the bag or data leakage.

2.6 Conceptual framework

Table 2.3 Conceptual framework

Values of big data		Challenges of big data
Cost reduction		High investment
Better decision making		Incompetent analytics
Customer behavior		Data privacy/Security

The conceptual framework is developed based on the knowledge from past research in the context of benefits and challenges of big data and analytics tools in general context. This research is going to explore about the impacts of big data and analytics tools in retail business in Thailand in both positive and negative aspects.

From the past research, the six independent variables will be affected each other. The values of big data and data analytics application are cost reduction, better decision making and understanding consumer behavior. In the contrary, there are a several challenges of big data and data analytics application. The challenges of big data consist of high investment, incompetent data analytics, and data privacy.

The first proposition is that high investment in big data application can benefit to cost reduction. Since every single process to analyze big data has cost such as big data technologies such as Hadoop. However, to gain the benefit of cost reduction, the company has to invest in big data technologies (Venkatesh, 2019).

The second proposition is that incompetent data analytics can be one of the reasons to bad decision. Big data is going to be valueless if it is lacking of proper data analytics tools. To get better decision making, a large and concentration amount of

data should be analyzed properly. So, organizations can get the idea to make the right decision (Venkatesh, 2019).

The third proposition is that to understand consumer behavior has relationship with data privacy and security concern from customers. Organizations can bring their personal data to learn and analyze in order to understand consumer behavior (Venkatesh, 2019).



CHAPTER III

RESEARCH METHODOLOGY

This research was designed to use a qualitative method in gathering the information to be analyzed to achieve the research objective and answers all the related questions. There are two research methods which are qualitative and quantitative method (Raimo, 2019). As the objective of this research aims to understand the values and challenges of big data and data analytics of Thai retail business, qualitative is the appropriate method in getting into the insight information.

This research was conducted by qualitative method. Researcher collected the information from 25 participants both males and females who are Thai and live in Bangkok, Thailand. Participants are working and used to work in retail company more than 1 year and they have to have experiences of using big data and data analytics. With the in-depth interviews, participants could express their perspective on their big data and data analytics usage.

3.1 Instrument construction

The depth-interviews were arranged in face-to-face interview. In case the interviewees were not convenience for face-to-face interview, the telephone interviews were optional. Open-ended questions were use in order to get descriptive answer. By using open-ended question, it is the best way to gain insight from my interviewees' thoughts and behavior to find the new idea, problem, and opportunities. The present research develops a set of open-ended questions on the benefits and challenges or limitation in using big data and data analytics in retail sector. In addition, interviewer has asked the permission to record interviewees' voices during the interview and distribute the given information. After the interview, the information was transcribed in details and arranges the main theme of values and challenges in order to answer research questions.

The open-ended questions were developed to ask participants with the objective of exploring values and challenges of big data and data analytics usage in retail sector in Thailand.

3.2 Question design

In part of the questions, the researcher separated questions into two different parts. The first part was screening. The second part was information part to find the values and challenges of big data and data analytics usage of retail company in Thailand. The examples of the questions include:

Part I: Screening Part

1. Are you working or Have been working retail company in Thailand ?
2. How long are you working or have been working in retail company in Thailand?
3. Have your company using big data and data analytics?

Part II : Information Part

1. How has big data and analytics tools impacts to retail business in Thailand?
 1. How big data and data analytics support your work? What are the benefits of using big data and data analytics for retailers in Thailand?
 2. Are there any concerns on big data and data analytics application? Please give a detail.
 3. Do you face any difficulties from using big data and analytics tools? Please describe.
 4. How do you solve the problems of big data and data analytics? Please suggest the solution.

Apart from the question above, there are additional questions that were asked only some interviewees by depending on the situation during the conversation. All the interviewee was asked individually and personally in a different time and has

no observation from anyone. Thus, the interviewees will not be interrupted. Lastly, all information that researcher got from this interview was kept as confidential and do not reveal which answers which answers were from which particular participants in details.

3.2 Data collection

Data were collected from 29/02/2020 to 15/03/2020. The 25 participants were Thais who live in Bangkok, Thailand. The in-depth interviews consist of a various type of retail companies in Thailand including e-commerce companies, department store, and fashion retail company. These participants are working and used to work in retail company more than one year to get the depth and insight information of using big data and data analytics. In additions, researcher conducted interviews with participants who are working and used to work in various departments including marketing and CRM department, merchandising department, operation department and supply chain in order to get the wide range of information. Moreover, the interview included the different position level in order to gather the depth insight such as manager level and administrator level.

This research used the framework for descriptive analysis. Besides, this research uses inductive approach by using the emergent framework to group the data and then looks for the relationships.

CHAPTER IV

DATA ANALYSIS

The interview was conducted with people who are working and have been working in retail company in Thailand more than one year. Most of the sample was the people who are working and have been working in e-commerce platform, department store, and fashion retail company in Thailand. 16% of participants are working and have been working in e-commerce, 40% of participants are working and have been working in department store, and 44% of participants are working and have been working in fashion retail business. Besides, 52% of participants are working and have been working in marketing and CRM department. Another 28% of participants are working and have been working in merchandising department. 20% of participants are working and have been working in operation department. In addition, almost 65% of participants are working and have been working in manager position.

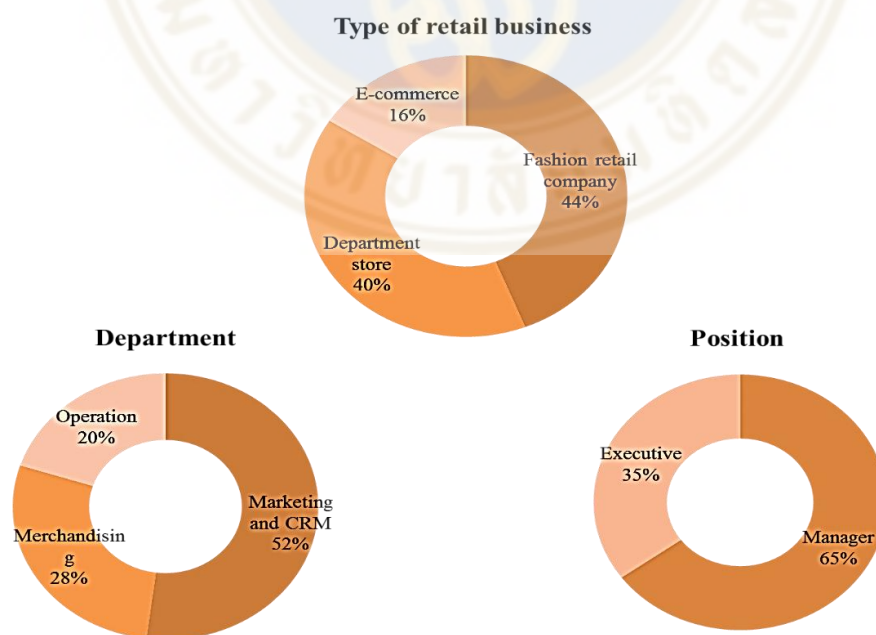


Figure 4.1 Information of big data and data analytics usage in retail sector in Thailand

Analysis of the interview transcripts answered all research questions including:

- 1) What is the significance of using big data and data analytics tool in retail sector in Thailand?
- 2) What are the values and limitations of the big data and data analytics application in retail sector in Thailand?

4.1 Significance of big data and data analytics in retail business in Thailand

Big data and big data analytics tools are a game changer in retail business. Regarding to this research about big data and data analytics in retail business in Thailand, big data can help retailers to have a greater understanding in consumer behavior on shopping habits from customer data and purchasing transaction. In Thailand, there is an idiom “Customer is god” which means that all retailers need to take a good care to customers or called as customer centric. Big data is going to be valuable when it is analyzed by efficient analytics technologies or data scientists. The efficient data analytics provide a chance to learn about the opportunity of business. For retail company, the opportunity of business is to win customers’ heart. Big data analytics enables retailers to create customer recommendations based on their purchase histories which are resulting products, services, and promotions personalization to each customers or one-to-one marketing. Big data and data analytics provide insight of customers such as online shoppers and in-store patterns.

Therefore, retailers can learn and gather customer data and shopping journey in order to create customer loyalty and improve customer experiences.

4.2 Values of big data and data analytics in retail business in Thailand

Regarding to this research, big data that is generated by analytics tools means a greater understanding in consumer behavior such as customer habits and

shopping behaviors. Retailers can find a solution to attract new consumer and retain existing customers by doing and offering products, services and promotions personalization to each customer. Big data analytics tools enable retailers to create customer recommendations based on their purchase histories. Then, they are able to personalize shopping journey to each customer based on customers' preferences. Apart from doing products, services and promotions personalization to each customer, another benefit of big data and big data analytics in retail business in Thailand is cost reduction. When marketers know and understand their customer shopping journey and behavior, they are able to select right communication channel to target customers instead of randomly doing advertising. Therefore, they are able to save their marketing cost.

According to the interview about values of big data and data analytics in retail company in Thailand, there are two themes of big data and big data analytics tools' values in retail business in Thailand including:

- (1) Understanding consumer behavior helps retailers to reduce marketing and operation cost.
- (2) Understanding consumer behavior is a key to personalize and customize products, services and promotions.

4.2.1 Understanding consumer behavior helps retailers to reduce marketing and operation cost

Regarding to the interview, participants who are working and have been working in marketing and CRM department said that big data and data analytics enable them to understand consumer behavior. Therefore, they can reduce marketing cost by select the right communication channel to each customer segment. About 7 out of 9 participants who are working and used to work in marketing and CRM department or 78% of marketing department said that the most significant benefit of big data is related to customers. Big data and data analytics enables them to understand consumer behavior which is a key to capture costumer heart. During the interview, marketers were talking about the benefits of big data and data analytics toward consumers. Comparing with the traditional strategy of doing marketing for the products or

services, big data can significantly help marketers to reduce advertising and marketing cost by creating and selecting the right advertisement for the right audience.

Aside from marketing and CRM department, operation department said that understanding consumer behavior can also reduce operation cost in term of selling expense. Around 4 out of 5 participants who are working and used to work in operation department or 80% of participants in operation department said that understanding consumer behavior enables them to reduce selling expense since they are able to find the location to allocate the products and storage the products nearby customer target.

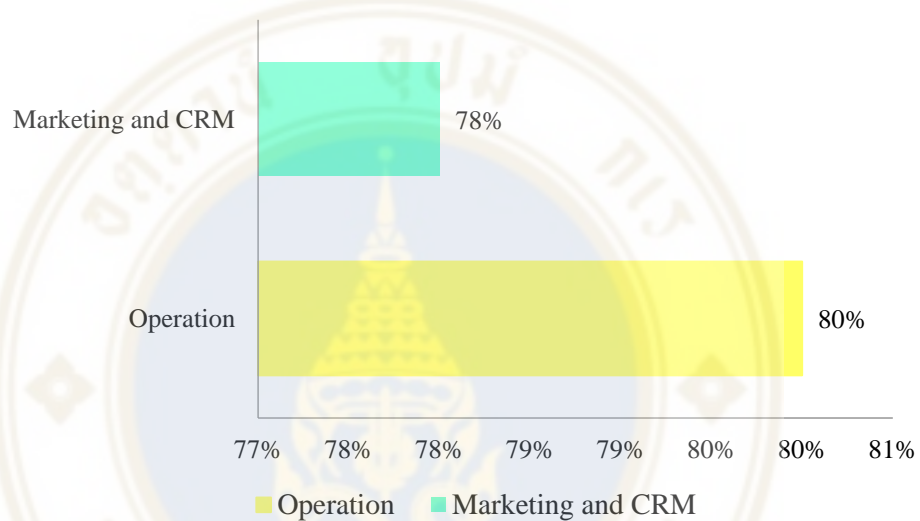


Figure 4.2 The percentage of marketing and operation department who said that understanding consumer behavior can reduce costs

In retail sector, customer data and customer profiles are very important. Both marketing and operation department or 2 out of 3 departments mentioned about understanding consumer behavior first. Big data is a powerful data for marketing and operation department to understand consumer behavior. From the interview, in the digitalization era, there are two channels that they can gather customer data. These two channels are offline channel or brick and mortar, and online channel such as e-commerce. Comparing with traditional of retailers, there was only one channel to gather customer data which was offline channel. The traditional retailers got customer data when customers walked into their stores. In the digitalization era, marketers and operation teams can easily get customer data. Due to the raise of mobile, social and

cloud technologies, the main source that provides a large volume, variety, and velocity data to marketer and operation teams is online channel or comes from e-commerce platform.

For marketing and CRM department, getting and understanding customer profile and customer journey enables marketers and CRM manager to reduce marketing cost by gathering customer data from both offline and online platform. With data analytics tools, they help retailers to derive insight from large volume of data. According to the interview with CRM manager of PP Group Company, she said that she utilizes the data that is collected from both offline and online platform to analyze through Microsoft excel in order to understand customer journey. Since her company is a small sized retail company, the technology that she uses to analyze big data is Microsoft excel. After the unstructured data was transformed to structured data, she could do and deliver advertising campaign and promotions to the right customer target which could reduce her marketing budget.

There are different communication methods and marketing strategies among the different customer segments. The consumer behavior between online and offline platform customers is unlike. Besides, the buying habit between online and offline customers is totally different. From the interview, communication manager of PP Group Company, Fashion Retail Company said that the average spending per transaction or APT of online customers was lower than offline customers. One of the reasons was that offline customers are dared to purchase higher price point items than online customers since offline customers are in the store and able to touch the products. After communication manager understood consumer behavior through customer information such as names, contact details, and buying habits, they were able to send SMS and communication tools to the right customer segment For example, marketers will send SMS about promotion of lower price point products to online customer database instead of sending SMS to every customer.

In the contrary, the tradition way of doing communication and marketing was unable to classify and select customers from the customer data's bucket due to lack of data analytics technologies. Marketers have to communicate every communication message to the whole bucket of customer. The communication message might be ignored and useless for indirect customer target. Therefore,

marketers wasted marketing budget from inefficient communication strategy. With big data and analytics tools, it enables new era marketers to be able to classify and do the advertising directly to the target group which can significantly save marketing and communication cost.

Apart from marketing and CRM department, operation department was also appreciated with the value of big data and analytics tools in term of understanding consumer behavior. Previously, operation managers were not able to well-managed inventory since they did not understand consumer journey and they were not able to classify their customer segmentation. However, big data and data analytics provides customer insight to them. Therefore, they are able to allocate products based on customer purchasing histories and sales record in order to save delivery and transportation budgets.

In the previous research, it indicated that understanding consumer behavior could lead to the concern on data privacy and security in both consumer and retailer aspect. However, it is very surprising that 92% of interviewees did not mention about data privacy and security concern from using big data and data analytics. Only 8% of interviewee or 2 participants out of 25 participants have mentioned about data privacy, but they mentioned from consumer's aspect only not from retailers' aspect.

In this research, the most important benefit of big data is directly related to consumer. From the interview, about 78% of marketers and 80% of operation team members who are working and have been working in marketing and operation department mentioned that understanding consumer behavior can reduce marketing and operation budget.

The large volume and various source of customer database allow them to have a bigger customer database that can be used to analyze to understand consumer behavior. The characteristics of big data and analytics tools can help marketers to promote their right promotion and advertising campaign directly to the right customer target by using a lower marketing budget than traditional way. Big data analytics enable marketers to reduce marketing cost by optimizing marketing performance. In the meantime, the insight of customers that is generated from data analytics tools enables operation team to understand customer's demographic and preferences. So, they are able to allocate products to the right store locations and save operation cost.

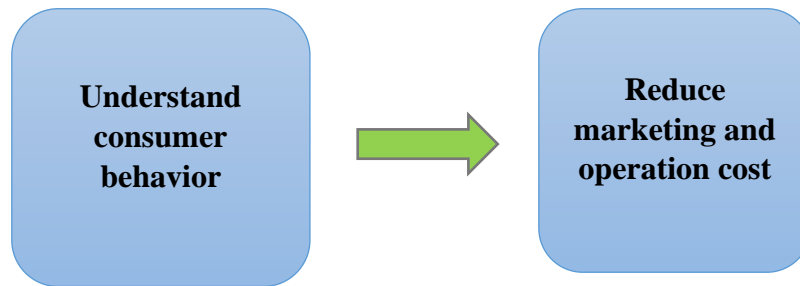


Figure 4.3 The relationship between understanding consumer behavior and cost reduction

4.2.2 Understanding consumer behavior is a key to be able to do products, services, and promotions personalization

Regarding to the interview, all departments including merchandising, operation, and marketing department mentioned that understanding consumer behavior from big data and data analytics can support retailers to be able to do and create products, services, and promotions personalization to individual customer since big data analytics provides customers' insight.

About 5 out of 7 merchandisers or 70% of merchandisers said that understanding consumer behavior from analytics tools enables them to know and understand customers' need. So, they are able to plan and customize products based on customer's need. Each customer has different factors to motivate them to make a purchase. The consumer behavior factors consist of 1) Social factor 2) Anthropological factors 3) Psychological factors 4) Personal need factors.

Apart from merchandising department, around 8 out of 13 marketers or 60% of marketers said that understanding consumer behavior from customers' insight which is generated from data analytics technologies can support one to one marketing strategy (Predictive analytics). Marketers are able to know and understand the persona of each customer from data sources such as social media and online channel. After marketers got the customer insight, they are able to customize promotions directly to each customer segment. Apart from promotions personalization and advertising strategy to each customer, one to one marketing can increase sales by offering the products to each customer based on customers' persona.

Operation department also agreed that understanding consumer behavior can help operation team members to effectively personalize services to each customer. Regarding to this interview, about 4 out of 5 participations who are working and used to work in operation department or 80% of operation department said that customers' insight such as customers' preference that they got from big data and analytics tools can help them to create and develop customer services and experiences for each customer. Big data provides customer experiences and customer feedbacks via social media and questionnaire. Operation can utilize these feedbacks from customers to develop and improve customer shopping experiences. They input customer feedbacks in analytics tools and generate the feedbacks to develop customer shopping experiences. Luxury retail business is the company that needs to pamper customers such as VIP and existing customers in order to build customer loyalty and brand repertoire. Moreover, the customers of Luxury retail business are expected for luxury services.

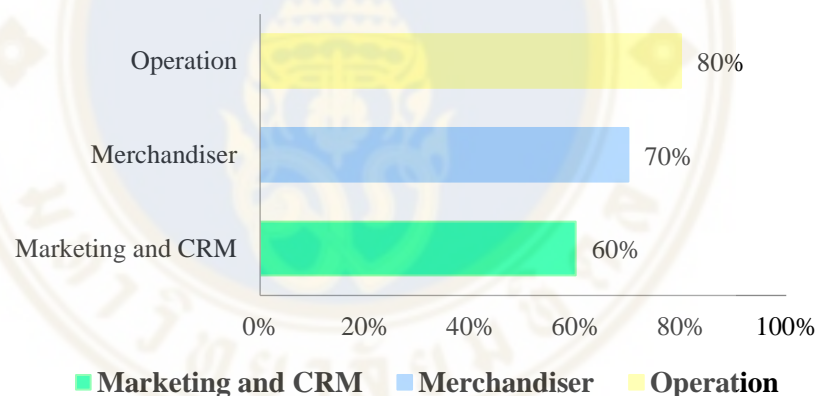


Figure 4.4 The percentage of all departments which believe that understanding consumer behavior can support product and promotion personalization

Nowadays, big data is everywhere. Retailers get the information of their customers from everywhere. In other word, retailers can get customer data in both online and offline channel. Understanding consumer behavior is the key to survive in retail business. Marketing and sales are directly related to understanding in customers' pain point and need. Previously, to understand customers' pain point and desires, marketers took a year to conduct market research. Recently, marketers take days or

even a several hours to know customers' pain point and desires from the data collected from customers' personal profiles of online shoppers in order to develop customers' journey on ecommerce platform. Moreover, the feedbacks and reviews from customers can also tell the customers' need and pain point toward your products and services.

According to online merchandising manager, Central Marketing Group, he said that he can utilize customer data to analyze consumer behavior. Since he is working on ecommerce platform called Lazada.com, he can utilize consumer behavior and sales record to personalize denim trousers that fit with customers on online platform. Moreover, he can leverage customer care from knowing consumer behavior. For instance, he uses customers' purchasing history to offer relevant promotions and discounts. He also utilizes customers' purchasing history in the same demographic group to offer and upsell with related product.

From marketing department's point of view about understanding consumer behavior and promotions personalization, big data and data analytics can support their current strategy called one to one marketing by utilizing customer data through data analytics tools in order to understand consumer behavior and customer journey.

Regarding to communication manager, Central Department Store, she said that big data is able to help her to customize promotion to each customer segment. For example, anti-aging product line promotions are going to be effective and apply with the customers with the age range above 30 years old while the whitening product line will target to customers who love to have outdoor habits. Moreover, she said that marketing and merchandising team are going to bundle the gift set of skincare based on special occasions such as Mother's Day, New Year gift, and Valentine's Day.

Regarding to the interview with operation manager of PP Group Company, she said that she can gain a lot of benefits from data analytics tools. Since she is working in Fashion Luxury Retail company, personalizing services to each customer is incredibly significant to compete with the other competitors. She is able to understand customers' preference and persona from the insight that she gets from analytics tools. She can develop customer experience and shopping journey when customers walk into the stores. She is able to provide special services to each customer based on customers' insight. For instance, she will prepare to serve TWG tea pot set

for customers who like tea. She knows and understands customers' habit and preference from customers' record when they purchased a product from stores.

The benefits of understanding consumer behavior and products, services and promotions personalization consist of maximizing consumer lifetime value, improving conversion rate, and improving customer engagement. Customers will be satisfied and special to brand. In the high competitive market, one to one marketing can support retailers to raise customer satisfaction and deliver tailoring campaign to customer interests.

In the previous research, the framework did not mention about products, services and promotions personalization. In retail industry, products, services and promotions personalization is incredibly significant in this era due to technology advancement. Products, services and promotions personalization is the key element to increase both revenue and customer base. The wider customer base, the higher sales retailers will get from personalization. Big data that is analyzed by efficient analytics tool is able to support retailers to expand customer base and completely personalize products, services and promotions to their customers.

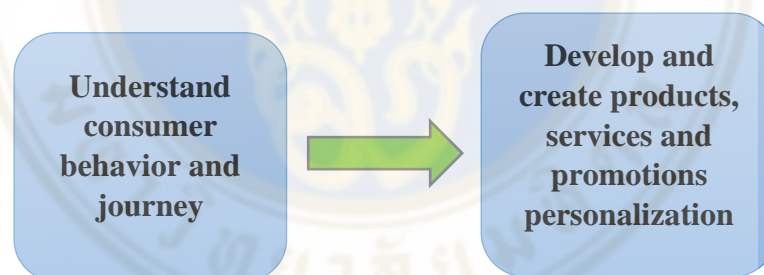


Figure 4.5 The relationship between understanding consumer behavior and develop products, services, and promotions personalization

4.3 Challenges of big data and data analytics in retail business in Thailand

According to the interview in this research, every department that were interviewed including marketing and CRM department, merchandising department, and operation department were agreed that incompetent data and analytics tools is the critical challenge of using big data and analytics tools.

There are two themes of challenges of big data and data analytics application in retail business in Thailand including:

(1) Incompetent data and data analytics are the barrier to reduce marketing cost.

(2) Incompetent data and data analytics are the barrier to personalize products, services and promotions.

4.3.1 Incompetent data and data analytics is the barrier to reduce marketing cost

Even though, the characteristics of big data provide a lot of positive effects to users, it is unavoidable that there are a several limitations of using big data. One of the limitations of using big data is incompetent data analytics tools. The large volume and various sources of data can cause the incompetent data which is the concern from users. For instance, the customer data duplication can be easily occurred in retail company. One bucket of data collection can have a duplicate customer data due to its high velocity.

According to the interview with CRM manager, PP Group Company, she said that the duplication in customer data is mainly occurred with retail company who want to tap and explore into Omni channel because customer data and purchase history are collected from both online and offline.

In retail industry, the rapid growth of big data has generated new issues and challenges which are about data management and data analytics. Even though Omni-channel is the new opportunity for retailers to grow in digitalization era, Omni-channel can be the issues when retailers do not have a proper data warehousing and data management. Incompetent data and data analytics is the difficulty for marketers and communication managers to utilize customer data to analyze or work in the further steps. The data duplication and the incompetent of analytics tools are the big issues in all size of retail business.

Nowadays, customers love to buy products from an ecommerce platform rather than offline platform due to its convenience. Transformation from offline to online can deliver a seamless and value-adding shopping experience which has become more important than ever before.

Regarding to communication manager, PP Group Company, she said that Omni-channel platform is playing an important role in the digitalization era. Omni-channel retailing has become the new exploration channel of retailers which provide a seamless, and continuous customer experience on any device and location. Omni-channel platform enables customers to easily do a transaction everywhere. Therefore, retailers can gather the large volume and various customer data, and purchase transaction easily.

From the interview, more than 50% of retail companies are successful in e-commerce and Omni channel due to their ability to harness and leverage big data to delight and sell more to existing customer such as Central Department Store or CDS and Central Marketing Group or CMG.

In the contrary, there are some limitation and concern on data management and warehousing because of the large volume and various customer data from Omni channel and e commerce platform.

According to the experience of Digital Marketing and PR Executive of the luxury watch retailer named Pendulum Thailand, he shared that a customer might walked into the shop and registered his/her data through sale associates. This customer data was collected from store to data warehousing. At the same time, the same customer searched the products on online of the same company. This customer also registered his/her contact detail in online platform once again. Unfortunately, she/he might give the difference contact information such as difference phone number or email. Moreover, customer name might be spelt differently. Therefore, there will be two customer data in the system. In fact, these two customers were the same person. When he generated the data from system, he had to manually manage and analyze customer data. About a half of customer data was duplicated. The problem that he and his colleagues are currently facing is about incompetent data and data analytics. The customer data duplication is the only difficulty for him to waste marketing budget since he has to send communication message or SMS campaign to the same customers. This action can be annoying customer.

Regarding to the framework of value and challenges of big data and data analytic in literature review, it indicated that incompetent data and data analytics is the barrier of decision making. Big data is going to be valueless if it is lacking of data

analytics. To getting better decision making, a large amount of data should be analyzed in order to get the idea and information to make the right decision.

From this research, incompetent data and data analytics can lead marketers to high cost. Since marketers are misleading from the data that they have, they might do the duplicate communication to the customers. Most of participants who are working and have been working in marketing and CRM department are struggling with incompetent data analytics tools especially in small to medium size retail company. Since they do not have a proper data analytics tool and data scientist to support and help them to manage a large volume of data that comes from various sources.

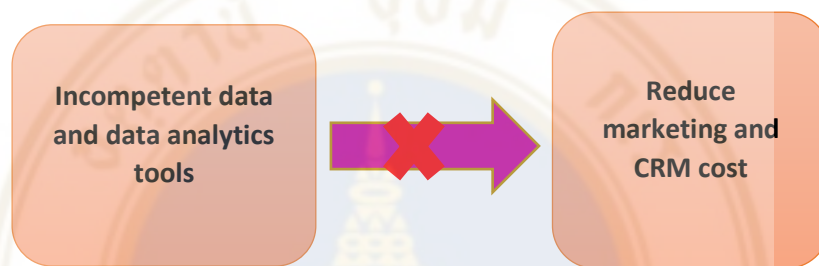


Figure 4.6 Incompetent data and data analytics tools is the obstacle for retail company to reduce marketing and CRM cost

4.3.2 Incompetent data and data analytics is the limitation to develop and do product, services, and promotions personalization

In retail industry, understanding consumer behavior and journey is a critical success factor to drive business and growth. To understand consumer behavior, retailers have to rely on database since customer database can be used to analyze consumer behavior and customer journey. Big data provides the large volume and variety of customer data especially data that comes from online platform.

About 5 out of 7 merchandisers or 70% of merchandisers said that incompetent data and data analytics is the critical limitation to customize products to their customers. Since the duplicate purchasing transaction data can lead to the duplicate product sales histories which will cause the misunderstanding in customers' preference.

Around 8 out of 13 marketers or 60% of marketers said that understanding consumer behavior from customers' insight which they got from data analytics

technologies can support their one to one marketing strategy by using big data analytics (Predictive analytics) as mentioned in the values of big data and data analytics part. Marketers understand the persona of each customer from data sources such as social media and online channel. However, incompetent data and data analytics is the obstacle for them to do promotions personalization to each customer since they really do not get the customer insight or the customer insight are wrong.

Around 3 out of 5 participants who are working and used to work in operation department or 60% of operation team members said that incompetent data and data management is an obstacle for them to customize shopping journey and experience to each customer. Operation team members are misunderstanding from the incompetent and duplicate customer data and purchasing history. The incompetent and duplicate data leads to the misunderstanding in customers' shopping behavior and journey. So, operation team is going to face with the difficulty to predict and develop customers' experience to each customer.

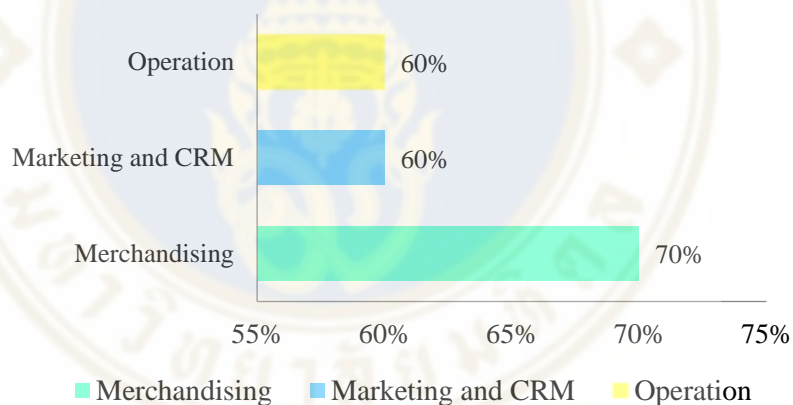


Figure 4.7 The percentage of operation, merchandising and marketing department who believes that incompetent data and data analytics is the limitation to do products, services and promotions personalization

Data analytics is the limitation and concern for retailers to understand customer journey especially in small to medium sized businesses that do not have data scientist and proper analytics tools or technologies to support data analysis. Nowadays, companies do not just want to collect data. Data will be valueless if it is not analyzed

by the efficient analytics technologies. Retailers want to understand and utilize the data that they gather to understand the meaning in order to understand their consumer's shopping journey and create benefit to their companies. After operation department understands what the customer need is, they are able to personalize special customer journey to improve customers' experience. However, there is some solution to solve this problem.

According to the interview with corporate marketing of Central Group's, she said that most of business unit of Central group solves the issue of incompetent data and data analytics by purchasing customer data from agency named Central The 1 credit card. Central The 1 credit card is the company that issue and operate Central membership card and Central credit card. It is one of the subsidiaries of Central company. So, Central The 1 credit card has a large volume of customer base. Besides, the customers that they have are the direct and potential customers. They can get the customer data and purchasing histories which is very reliable and accurate. The customer data that gets from Central The 1 credit card is the right target customer because The 1card collects customer data from membership as well.

Apart from providing a huge volume of data, big data also provides a micro customers' detail that is able to personalize and customize promotions to each customer. The efficient product and promotion personalization can create excellent customer experience and customer satisfaction.

According to Brand manager of Central Department Store, secondary data that marketers and merchandisers get from Central The 1 credit card supports their work at lot through a data analytics tool called Tableau Public. The data from The 1 card is collected from Central membership and credit card. The customer database from Central The 1 credit card company combining with analytics tools called as Tableau Public can help Central company solve the issue of incompetent data and analytics tool by providing the different types of pragmatic reports in various formats as below. These secondary data that has been generated from primary data can provide a lot of benefit to Central Company

1. Customer Demographic Overview in pie chart and bar graph
2. Brand Loyalty Index in table and bar graph format

3. Cross-Selling-Brands bought in same period in table and bar graph format
4. Compare Performance – Overall Performance in table and bar graph format
5. Landing Page in Dashboard format

Refer to the previous research; big data analytics could support companies to have a better decision making. In this research, big data analytics is able to help brand manager, marketing officer, and merchandisers, and operation to do products, services, and promotions personalization to increase customer satisfaction. However, retailers in Thailand including merchandising, operation, and marketing department concern on data management even the big size of retail company likes Central Group.

Marketing, merchandising and operation department are encountering with the limitation of incompetent data and analytics tools. They agreed that big data is going to create values when the data is analyzed properly and there are no duplicate data. In marketing department, duplicate data can be the obstacle to customize promotions and communication channels to each customer segment. Moreover, it is also obstacle to do one to one marketing since the information of customers is not complete and duplicated. The qualified data is able to get rid of the lag time to reaction by predicting events before they occur. Beyond internal transactional data, it can take in consumer purchasing records and social data, as well as unpredictable data like weather, competitors, and consumer psychographic profiles.

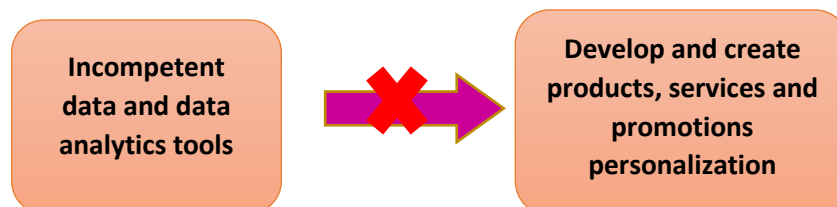


Figure 4.8 Incompetent data and data analytics tools is the barrier to develop and create products, services, and promotions personalization

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

This final chapter will provide the conclusion of the research in the beginning and following by the managerial implication, limitations, and recommendations for the future research respectively.

5.1 Conclusion of the study

From the previous research, there were 3 benefits and 3 challenges of big data and data analytics application in general context including retail industry. According to the conceptual framework about values and challenges of big data and data analytics application, each benefit and challenge had an impact to each other. The first proposition was that cost reduction could lead to high investment due to hiring skillful staffs to analyze data, and implementation of data analytics tools such as SAS, and Tableau Public. The second proposition was that better decision making and real time decision could be limited by incompetent data analytics. The last proposition was that understanding consumer behavior could lead to the concern of customers and companies on data privacy and security.

Regarding to this research, the benefits and challenges of big data and analytics tools in retail sector in Thailand are mainly related to customers. The values that mentioned in this research consist of three values which are understanding in consumer behavior, personalizing product, services, and promotion, and reducing cost. However, the most significant value of big data and data analytics tools of retail company in Thailand usage is understanding consumer behavior as you can see in the figure no. 5.1. Understanding consumer behavior can lead to two more values which are cost reduction and products, and promotions personalization.

Apart from values of big data and analytics tools of retail company in Thailand, this research also finds that the most significant and critical challenge of

using big data and analytics tools in retail business in Thailand is incompetent data and analytics tools. Refer to the characteristics of big data in literature review; velocity is the limitation of data analytics due to the multichannel and various data sources to gather data. Therefore, the values of cost reduction and products, and promotions personalization will be successful when companies understand consumer behavior. Moreover, these values will not be successful if the retailers cannot solve the limitation of incompetent data and data analytics. From the interview with participants who are working and have been working in retail company in Thailand, there are three values and one limitation of big data and data analytics application in retail business in Thailand.

Regarding to figure no. 5.1, the diagram shows that the major challenge of big data and data analytics in retail business in Thailand is incompetent data and data analytics tools. The incompetent data and data analytics tools can be the limitation to two more values which are personalizing product, services, and promotion to customers, and reducing marketing budget.

From the depth interview, the values and challenges of big data and data analytics tools in retail business in Thailand can be classified into two themes of values and two themes of limitations. To begin with values aspect, the first theme is that understanding consumer behavior can help retailers to reduce operation and marketing cost. The second theme is that understanding consumer behavior can increase the efficiency to do product, services and promotion personalization. On the other hands, the first theme of challenges or limitations is that incompetent data and data analytics tools is the key obstacle to save and reduce marketing budget. Besides, the second theme of challenges is that incompetent data and data analytics is the limitation for marketing, merchandising, and operation department to develop product, services, and promotion personalization to customers.

From this interview, more than 60% of participants said that incompetent data and data analytics tools is the major limitation and obstacle to reduce cost, and personalize products, services and promotions to their customers. Only 2 participants out of 25 participants or 8% mentioned about the limitation of data privacy and security. Moreover, these 2 participants mentioned about data security and privacy in the aspect of customers not retailers. They said that nowadays, there is a law called

Personal Data Protection Act or PDPA. Therefore, every personal data being collected and used, organizations must ensure that they are complying with obligations under data protection acts. Only 8% of participants who mentioned about data security can represent that retailers in Thailand have not realized on data protection laws and data privacy yet. Besides, none of participants were concerned on the investment and ROI of implementation of big data and analytics tool.

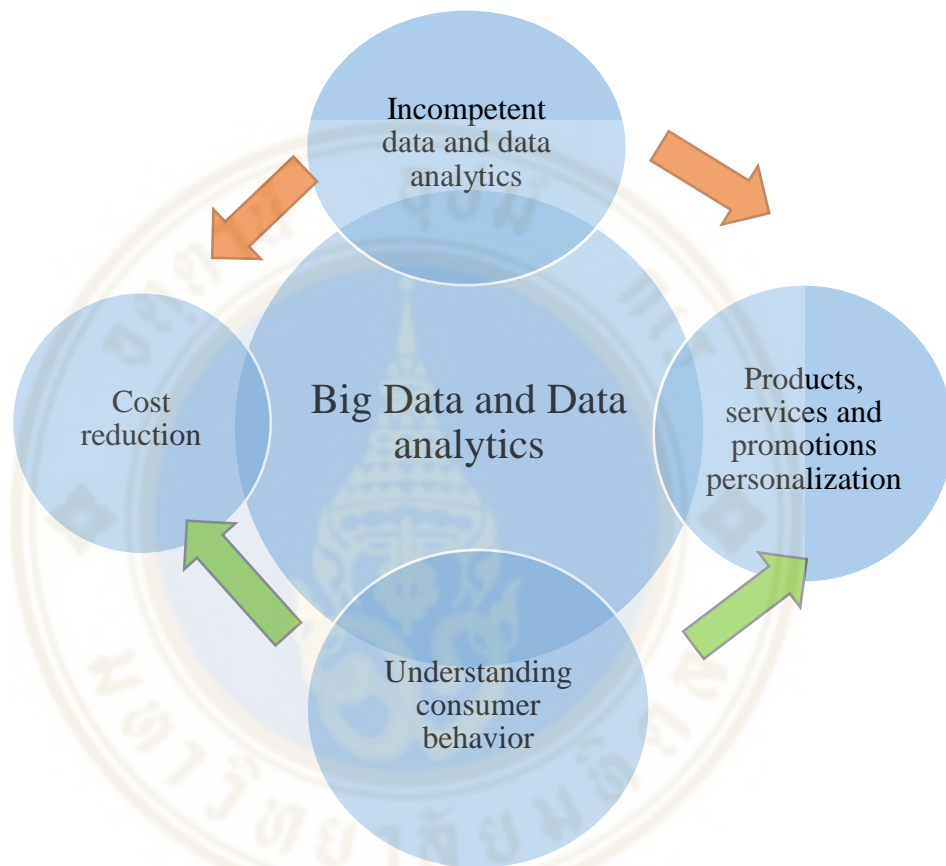


Figure 5.1 Values and challenges of big data and data analytics in retail sector in Thailand

5.2 Managerial Implications

According to the diagram in figure 5.1, it represents the clear picture of benefits and limitations of big data and analytics tools application in retail industry in Thailand. Retail company or retailers in Thailand are going to understand the values and challenges of big data and data analytics application from this research. According

to the conceptual framework of values and challenges of big data and analytics tools that was indicated in literature review, there are 3 benefits and 3 challenges. However, in this research, there are only 3 critical values and 1 major limitation of big data and analytics tools in retail sector in Thailand. The values of big data and data analytics are understanding consumer behavior, developing products, services, and promotions personalization, and reducing cost. These values will not be successful if the retailers cannot solve the limitation of incompetent data and data analytics.

This research precisely scopes down and focuses on the values and challenges of big data and analytics tools in retail sector in Thailand. Therefore, the retailers in Thailand who are currently use big data and analytics tools can realize on the limitation in using big data analytics tools. In the meantime, retailers in Thailand who have not decided to use big data and data analytics will understand and know the limitations and benefits that they are going to face from using big data and data analytics. They can utilize these information and knowledge to make a decision and find the solution to solve the problems efficiently. Moreover, this research will help them to notice the benefits that retail company is going to gain from using big data and analytics tools such as cost reduction, understanding consumer behavior, and products, services and promotions personalization products to each customer. These values of big data and data analytics will support and help them to compete with their competitors. The retailers who have not decided to use big data and analytics tools can consider the values which provide an opportunity for them since big data is an important source of information that might be useful for analytics purpose.

From a managerial point of view, the retail company is going to notice that values of big data and analytics tools are greater than challenges. According to this research, there are only one challenge which is incompetent data and data analytics. In the contrary, there are a several benefits that retail company will get from using big data and analytics tool. These benefits consist of understanding consumer behavior, products, services and promotions personalization, and cost reduction. If the retailers can solve the challenge which is incompetent data and data analytics, they will completely gain these benefits from big data and analytics tools.

For the small to medium sized retail companies, they might be afraid of the investment of using big data since they have to invest in analytics tool in order to

get insight and solve the problem of inefficient data. However, this research is indicated and proved that investment in using big data and analytics tools is worthwhile since it provides a lot of benefits which can encourage companies to understand consumer shopping behavior which can provide the other two benefits including cost reduction and products, services, and promotions personalization. These benefits will help retailers to decrease the concern on high investment.

Due to the digitalization era, these benefits will help retail company to compete their competitors if retailers can find the efficient solution to solve incompetent data and analytics tools by investing in data analytics tools or hiring skillful data scientists to solve the only limitation. Besides, this research can encourage small to medium size retail company to be dare to implement big data and invest in analytics tools since they are going to be able to capture customer heart and compete with their competitors due to the customer insight analysis.

5.3 Limitations and Recommendations

This study was conducted to study and explore about values and limitations of big data in retail business in Thailand by interviewing with various positions and business types in retail industry in Thailand. Although the present study provides and offers some critical insights about benefits and limitations of big data and data analytics tools in retail industry in Thailand, it also has some limitations.

The limitations that were found in this research are that this research focuses on only 3 departments which are marketing, operation, and merchandising department. Besides, this research applied only qualitative method in order to gather insight information of using big data and data analytics tools in retail sector in Thailand.

According to the limitation, in order to conduct a future research about big data and data analytics, the researcher should do the interview with more related department such as financial and IT department to get the other aspects about this topic. Moreover, the future research can apply both qualitative and quantitative method to get the complete information.

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APPENDICES

APPENDIX A: QUESTIONNAIRE

Section 1 Screening Part

1. Are you working or have been working in retail company in Thailand?
 2. How long are you working or have been working in retail company in Thailand?
 3. What kinds of retail company in Thailand are you working or used to work with? (Department store, Supermarket, Hypermarket, and E-commerce)
 4. Have you ever used or experienced with big data and data analytics?
 5. How long have you experienced with using big data and data analytics?
- 

Section 2 Values and Challenges of big data and data analytics tools in retail sector in Thailand

1. In your opinion, what are the impacts of big data and data analytics tools for retail company in Thailand?
2. How do retailers collect and analyze big data?
3. How is your position related to big data and data analytics tools?
4. How does big data support your work? Or what are the benefits of using big data and data analytics in retail business in Thailand?
5. Can you give me the examples of benefits that your position get from using big data and data analytics tools?
6. From your experiences in retail company, are there any concern or limitation on big data and data analytics tool applications ?
7. Please give the examples of limitations of big data and data analytics tools that you are facing or used to experience with.
8. How do you solve the problems of big data ana analytics tools? Please suggest the solution.