

**Marketers, Big Data and Intuition –
Implications for Strategy and Decision-Making**

**Thesis submitted in accordance with the requirements of the
University of Liverpool for the degree of
Doctor of Business Administration**

By

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Dedicated to my fiercely inspiring wife and my two mildly amused daughters.

Abstract

Marketers worldwide are grappling with issues relating to effective decision-making in context of the opportunities and challenges created by the emergence of Big Data. Marketing executives are challenged by the impact of advances in technology, measurement and Big Data in making decisions regarding delivering short-term business results and creating a long term future. Traditional marketing analytics rely more on propositional knowledge as opposed to Big Data marketing analytics that depend more on automated procedural knowledge. It has been observed in the workplace that marketers operating in the world of Big Data are challenged with how to adapt their decision making styles to these advancements. This need for change has created some amount of confusion and lack of clarity in marketing teams as has been observed in the author's own workplace. Rather than let the operators in "the trenches" figure a way out through trial and error, this thesis and accompanying research aim to provide an actionable framework for guiding marketers as they make critical decisions.

Based on theory-generating expert interviews with senior marketing leaders, this thesis proposes a novel application framework for decision-makers in Marketing, which connects the cadence of strategic, operational and tactical decisions in the business with Big Data, analytics, and intuition. The application of the framework is subsequently illustrated in a workplace setting through Action Research that seeks to improve the decision-making styles within a marketing team. The application of the framework helped the action research group to transform their quality and efficiency of insight collection, analysis and decision-making.

This research thesis demonstrates the evolution of the problem, creates a novel and actionable framework that can be used by marketers, demonstrates the efficacy of the model in a workplace action research setting and finally provides a guide to implementation of this framework in the service of marketing executives in other organizations.

Declaration of Own Work

I declare that the thesis has been composed by myself and that the work is my own. The work has not been submitted for any other degree or professional qualification. All quoted sources have been acknowledged.

Gopal Krishnan

Date: 03 October 2018

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Chapter 1 – Introduction

1.0.0 Introduction to the Chapter

The title of this doctoral thesis research is “Marketers, Big Data and Intuition – Implications for Strategy and Decision-Making”. The overall objective of this study is to understand how decision-making in the marketing profession should adapt to the evolving advancement of big data, and at the same time, how the judgment process used by a marketing professional should include aspects of big data analytics and intuition in an effective manner.

The first part of this chapter is an introduction to the research. The second part is an introduction to the research stance of the author. An action researcher stands alongside the community, not as an objective outsider, but as a value-laden participant (Berg, 2004), hence it is relevant to discuss here the values of the author especially with regard to the position of an action researcher and a practitioner.

1.1.0 Introduction to the Thesis

The term “Big Data” was originally coined to represent fast growth in volume of data which made it difficult to be processed (efficiently) by traditional database methods and tools (Kaisler et al., 2013). As the power of computing grows exponentially, the definition of what constitutes Big Data also grows with time; the current definition is in the range of exabytes or 10^{18} units (ibid.). As Big Data makes its way into businesses and companies, decision-makers are faced with the challenges brought by volume, velocity, variety, veracity, value and complexity of data (Gandomi and Haider, 2015; Gantz and Reinsel, 2011). This project seeks to study how practicing marketing leaders adapt to the onset of Big Data and to use this understanding to recommend best practices for the author’s department as well as other marketing theorists and practitioners to navigate these changes. During this process, issues concerning leadership styles, decision-making processes and criteria for translating insights into action will be explored in more detail.

The discipline of Marketing has undergone several mutations and adaptations in the last 80 years. The pendulum of marketing thought swings between art and science, theory and craft. In this process, Marketing has had three specific eras of adopting the mathematical sciences (1) the quantitative measurements from the mid-1940s, (2) the statistical interpretation of market research from the 1980s

(Brown, 1996) and now (3) the introduction of Big Data in the mid-2010s. Having been a marketing executive for over two decades, the author has seen some of this evolution first-hand, from the viewpoint of a practitioner, and this DBA thesis project extends that experience into an opportunity to look at the future through the lens of both a researcher and a practitioner.

This topic has importance not only to the author and his organization, but in a broader context to all marketing leaders across industries. In a global survey of more than 750 marketing executives connected to McKinsey & Co., researchers Leeflang et al. (2014) pointed out several challenges faced by marketers working with Big Data, of which some are of specific interest to this project. Firstly, the ability to generate and leverage rich and actionable consumer insights from the data is a key issue which is complicated by high speed and volume. Secondly, creativity and breakthrough innovation can get stifled by an over-reliance on data and hard facts. Thirdly, the inability to create undisputed attribution and the unknown factors surrounding integrity of data creates challenges in execution. Finally, on the human side, there is a significant talent gap in marketing that has the capacity to deal with the above changes (ibid). Historically, empirical studies have shown that rational processes of decision-making alone have about a 50% rate of success in management situations (Nutt, 1999; Sinclair and Ashkanasy, 2005), that is, as reliable as tossing a coin. Intuition, used appropriately can provide a more holistic perspective on the situation (Hodgkinson et al., 2009). Intuition can be described as the preconscious recognition of either patterns or opportunities (Crossan, Lane and White, 1999) that is developed through experience, expertise and training (Khatri and Ng, 2000).

This evolution can be directly related to the practical challenge faced in the author's workplace, which has also been informally confirmed by the author's peers who are marketing leaders in other organizations. Specifically, there is a trend for marketing teams to get more specialized and focused on mutually exclusive disciplines of expertise such as search engine optimization (SEO), search engine marketing (SEM), customer relationship management (CRM) etc. and in developing that expertise, become less accountable for or influential over the overall success factors of business such as revenue, profits, market share, customer loyalty etc. As part of the mandate of being a marketing leader in the company, the author through this thesis, aims to develop a model that will enable the marketing

organization to adapt to the new world of Big Data while proving leadership to the success of the overall business.

The thesis is organized as follows. After the introduction (Chapter 1), a synthesis of extant literature has been provided (Chapter 2). As this is a multi-disciplinary area of study, the author has sought to provide an appropriate balance and fusion of learning from diverse fields such as data analytics, marketing management, organizational development, sociology etc. The uniqueness of this review resides in this multi-disciplinary synthesis which results in further research in general management. After the literature, a description of the research method is provided (Chapter 3), for this two-stage study involving (1) theory-generating expert interviews and (2) action research. Subsequent chapters lay out the expert interviews (Chapter 4) and the framework that has been created based on the extant literature review, the knowledge of experts and the researcher's own insights (Chapter 5). After that, the journey and learning of applying this is at the workplace is described (Chapter 6). A very short explanation of how this model might be applied in an organizational setting is described (Chapter 7) followed by suggestions of areas for future research (Chapter 8) and concluding remarks (Chapter 9).

1.2.0 Introduction to the Research Stance of the Author

It is challenging that sometimes management research and practice are like two sides of a coin – facing in opposite directions and never looking at each other. What we need to become is two ends of a bridge, where traffic can freely flow between one to the other, with enriching discourses, interactions and inter-connectivity (Starkey and Madan, 2001). Thus, the dualism of theory and practice can be very productive in research and in the workplace (Dewey, 1904).

The scholar-practitioner is defined as someone who is dedicated to generating new knowledge that is useful to practitioners (Schein, 2001). The definition is further extended by Tenkasi and Hay (2008) as someone with one foot each in the worlds - that of academia and that of practice, with a focused interest in advancing the causes of theory as well as practice.

Hence the scholar-practitioner is in a unique position to leverage this duality. Experience from the world of business provides a panoramic view into the potential benefits of application of the theory. Similarly, the discipline of theorizing provides a scaffolding and structure to conduct disciplined inquiry that will help create progress in the world of practice.

It all depends on how skillfully the two aspects can be made to work for each other. The university provides a context and a discipline to the process of disciplined inquiry. This is enriched by the experiences, expertise and exposure that come out of solving problems and interacting with people which is what the business executive does. The challenge then, is how to fuse the best of theory and practice into learning that will benefit future generations.

Through the journey that culminates in this thesis, I have developed a research stance that seeks to meet the following goals: (1) Look for the story behind the data, (2) Turning knowledge into insights is alone not enough, the insights have to be then turned into action and (3) What I do has to help me become a better scholar and practitioner, my business a more successful business, the scholarship of management a little more enlightened, and in some small way, this world a better place for all.

1.3.0 Impetus for Choice of Topic

Bringing this back to the author's workplace, marketing content creation is a creative discipline that leverages creativity, empathy, intuition etc. At the same time, marketing content placement (media planning) is a fast-moving, online process where instant actions are taken based on copious data streams and often relying on programmatic machine-based decision-making. Such contrasts exist in other areas of the day-to-day functioning of every marketing leader. The purpose of this thesis is to generate insights from recognized expert practitioners that can lead to novel theory and processes that can be implemented through action research within the author's organization first and later can be provided as a toolkit to marketing executives in the external world through the thesis publication.

At this point, it would be appropriate to summarize the author's legitimacy to work on this project and the challenges involved. After completing an MS in Physics and a Master's level program in

Management, the author has worked in Fortune 500 companies and in start-ups as a marketing executive, rising to the level of executive leadership in the last 6 years; worked in different countries, held global responsibilities and had experience in different industries - both in traditional bricks-and-mortar as well as in the e-commerce space. The author has also frequently taken the time to get involved with Universities as a visiting faculty, as a mentor for their start-up incubation programs and as a sponsor of student research programs. During this journey, the author has had the good fortune to work with or come in contact with prominent CMOs and marketing leaders as well as professors of marketing. All that the author practices today as a marketer has evolved from his lived life experiences as a marketing leader and also influenced by his interactions with these key industry leaders and through the learnings that he has absorbed from research articles that have made a contribution in this area.

1.4.0 Intended Outcomes of Research

Firstly, a broad problem has been identified, that is facing marketing practitioners across companies and industries as they adapt their decision-making processes with the swift advent of Big Data. Research was conducted to identify the causes and solutions to the problem. This phase of research included an extensive review of multi-disciplinary literature, followed by in-depth expert interviews of highly reputed and senior experts holding marketing leadership positions in very internationally-recognized companies. This phase of research concluded with the development of a novel and actionable framework for managing the problem.

Then, to test the framework in a real-life situation, the researcher focused on one specific problem faced in his workplace. The Go-To-Market team that manages the mobile app business in a well-known Silicon Valley company was facing the challenge of making sub-optimal decisions by being very restricted and functional in their use of data to take key business decisions. The action research demonstrated the efficacy of using the new framework developed by the researcher.

Finally, the accumulation of learning from the literature review, the expert interviews, the original framework development and reflective insights from action research, have led to a robust contribution of actionable expertise that is generalizable to marketers in other companies and industries.

Chapter 2 - Literature Review

2.0.0 Introduction to Literature Review

The focus of this thesis is the effect of Big Data on decision-making by marketing leaders, hence the approach taken here is that of understanding the breadth of cross-functional knowledge, paying attention to the intersection of this knowledge and the discipline of marketing. The field of marketing itself is a successful integration of management science, psychology, sociology and economics. These complementary fields provide a spectrum of scientific approaches to study the issues (Chintagunta, Hanssens and Hauser, 2016). This combination can provide a better theoretical understanding as well as suggest practical approaches to solve relevant and pivotal issues in marketing, hence a cross-disciplinary approach is taken in this literature review.

The literature review also bears relevance to the workplace problem and the questions of inquiry in action research. In a consumer technology company, where the marketing team is beset by the rapid expansion of Big Data, there are stresses and strains arising as a result of over-splintering and specialization of different branches of marketing. In the past, decisions would be made through more holistic discussion of all aspects of the marketing mix and the customer experience. However, the volume, pace and specialized nature of Big Data has created a workplace situation where the “automated” analysis of Big Data and the resulting score-cards have started to have an over-sized emphasis on how decisions are being taken. This is leading to sometimes ineffective decision-making as well as a hardening of functional silos within the marketing team.

The overarching research question is:

RQ1: How can marketers balance Big Data and intuition to improve strategy development and decision-making?

The following sub-research questions provide the canvas for further investigation and translation into theory and action during this thesis project:

SRQ1: How should marketers deal with the challenges of Big Data in decision making: specifically, with reference to the unique characteristics of volume, velocity, variety, veracity, value and complexity of data?

SRQ2: How are marketing leaders balancing data and intuition in decision-making situations and what improvements can be made to this process?

The research question and sub-questions originally emerged from the author's experiences in the workplace and in the industry as a practicing senior marketing professional. While planning for an appropriate literature review, it was quite immediately apparent that the need was not for an in-depth study of literature in one topic that would identify the limitations of academia. Instead, it was clear upon the initial reflection, that the research question requires a review of multiple fields of academic literature such as big data, decision-making styles, marketing strategy and execution as well as some insight into the human mind's way of making decisions using data and intuition. As has been referenced later in this chapter, the majority of early papers on big data were by academics who sought to evangelize the powers and uses of big data, and not so much on critically evaluating its usage in the workplace and its role alongside other decision-making methods and styles. There was also a need for the literature review to span the breadth of thinking required to understand how professional can cope with and productively assimilate all the benefits that big data can offer without getting overwhelmed by some of its collateral features such as volume, velocity, variety etc.

Given this context, this literature review provides a critical overview of the extant body of work relevant to the thesis topic, sequentially divided into these heads: (1) the emergence of Big Data and its influence on business and the marketing function (2) the decision-making process in marketing and the impact of Big Data (3) a review of the relevant factors in marketing decision-making including intuition, and (4) the evolution of the decision-making role of the marketing manager or leader. Finally, a synthesis of gaps and key observations from this literature review is used to identify opportunities to build a novel framework as well as to improve the workplace situation.

It is also realized that Big Data is a fast-evolving field where approaches are rapidly rendered obsolete by the exponential advance of technology and processing capability. Hence, a practical decision has been

taken in this review to give representation to a few fundamental papers that anchor the origins of this topic, but then fast-forward to publications from the last 2-3 years.

The inspiration to research this topic is borne out of an observation of evolution of the marketing function in businesses such as the author's employer. The evolution of marketing into the world of always-on data creates a need to quickly build talent and infrastructure in the areas of data analytics (Galbraith, 2014). The increase in speed of decision making requires that marketers re-examine the linear, hypothesis driven "Socratic" method that has been widely prevalent in the past. Further a clash of cultures between the data specialists and the creative thinkers needs to be managed constructively in the best interests of the organization (Nadeem, 2015).

Specific to the author's workplace, it has been observed that SMEs (Subject Matter Experts) in these specific fields deal with Big Data in different ways while tending to lose the big picture of accountability for overall business success. As an organizational leader, the author seeks through this literature review and subsequent research, to create processes that help the team in making better decisions. To do justice to this action research endeavor, it is important to lay the groundwork through this literature review by examining the definition and implications of Big Data, decision making and the role of data and intuition in the service of improving decision making processes among leaders of marketing.

2.1.0 Emergence of Big Data and its influence on business and the marketing function

2.1.1 Introduction to Big Data

This section introduces the concept of Big Data and shows how its definition has expanded following wider use of big and bigger data sets; accompanied by a discussion of the literature in this domain, that has initially been more of an evangelical nature, but recently has started to be a bit more critical. Equally, it has been observed that existing research on the topic appears to have limited explanatory power since it is largely normative and descriptive (Janssen van der Voort and Wahyudi, 2017).

The field of business management is no stranger to data. The term Big Data refers to very large sets of data, typically those that require special software tools, as well as hardware processing capacity, to record, manipulate and analyze (Kaisler et al., 2013; Manyika et al., 2011). Initially the size threshold of Big Data was discussed in terabytes (10^{12} bytes) but was soon increased to petabytes (10^{15} bytes) and exobytes (10^{18} bytes) with advances in technology (Anderson, 2008). Despite this size indication being a moving target, there is consensus regarding the characteristics that define Big Data, such as having high volume yet being highly detailed, with high velocity or real time availability, great variety, and having “relationalability” and flexibility (Kitchin, 2014). It is recognized that this definition will continue to evolve over time and will vary by industry sector and research domain.

De Mauro, Greco and Grimaldi (2016, p.128), in attempting to change the focus from size of the data set to the nature of the data set, propose a more general definition as follows:

“Big Data is the information asset characterized by such a High Volume, Velocity and Variety to require specific Technology and Analytical Methods for its transformation into Value.”

To overcome the move to super-specialization and narrow span of Big Data analysis, Lietdke (2016, p.33) proposes a modified definition which reflects the reality of data input and output:

“Big Data is a relatively large amount of data consisting of multiple types from multiple sources possibly arriving in real-time of varying degrees of accuracy requiring exploratory data analysis and integrative analytical methods.”

Today, Big Data is collected in fields as diverse as social media, weather, sports, economics, genomics (Frizzo-Barker et al., 2016). It is also becoming increasingly apparent that Big Data represents a social movement (vox populi can be rapidly collected from Tweets, Facebook posts etc.) as well as a cultural shift (key consumer decisions are influenced in real time by the views of countless peers on Amazon or Yelp). The increasing fickleness of customers who are leveraging such large quantities of information, raises new challenges for businesses that need to adapt with equal speed (Grover and John, 2015).

Another important aspect of Big Data is the granularity or fineness of information available regarding participants, and hence there is a camp that would describe “Big Data” instead as “Smart Data” (George Haas and Pentland, 2014). Data-intensive explorations can follow one of two paths (1) an empirical approach, where Big Data can be used to create conclusions that are “free of theory” and (2) Big Data as

a driver that radically transforms the scientific process by creating a hybrid of abductive, inductive and deductive approaches (Kitchin, 2014).

2.1.2 Emerging Applications of Big Data

Over the past few years, the emergence of Big Data has started to change the landscape of business analytics in several ways, such as (1) providing the ability to gather data for the entire or a substantial part of the population rather than a small sample, (2) moving from significance testing to substantive measurements, (3) leveraging continuous data streams rather than point-in-time surveys, and very importantly (4) making it far more viable to combine data from multiple sources and forms to generate unified insights (Verhoef, Kooge and Walk, 2016). Integrated predictive modeling using multi-source data such as segmentation, trend analysis, web analytics, social listening, and user sentiment analysis is now a practical and achievable possibility (ibid.). This has led to researchers and practitioners in diverse fields demonstrating the value of Big Data to their work, as can be seen from a few examples given below.

In Public Health and Health Policy, Buckeridge et al., (2014) matched grocery store purchasing patterns from Nielsen at the household level with nutritional values published by the product manufacturers along with medical records for the residents of those zip codes, to study the effectiveness of public health education initiatives. Leveraging similar datasets of medical records, Lix et al., (2012) were able to demonstrate predictive algorithms for case ascertainment as a way of verifying manually entered disease codes. In the area of Civic Behavior, an analysis of Tweets published across 4 years were cross-analyzed with the Gold Standard Report, to identify specific keywords that were predictive of an insurgency event in Latin America (Korkmaz et al., 2015). This is an example of using constant data streams of social media in combination with professionally developed reports as two disparate data sets to create a unified predictive insight. In the field of Environmental Studies, Barboza, Tingley and Viens, (2014) show how heterogeneous information derived from coral reefs, tree rings, volcanic activity etc. can be combined to model the long-term impact of climate change. In Education, a large data set of almost 3 million course evaluations over a period of 12 years were analyzed by Reese et al., (2014). By combining diverse data points in the forms of ordinal scales, free text and sentiment analysis, the authors were able to demonstrate long-term effects of grade inflation in educational institutions. Big Data has also been used to demonstrate counter-intuitive results, such as the finding that random

selection in a materials science study proved to be more efficient than a carefully prepared design of experiment (Candès, Romberg and Tao, 2006; Franke et al., 2016).

As mentioned previously, one of the major advantages of Big Data is the ability to study constant data streams rather than point-in-time sample sets (Zhang et al., 2016). In the area of mobile devices and networks, the power of this feature can be clearly seen. Telecom operators are able to optimize network traffic and coverage based on mobile usage data, geo-location and event messages, and this trend will grow even more as networks around the world upgrade to 5G (Zheng et al., 2016).

In the area of Retail marketing, mobile check-out platforms for supermarket shoppers can potentially provide a much greater magnitude of data as compared to Point of Sales (POS) systems. Instead of just providing actual purchase data like POS, mobile phone check-out platforms can also provide data regarding shopping activity at shelf, thus allowing the retailer or manufacturer to provide coupons, messages and other offers that can influence the purchase decision at the moment of truth (Aloysius, Hoehle and Venkatesh, 2016). This is of special interest to marketers because the customer journey is getting more and more fragmented and runs across multiple channels (Lemon, 2016). For example, a customer may (1) get an idea to buy something based on a friend's Facebook post, (2) then search for category information on Google, (3) check out reviews on Yelp, (4) do comparison price shopping on several websites and (5) weigh whether to make the final purchase on an e-tail site like Amazon or in a brick-and-mortars retail store like Wal-Mart, and (6) at the final moment of purchase, decide to download and use a discount coupon from Retailmenot. Lemon (2016) introduces the concept of "real time relevant" marketing, where, based on instantaneous data, the company is able to initiate a conversation with the customer at the moment of truth.

While Big Data brings various new opportunities for decision-making in areas such as Marketing, it is important to recognize the complicated inter-relationships and challenges, such as creating a platform for real time analytics to be conducted, distributed and reviewed (Ducange, Pecori and Mezzina, 2017). As mentioned earlier, several issues have to be considered including high volume data storage, analytics that provide real-time dashboards, a mid-flow process to verify the correctness of the data and the accuracy of the insights, maintenance of data privacy and protection (Liu, 2012). Content analysts

perform an important role in bridging machine learning with descriptive data, analyzing social media content for sentiment, emotion, and passion. This has to be supported by quantitative analysis of trend reports and volume and prominence of social conversations (Wang and Luo, 2013; Zeng et al., 2010; Chi et al, 2015).

A comprehensive survey of 52 published studies by Ducange, Pecori and Mezzina, (2017) revealed that Big Data in social marketing has resulted in applications in four major areas. The first area is in integration of traditional market surveys with social media data streams to map trends leading to innovation pipeline, competitive strategies etc. The key challenges here relate to adaptability of new and old forms and flows of data, and issues surrounding integrated analytics versus distributed self-service models. The second area deals with branding, communication, advertising and promotional campaigns. In this area, emotional spikes, brain wave analysis and similar techniques can complement traditional in-depth interviews and ethnographic studies that aim to dig deep into the attitudes and beliefs of the consumer. The third area of use is in quality and reputation monitoring, brand loyalty and net promoter scores. Here primary research methods can be supplemented by social listening, scraping online reviews etc. to provide a more timely and rich picture. The fourth area deals with CRM or customer relationship management. More frequent, less invasive and more in-depth probing of reasons for churn, levels of engagement etc. would fall in this category.

As mentioned, social media monitoring requires constant listening to online conversations and viewing user-generated content. An organizational challenge here is how to ensure that distributed, time-sensitive decision-making can be combined with more deliberative and centralized analysis. As Bowen and Bowen (2016) point out, the veracity of new single-source information can benefit from a more reflective triangulation using other data sources or proof points, in “slow thinking”. This is easier done than in the “fast thinking” usually associated with Big Data. Similarly, such a deliberative approach also needs collaborative and collective digesting of information and decision-making, and this goes against the image of real-time trading by a single expert who is at the data console. This is an issue that will be further explored in the work-place context.

2.1.3 Characteristics of Big Data

The three Vs of Volume, Velocity and Variety are used to characterize Big Data. Volume indicates the large and growing amount of data that is collected. Velocity refers to the speed of generation of the data which continues to increase with advances in sensors, communication, and the prevailing developments in the internet of things (IoT), where everyday objects such as automobiles, baby-monitors, smartwatches, traffic cameras, all emit always-on and networked streams of data. Variety refers to the diversity and breadth of data that is available at a high degree of granularity. This aspect of variety continues to create challenges for the manipulation and analysis of data in different forms and formats (Phillips-Wren et al. 2015). Proponents of the Variety aspect of Big Data push researchers to go beyond the dyadic relationship of supplier-user and study a larger and more complex ecosystem of interconnections (Baron and Russell-Bennett, 2016), such as bottom of the pyramid studies, transformative service paradigms and study of multi-tiered ecosystems at micro-level, meso-level and macro-level. This ability to study the effects on the ecosystem of multiple players seeking to create or destroy value makes Big Data relevant to the evolution of business (ibid.).

Beyond these three Vs, researchers showing an appetite for alliteration, have proposed other characteristics such as Value, Visualization, Volatility and Veracity (DeMauro, Greco and Grimaldi, 2016). Kypri (2015) uses the term Veracity to connote the accuracy of the information, the reliability of the source of the information, and the relevance of the context in which the data was generated. This overriding need for quality data can sometimes be overlooked when the speed and quantity of data becomes overwhelming. The recent controversy regarding “fake news” on social media channels is a sobering example of the damaging effects of a lack of veracity. Further, the evolution of Big Data also provides an opportunity for firms to leverage their information to create transformational innovation. Big Data-Driven Innovation can provide a competitive advantage to the firm that chooses to invest in the technology, infrastructure and the talent to gather, analyze and exploit Big Data (Kopanakis, Vassakis and Mastorakis, 2016). With the emergence of technologies such as Hadoop and open-source applications, advances in cloud computing and visualization, new skill sets, training and mindset are becoming equally important (Davenport and Patil, 2012).

As an emergent and advancing field, it is understandable that much of the early writings about Big Data are aimed at “evangelizing” and characterizing, rather than critically examining the applicability and challenges of this discipline. It is understandable that business practitioners tend to greet such emergent disciplines with a touch of skepticism, but an understanding of this thought process can also help the academic side to build a stronger argument for the insightful and considered use of Big Data. To illustrate this, it is helpful to consider the history of a previous development, that of Customer Relationship Management (CRM) about 15 years ago. Consultants and thought leaders stirred up a lot of excitement in the executive chambers of business, touting the value of customer information and urging large investments of time and money in IT infrastructure to handle and process a massive influx of customer data. After the initial period of euphoria, business leaders came to several sobering conclusions. Firstly, large corporate IT systems created data silos that did not easily interconnect with other elements of the network, reducing the ability for frontline employees to make crucial decisions without waiting for corporate information. Secondly, the investments in IT infrastructure were made without a corresponding investment in training of the data users or in change management in the operating divisions of the companies. This led to a period of reflection and introspection before companies managed to right-size their efforts and make a more holistic and balanced effort at eventually embracing the paradigm of CRM. This example is well described by Barton and Court (2012) and provides a great segue into a critical examination of the benefits and cautions of embracing the wave of Big Data.

2.1.4 Issues Surrounding Big Data and Decision Making

Starting with the premise that the rational human being has always utilized data and observations to make sense of the surroundings, Cukier and Mayer-Schoenberger (2013) argue that Big Data should allow for more and better utilization of data to make even better sense of the world. The proponents of this argument say that the scarcity and expensive nature of traditional data placed restrictions that will be removed with the advent of Big Data in conjunction with the progress of computing technology. Thus, a business decision can be made based on the understanding of a million individual data points rather than of a small statistical sample.

A more controversial extrapolation of this line of thinking creates a proposal to question the necessity of building theory based on causality and instead focus only on correlations that emerge from the Big Data (Anderson, 2008). The argument is that cheaper, faster data can produce better decisions in most situations that do not need the precision and accuracy of statistical analysis (ibid.). Thus, in the “petabyte” age, sampling and modeling techniques of traditional statistics might be replaced by the brute force of advanced computers and machine learning. Instead of wondering why people behave in a certain way, adherents of Big Data would say that it is not important why they do it, but if they do it based on Big Data, then it is so.

In assuming such a world view, correlations can be said to be as useful as causation, and actual behavior can be studied and forecasted without worrying about the models behind them. “All models are wrong, and increasingly you can succeed without them” is the stance of a senior officer from Google (Anderson, 2008, n.p.). It is posited that the sheer largeness and richness of the amount of data, allow for the data to speak for itself without the need for theory (ibid.). Oversimplified, the implication is that practitioners should focus on the ends and ignore the means (Cukier and Mayer-Schoenberger, 2013). While provocative, this is also a somewhat dangerous line of reasoning and the flip side of this will be examined later in this review. A further argument is that the sheer quantity of data can balance out the need for exactness or precision in data gathering and data cleaning. (ibid.).

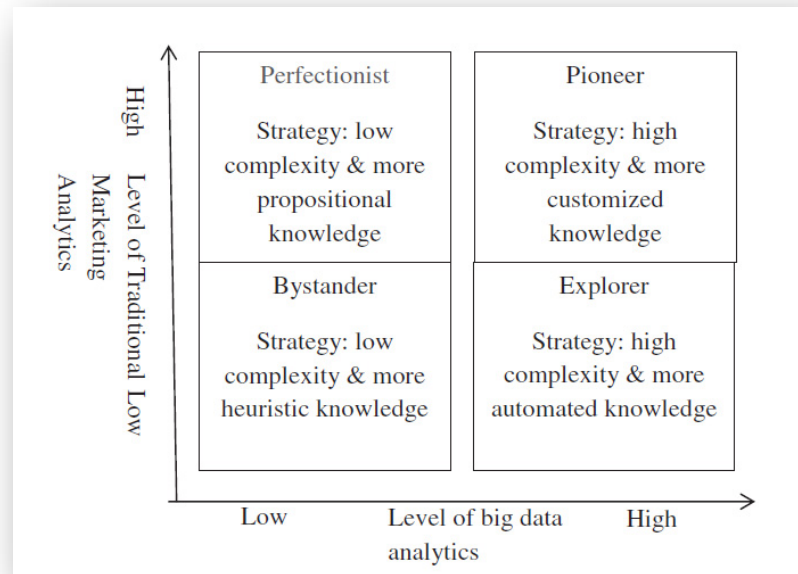
On the other hand, several arguments have been made for exercising caution. Firstly, a massive data set by itself does not obviate the need for sampling protocols. The profile of the respondents in the data set have to be matched with the profile of respondents in the target market. For example, while Twitter feeds can provide a copious amount of data, the specific word limits and usage restrictions placed by Twitter lead to certain online behaviors that may not be replicable across other engagement channels (Japkowicz and Stefanowski, 2016).

A second argument is that in-depth observations obtained from a smaller number of qualitative research studies or ethnographic studies may provide far more robust and actionable insights than a large swathe of shallow or constrained data. Similarly, the speed and size of Big Data cannot replace the need for critical questioning of the data (ibid.) or as it is often said “What is the story behind the story?”

which speaks to the need for clarity regarding the causality. Both causality and correlation have their own place in theory and practice and this offers a possible area of further investigation in the subsequent stages of the thesis process. The choice of action based on correlation alone has to be tempered by (1) the confidence that such a coincidence will be repeatable in future and (2) by understanding the risks and rewards of acting on it. Spurious correlations with Big Data (including the oft-repeated story of “Google Flu” and the “epic fail” of pollsters during the 2016 US Presidential Elections) are now at risk of being over-belabored (Fan and Bifet, 2013, Lazer et al., 2014, Gandomi and Haider, 2015, Silver, 2016), so it will just be mentioned here that spurious correlations could be white noise instead of real insights and this places a greater responsibility on management to train users and analysts on how to avoid these.

The intention of this thesis is not to deride the legitimacy of Big Data, but to provide a balanced view that can lead to more successful adoption. In summary, then, based on a review of Cukier and Mayer-Schoenberger, (2013), Anderson (2008), LaValle et al. (2011) and Dhar (2013), several challenges are apparent. Firstly, moving from “some” data to “all” data (or a lot of data) requires new thinking in terms of statistical analysis, sampling and decision-making processes as also the role of hypothesis development and the trigger point for model creation. Decision-makers have to develop comfort in moving from clean, curated, compact and slow data to messy, unwieldy and fast data, which places a strain on data presentation protocols and responsibilities. The push from causation to correlation also creates challenges regarding the mental models of decision making and the responsibility of the leader to find the right balance. A further challenge to evolution from Traditional Data Analytics (TMA) to Big Data analytics (BDA) is presented in Figure: 2.1 (Xu, Frankwick and Ramirez, 2016):

Figure: 2.1 Taxonomy of Data Analytics in Organizations, by Xu, Franckwick and Ramirez (2016, p.3)



A firm with high BDA and High TMA is able to manage higher complexity through customized knowledge and such entities are designated as Pioneers. A firm with high BDA and low TMA is designated as an Explorer with more automated data streams that influence decision making. A firm with low BDA and high TMA is designated as Perfectionist with a greater reliance on propositional knowledge. Finally, a firm with low BDA and low TMA is labeled a Bystander. Based on this taxonomy, the authors (ibid.) argue that all companies can benefit from a fusion of both TMA and BDA. This has to be tempered with the cost of acquisition and analysis of each type of data and the likely benefit to the firm.

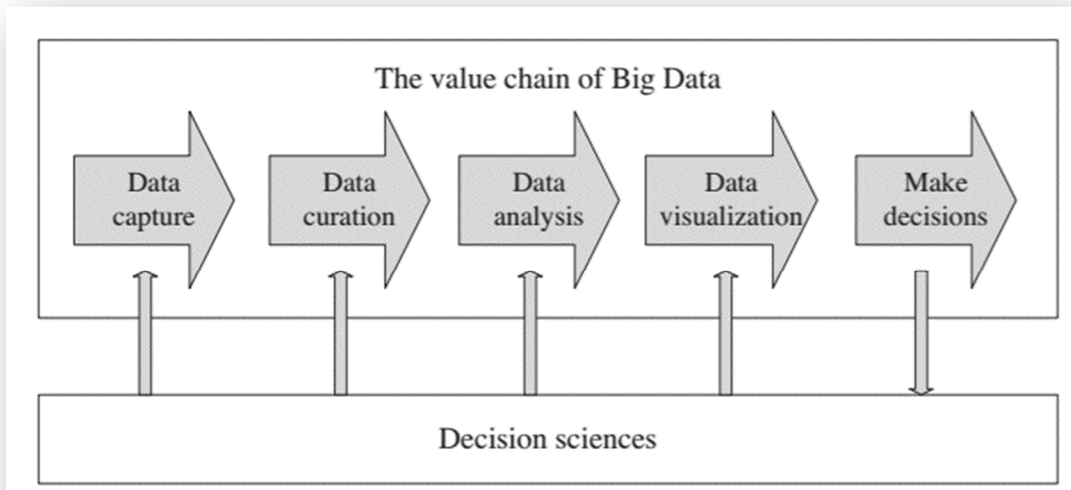
Turning the focus to implementation, Biesdorf, Court and Wilmot (2013) make the case for a comprehensive plan that recognizes several realities of corporate decision-making. Information within a company is collected and stored in a distributed manner, and the flow of the information often conforms to the vertical organizational governance structure or the horizontal operating teams. These data systems have often evolved differently and independently from one another, thus creating challenges for legacy systems to talk to each other. In addition, some of the important data may sit outside the firm, at the hands of vendors, customers etc. Key success factors for success of implementation are (1) having a clear need, (2) getting executive sponsorship, (3) obtaining early alignment of the IT strategy with the business plan and goals, (4) fostering a data-driven culture, (5)

investing in a robust infrastructure, (6) employing appropriate analytic tools, combined with (7) teams having relevant analytical skills. (Riggins and Fosso Womba, 2015).

In the implementation process, data management consists of a data life-cycle for collection, cleaning, modelling, analyzing, storing, disseminating, retrieving, discovering and interpreting (Khan et al., 2014; Kopanakis, Vassakis and Mastorakis, 2016). Each of these stages can face challenges in dealing with the volume, velocity and variety of Big Data. The effective implementation of this process in an organization requires the orchestration of several roles as described by Loshin (2013) - (1) The Business Evangelist understands the gaps in existing infrastructure, and through knowledge of emerging technologies, is able to persuasively communicate the value of creating a technological and infrastructural plan to meet the emerging needs of the organization. This person may also be responsible for piloting and scaling the solution. (2) The Technical Evangelist has a deeper understanding of the underlying science and technology behind the new methods and can champion an improvement of efficiencies with the existing system or enable acquisition of new systems. (3) The Business Analyst role engages with the owners of the business process to understand expectations and requirements and guide the development of a business case for new infrastructure. (4) The Application Architect is able to leverage their expertise in performance computing to optimize the design and performance of the system such that the vendor's frameworks work within the company's operating environment. (5) The Application Developer identifies and implements the appropriate skill set for testing applications and (6) The Program Manager plans, coordinates and oversees the implementation deadlines, budget utilization, documentation, cross-functional hand-offs and migration from test phase to production.

Going beyond the technical team, additional roles include (1) The marketing and management functions, responsible for identification and prioritization of business opportunities for Big-Data-driven decisions; (2) Data science as well as Data management that ensures the fidelity, timeliness and applicability of the data and (3) Legal and Regulatory Compliance experts to handle the serious issues surrounding security, privacy, and compliance (Wedel and Kannan, 2016). The process relationships are illustrated in Figure: 2.2 (Wang et al., 2016):

Figure: 2.2 Big Data and Decision-Making Process, by Wang et al., (2016, p. 749)



A better understanding of the complex cast of characters and the deployment process can help the end user or business owner get more fully rooted in ensuring that sustainable value is extracted from the system.

2.1.5 Application of Big Data in Research - Identifying Synergy between Modern and Traditional Approaches

While a broad and deep analysis of qualitative versus big-data inspired quantitative techniques is beyond the scope and focus of this thesis, it is nevertheless illuminating to briefly compare and contrast an emerging method like Machine Learning with an established method like Grounded Theory. Machine Learning is defined as the process of optimization of a selected performance-based variable using multiple datasets and computational programming (Alpaydin, 2014). The goal-seeking nature of machine learning lies in the ability to automatically detect patterns in complex data sets, use the patterns to predict future outcomes, and continuously iterate the pattern-detection algorithm as fresh data keeps getting added (Murphy, 2012). Grounded Theory also includes processes such as collecting and analyzing data iteratively and moving from data coding to conceptualizing theory through a deliberate process (Stumpf, Sandstrom and Sanger, 2016).

There are several interesting areas of convergence between Machine Learning and Grounded Theory (Timmermans and Tavory, 2012) that can be observed. Firstly, both methods start with data, iterate with data and return to the data at the end. Secondly, both methods create a rough model and continue to repeat with additional data until the model is sufficiently robust. However, Machine Learning can be supervised or unsupervised depending on whether the iterative analysis and model building is designed to occur with human intervention or not.

In the unsupervised approach, the human researcher must examine the initial data-driven groupings and make critical decisions on which variables are important for the final outcome. The machine then takes this initial guidance and iterates unsupervised to converge on an optimized model (Dy and Brodley, 2004). In the case of the supervised approach, predictive methods such as regression or decision trees are used to iterate to achieve a standard benchmark by the involvement of the researcher. While the human iteration spans across the steps of Grounded Theory and operates in a circular fashion, in Machine Learning, there is an action/reaction sequence of interaction between the human and the computer that creates a more linear, sequential approach (Muller et al., 2016).

It is worth examining how Big Data has led to smart decisions in theory and in practice. When creating theory based on Big Data, the process of Knowledge Discovery from Data (KDD) has similarities and differences in comparing with a method such as Grounded Theory (GTM) when examining the data or the theoretical construct (Charmaz, 2014; Cho and Lee, 2014; Smith, 2015). Historically, GTM uses data as the foundation upon which to build theory while recently KDD is increasingly regarded as something to be “mined and explored” in search of a theory or insight (Bryant and Raja, 2014). GTM can involve an iterative sequence of gathering data and analyzing the data such that each step informs and sharpens the other (ibid.). After the initial broad data collection, researchers in GTM can become successively more targeted and this targeting is borne out of the increasing knowledge and insights that the researcher has managed to acquire through this iterative process.

While KDD undergoes a similar process of targeting a dataset based on the problem definition, a level of control has to be exercised on the breadth and quantity of keywords targeted for analysis. While the aspect of conscious choice is inherent in both systems, the theory is seen to emerge from the mining

aspect of data in KDD unlike the iterative learning aspect in GTM. In addition to deduction, the process in KDD may also involve induction or abduction. While deduction and induction are well known, abduction is defined by Charmaz (2014) as a method of reasoning where the data is first scrutinized and then all possible hypotheses are entertained, and methodically confirmed or disconfirmed until the most plausible explanation is found. Especially with the mining of Big Data, it is critical to avoid premature theories formed through induction or suffer from the stress of too much data and too many options in the case of abduction (Dalcher, 2015).

2.1.6 Application of Big Data in Practice – Some Considerations

The opportunity for business leaders to embrace Big Data is significant. “While most managers probably realize that powerful messages lie within the mess of Big Data, many don’t know that these messages can be extracted relatively easily using the right techniques” (Bendle and Wang, 2016, p.123). As is well known, social media is one of the first places where marketers have started to see the benefits of Big Data. Social media and cloud computing can help marketing researchers access a vast number of opinions in real time, and the findings can be used to quickly create and deploy marketing tactics. The tactics that have been pioneered by e-business giants such as eBay and Amazon have shown the success of such an approach in scaling up large e-tailer platforms to provide micro-targeting for advertising, merchandising, pricing and marketing campaigns (Bello-Orgaz, Jung and Camacho, 2016). As these e-tailers come to understand their “connected customers”, Big Data enabled fulfilment systems can provide an equalizing platform by which any company can provide the same level of customized and personalized customer service as a recognized leader in the field, such as Zappos (Taylor, 2014).

As an extension of this, marketers can also transform the process of marketing at “moments of truth” at a much more universal, yet at the same time micro-customized basis to almost signal the advent of “personalized media” (O’Neal, 2016). In addition, it provides (1) open and relatively unlimited access to social attitudes and behaviors that have not been documented in the past and (2) freedom from having to draw representative samples when it is easier to just read the entire stream of data (McFarland, Lewis and Goldberg, 2016).

On the flip side, automation and algorithms that seek to organize and present Big Data to the user can create information “ghettos” as has been recently observed in the case of Facebook and other platforms serving up news that they assume each reader wants to see (Klous and Wielaard, 2016). While “datafication” has transformed the quantification of online data for tracking, the recent focus has been on ways to use data to predict future behavior (Cukier and Mayer-Schoenberger, 2013).

Thus, a line of thought goes as follows – rather than focus on the past behavior of consumers, marketers should look for ways to predict (and influence) their future behavior. This has been called “life mining” defined as a process of mining predictive insights from the “digital trails” left behind by past behavior (van Dijck, 2014). Such a “life mining” opportunity using Big Data is provided by the increasingly comprehensive capture of online activity across various channels.

There is also an element of social exchange involved in this process. While using fee-free social media platforms such as Facebook, Yelp, Twitter etc., users freely share certain aspects of their personal information and behavioral habits in exchange for receiving tailored services from companies that aggregate, measure and monetize this data stream. On the other hand, there is also a rising trend to preserve net anonymity and some users are investing in applications to protect their online privacy (ibid.). While mining this vast trove of data, companies and researchers are faced with questions about privacy, bias, historical relevance, and ethical issues of sharing, saving and manipulating data. Similarly, in the “barter” of data for services, people may be more willing to share data for research or certain social causes but not for purposes of marketing or business. This is an area where social sciences can work hand in hand with marketing and data science to create a more holistic world view of Big Data and the people behind the data (Franke et al., 2016).

2.1.7 A short note on Privacy and Big Data

The issue concerning privacy in the context of Big Data is an entirely rich field of study in itself and it is clearly not within scope of the ambitions of this thesis project. However, at the time of final submission of the document, Mark Zuckerberg of Facebook has just been deposed in front of the House and Senate committees of the US government on the issue of privacy. Due to its topicality, a short note on privacy and Big Data has been appended here.

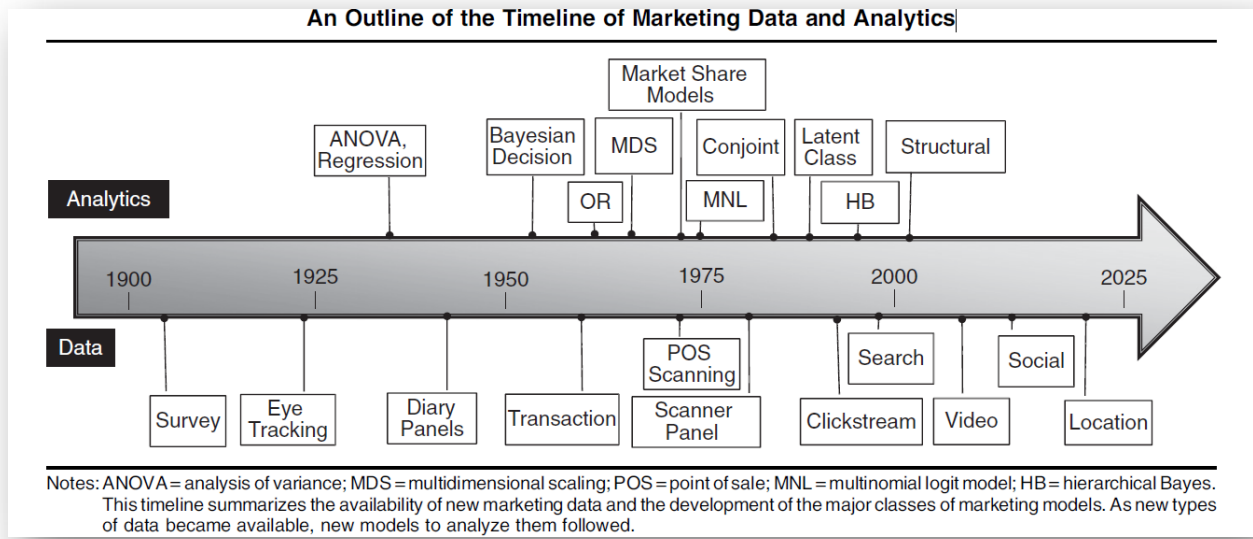
Neef (2014) popularized the catchphrase “Digital Exhaust”, referring to the large amount of digital information that is thrown out by our computers, cellphones, and online activities as we increasingly live our lives in the digital world. Large portions of this “digital exhaust” are captured, analyzed and often monetized by companies such as Facebook, Google, Amazon etc. According to Altman et al., (2018, n.p.), “Different characteristics of data may combine to create privacy risks, and the effects are often cumulative and superlinear”. The interplay between privacy and content dissemination has seen repeated changes in regulation as well as user behavior (Hargittai, 2010). As lay consumers struggle to understand and control these risks, they are adopting one of two postures (1) market avoidance, where a small but growing section of consumers is choosing to withdraw many aspects of their digital footprint and (2) market assimilation, where a larger group of consumers are adopting a risk-balanced approach to sharing or hiding their data (Baruh and Popescu, 2015). A framework for due process is sorely required, and this requires a judicious mix of safe habits by consumers, self-regulation by the companies and “fair and feasible” regulations by the lawmakers, and a foundation is provided by Crawford and Schulz (2014). The author foresees the issues of privacy becoming increasing relevant and ponderous in the years to come.

As use of data has matured and the research and insights process has adapted to new ways of helping managers understand what is possible with Big Data and how it can add value, my review now turns to the effects that Big Data has on the decision-making processes in the marketing organization.

2.2.0 Decision-making processes in the Marketing organization and the Effects of Big Data

Over almost a century, decision-making has evolved within the marketing discipline. Initially, simple statistical methods were used to describe business conditions, then in the second stage, models based on psychology, sociology and economics were brought in to provide actionable insights. In the third stage of evolution, modeling started to get more sophisticated with the addition of econometric and operational research paradigms. As technology provided access to new data, the analysts and modelers stepped in with new methods to mine and analyze the data for economic profit. Figure: 2.3 is a very comprehensive table provided by Wedel and Kannan (2016):

Figure 2.3: Timeline of Marketing Analytics, by Wedel and Kannan (2016, p.101)



The more traditional market research methods such as focus groups, in-depth interviews, in-person, telephonic and online surveys tend to be more limited in scope, more expensive and take more time to conduct. In these studies, the number of questions that are asked is constrained by time and cost and hence considerable skill is required to design and interpret such research. Also, the limited forms of communication place a constraint on getting adequately verbalized responses from the consumers.

Big Data can overcome some of these shortcomings by aggregating and integrating data from multiple sources, channels and situations to stitch together a more holistic picture (Bendle and Wang, 2016). In so doing, marketing organizations are having to adapt to a shift in the decision-making paradigm from a more subjective basis to a greater reliance on data. As Big Data “tells new truths” that were not previously accessible, it is also questioning some of the established decision-making techniques such as gut feel, subjective data etc. (Bennett and Turgoose, 2016).

In organizations, the use of marketing data has changed alongside how the decision-making process has evolved. The more traditional marketers, especially in mature industries, are simply avoiding the challenge. Others in more progressive firms are openly experimenting with the possibilities of Big Data analytics and are considering organizational, procedural and cultural changes to benefit from the new

advances in this field (ibid.). In today's marketing function, these Big Data analysis tools are widely used for consumer segmentation, media targeting, product development, pricing, customer acquisition, customer relationship management, customization and personalization, marketing investment returns, portfolio planning, trade and consumer promotions, search engine optimization, search engine marketing, public relations, word of mouth marketing, content design and delivery, just to name a few.

This evolution is especially relevant in the evolving world of digital services and e-commerce, where value creation and value capture can occur in different places in the ecosystem; e.g. online versus in factories, and mobile phones versus cash registers (Bharadwaj et al., 2013). Even so, several authors including Ahmed (2015) stress the evolving nature of this field, pointing to a significant number of failures as well as successes that occur as marketing leaders experiment with embracing, understanding and acting on Big Data.

2.2.1 Application of Big Data in Marketing Decision Making - Challenges

In the previous section, a general mention has been made of the various challenges that are encountered in using Big Data in decision-making processes. At this juncture, a deeper examination of these challenges is warranted, specifically from a marketing leader's perspective. Traditionally, marketing leaders have applied both emotional and scientific approaches to decision making (Simon, 1987). Data-driven decisions in marketing have followed a deductive method of (1) creating hypotheses (2) setting up models and (3) testing. In such a "hypothetico-deductive" process, a balance of professional expertise and experience-based imagination are used to create hypotheses, the consequences of these hypotheses are developed out by a deductive process and then these are tested and validated by experimentation (Lawson, 2005).

With the emergence of Big Data, marketing leaders are reconsidering this approach. Erevelle, Fukuwa and Swayne, (2016) suggest that "inductive reasoning" and "partial ignorance" can be used to produce actionable insights using Big Data unlike "deductive reasoning" that has been used with "small data". "An ignorance-based view (vs. a knowledge-based view) coupled with inductive reasoning techniques" can pave the way for different insights that might be yielded from existing knowledge paradigms (ibid., p.6). However a cautionary argument can also be made along the following lines (ibid.): One should not

be swayed just by the bigness of the data since bias, representativeness and relevance need to be considered as well. Secondly, the analytical protocols for the computing process have been created by the programmer with some theory or framework in mind, and whilst this may not be visibly apparent to the end-user (researcher) it is still there (ibid). A cautionary view of the future is provided by Fan and Bifet (2013) where they articulate the ongoing need for an analytical architecture, monitoring statistical significance of the conclusions of Big Data, use of evolving data over time and appropriate visualization of the data.

Marketers are used to explaining the complexities of human behavior in terms of causal forces because causation helps to understand and inform the steps that may be taken to manipulate that behavior. But this process of causation is complicated in the case of Big Data due to the possible existence of “additional and mostly uncontrolled confounders and covariates with correlations among them, and between them and the identified variables” (Shiffrin, 2016, n.p.). When data from multiple channels and sources are aggregated, the marketer is acknowledging the complexity of the real world with large, interacting ecosystems and this makes causality even more difficult to pin down (Kambatla et al., 2014). Another challenge is highlighted by Varian (2016). In statistical paired studies, causality can be determined by comparing a test sample to a control sample. In the case of Big Data such as click stream or social media flows, there is no test group and control group, hence it is not as clearly apparent how the “factual” may be tested against the “counterfactual”.

Psychologically, when a Business Intelligence analyst walks into the Chief Marketing Officer’s room with reams and reams of Excel tables and graphs, it is easy to get overwhelmed by the size of the data and accept all of it at face value. At the same time, it is possible that the data analyst is under severe pressure from his client to “tell a story” with their data. This is where marketers need to be wary of spurious correlations that were touched upon in the previous section. According to Klous and Wielaard (2016, p.108), “If you recklessly abuse the calculation power of a computer, you will come to many conclusions that are not very relevant or that are even misleading”. Hence the data analysis has to be filtered through three levels – firstly the computation or “number crunching”, secondly analysis by the data scientist and thirdly, the generation of real-world, relevant, actionable insights generated in partnership between the analyst and the end-user or marketer. The latter step is essential to

understand and interpret the results in a meaningful manner. In the author's experience, some teams do this well, but many teams only too often operate in functional silos, resulting in irrelevant reports gathering dust.

The last aspect of Big Data in marketing that is considered here relates to velocity as is exemplified by the concept of "Nonstop Consumer" a term coined by Accenture Consulting (Purcărea, 2015). This term refers to the consumer of today who is accessing multiple digital channels to examine options, reading online sure reviews, conducting online comparison shopping and seeking online resolution for returns etc. This consumer behavior manifests in switching between manufacturers/retailers, constant monitoring for new offerings, placing high hurdles on first level resolution of issues, multichannel shopping behavior, and results in marketers facing non-traditional competition (e.g. Gillette vs. Dollar Shave Club, Restaurants vs. Grub Hub). Accenture's response to these trends is to suggest that marketers evolve into a "multispeed customer organization" focusing on the ecosystem rather than the internal company (ibid.).

The challenges described above can be illustrated when considering some topical issues that are relevant to the practice of digital marketing. While the effect of algorithmic decision-making has produced immense improvements in productivity, it has also created new challenges for social media and advertisers (Bakshy, Messing and Adamic, 2015). Content sites such as newsfeeds routinely target content based on the viewing patterns and subjects of interest to the online media consumer, as determined through constant tracking and use of algorithms. However, when "algorithmic gatekeeping" is used to make decisions involving political, social and interpersonal matters, the differences between machine intelligence and human brain processes become very important (Kireyev, Pauwels and Gupta, 2016).

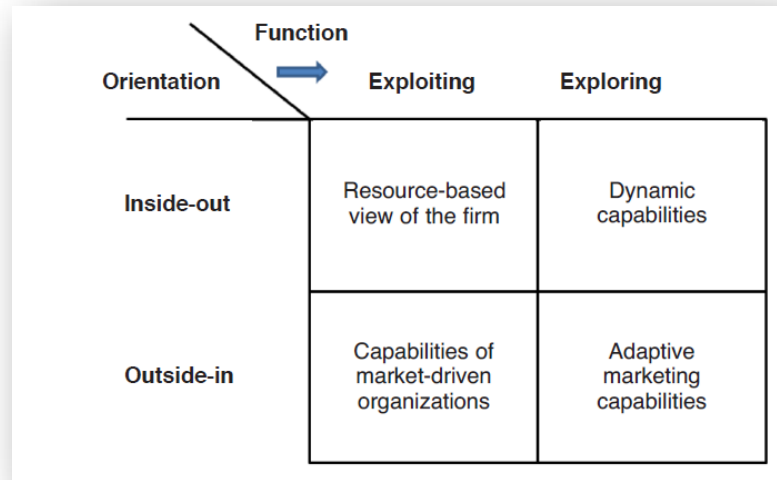
Algorithmic decisions can lack transparency, invade on personal privacy and can lead to goal-seeking optimization where the correlation is determined by a model that has no clearly apparent logic. Modelling by guessing or latent trait modelling leads to socially unacceptable and politically incorrect outcomes that can cause great harm to the company's reputation (Tufekci, 2015). Another example of challenges in Computer Mediated Environments (CME) in Marketing is in the area of dynamic

promotional pricing (Yadav and Pavlou, 2014). Today, marketers have the ability to set promotional prices that vary frequently based on factors like competitive pricing, demand patterns etc. Pauwels and Weiss (2008) concluded that customers react to online price promotions by making short-term commitments, while customers acquired through emails or blog content based on providing information tend to make commitments for the longer term. Heterogeneity of prospective customer segments can also lead to challenges with automated pricing models where the brand image and perceived product value can be inadvertently compromised (Kannan, Pope and Jain, 2009; Xie and Shugan, 2001).

2.2.2 Big Data – Effect on Marketing Capability Development

This increasing interactivity further influences the evolution of the capabilities that are required in the marketing executive. As use of analytics becomes more predictive, normative arguments by Day (2011) suggest that marketing needs to be more adaptive.

Figure 2.4: Evolution of Marketing Capabilities, by Day (2011, p. 187)



The traditional resource-based view of the firm emphasized the role of exploiting the products or services created inside the firm. The organic innovation approach focuses on the exploration role but still with an inside-out emphasis. The term, dynamic marketing capability has been used to refer to the firm’s ability to integrate and reconfigure internally to address external changes (Teece, 2007; Barrales-Molina, Martinez-Lopez and Gazquez-Abad, 2014). Day-to-day marketing in the digital age with Big Data would be classified as outside-in using real time data streams from Google Analytics etc., but still in a mode of exploiting the current portfolio and customer profile or running the “business of today” (Day and Malcolm, 2012). A true adaptive marketing approach would involve an explorative phase guided by outside-in data or creating the “business of tomorrow” by anticipating and leveraging trends before they occur (ibid.). In order to better adapt to market complexity, technological transformation and creative competition, three adaptive capabilities are suggested by Day (2011): (1) market learning that creates deep insights to anticipate structural market changes, emerging trends and unmet needs, (2) adaptive experimentation and a process of continuous learning and (3) open marketing that creates networks with channels and partners.

A further nuance to adaptive capabilities is provided by Krush, Sohi and Saini, (2015) in making a distinction of “outside-in” as (1) from outside the marketing function within the company and (2) from outside the company itself. Intra-organizational dispersion represents the effect that non-marketing

employees within the company (in other departments like finance, sales, production etc.) have in influencing and enhancing the marketing capabilities of the organization.

On the other hand, inter-organizational dispersion refers to the effect that outside entities in the ecosystem such as customers, distributors, vendors, consultants and other firms have on the marketing function. These influences could result in decisions such as product development, media planning, make/buy/partner sourcing decisions etc. Inter-organizational dispersion was found to positively affect the perceived influence of marketing and integrating external partners into marketing function and processes also allow the marketing department to demonstrate its value as a knowledge integrator and growth driver (ibid.). Dispersion also has a beneficial effect on fostering innovation. Innovation is closely linked to creativity and autonomy. The productivity of creative teams is enhanced by the skills of the individual members, the team's group dynamics and the environment in which they operate (Cirella, Radaelli and Shani, 2014). Creative teams tend to flourish when there is transformative leadership, a supportive organization and lack of tactical time pressure (ibid.). The latter point is interesting to note against the scenario of rapid availability of Big Data.

A dispersed leadership culture also positively affects innovation as illustrated by Whittinghill, Berkowitz and Farrington, (2015) with the example of "Command by Negation" in the US Navy by which a local commander is presumptively accorded relative freedom to conduct operations that fall under their area of responsibility, until such time as they are directed differently from headquarters. A similar culture of "freedom within a framework" is practiced in one global Fortune 100 company as experienced by the author, where line employees are allowed to improvise within specified guidelines. Weil, Sabhlok and Cooney, (2014) propose that inter and intra-organizational dispersion can be created when leaders provide incentives to internal teams and external partners to take measured and meaningful risks, in order to adapt and respond to trends at an early stage. Based on a case study from the biofuels industry in USA, open organizational systems with a culture of dispersion and sharing of data and influence are shown to be more adaptable and innovative than more closed, organizations that operate in functional silos (ibid.).

In conclusion, even as initial research seemed to suggest Big Data provided an easy and obvious solution to managers, progressive researchers have been engaged in understanding the nuances of organizational challenges encountered by marketers. The following section further focuses the scope of the review to extant literature that explores the less-than-rational side of decision making and examine whether intuitive decision-making still has a role to play in the era of Big Data.

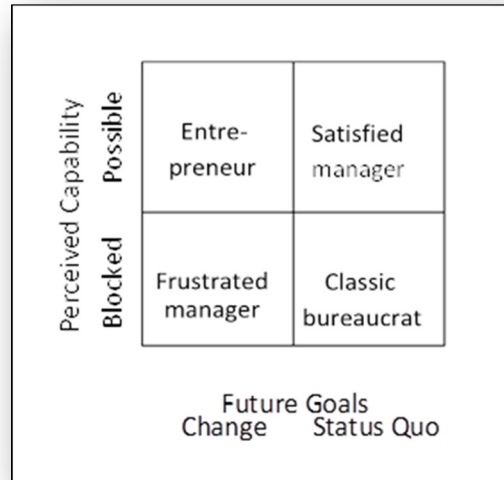
2.3.0 Revisiting the role of intuition and its place in decision-making processes among Marketers

The way Big Data is evolving today, there is a big emphasis on rational data-driven decision making. This thinking works very well when dealing with the transactional levers of marketing such as pricing, promotional offers etc. However, it is also worth noting that this rational data is actually being used to understand and predict human behavior. Social sciences have long looked at the objective as well as the subjective sides of the human brain, where decisions can be made using a complex mix of rational information and emotional or subjective feelings. It is therefore possible to find both scientific and artistic approaches to marketing (Kucuk, 2017). Creative thinkers are more adaptable to the fast-changing world (Rosenberg, Firstenberg and Seager, 2017), and as such, there is a need to balance the march of progress of data-driven marketing with the complementary side of intuitive marketing based on creativity, sensing and feeling.

Depending on the organization, the Marketing team plays some combination of two different roles – firstly, that of a functional expert in Marketing Programs, seeking to support the business goals through efficient marketing. The key metrics of success in this role are usually functional in nature, such as brand impact indices, return on advertising spend, communication reach and frequency etc. (Farris et al., 2016; Mintz and Currim, 2013). While these have an arm's length correlation to business results, many marketers at this end of the continuum are not directly called to deliver hard business metrics such as revenue, profit etc. At the other end, in several progressive companies, marketers take on the mantle of quasi-general managers who are firmly tasked with meeting revenue and profit goals through matrixed leadership of all cross-functional activities for their product or brand that result in organizational

success. Based on the author's own substantial experience as a growth and innovation leader, and based on the current workplace environment which is based in the tech sector, this thesis is aimed more at such marketers, who take a far more entrepreneurial view of their role within the company rather than a functional view. This role of the marketer as an internal entrepreneur can be perceived through the classification provided by Stevenson and Jarrillo-Mossi (1986) in Figure 2.5:

Figure 2.5: Managerial Roles, by Stevenson and Jarrillo-Mossi (1986, p. 11)



Several progressive companies provide the freedom and ability for marketing leaders to change the status quo, and the Chief Marketing Officer is formally or informally tasked with playing the role of the Chief Growth Officer. Thus, teams within such companies (including the author’s organization), escape the “tyranny of stagnation” brought by the maturing of markets, by seeking to foster a spirit of “intrapreneurship” or entrepreneurship within the business context (Kolchin and Hyclak, 1987; Pinchot III and Pellman, 1999). Therefore, a significant portion of the marketing leader’s responsibility can be characterized as “business not as usual” while the rest of the time is focused on keeping the business running or “business as usual” (Mitroff, 1987; Adams, Bessant and Phelps, 2006). In such situations, scholars and practitioners of marketing will be well served to look beyond the strict definition of data-driven decision making.

Detractors of purely rational decision-making argue that it has been empirically shown to have about a 50% rate of success, or no better than a coin toss (Nutt, 1999; Sinclair and Ashkanasy, 2005). Even when data may be available, the great speed and quantity (velocity and volume of Big Data) may create stress for the decision-making human being who is constrained by time pressure, processing power of the brain, ability to concentrate etc. Hence several researchers suggest a more holistic and inter-disciplinary discussion about decision-making that encompasses both rational data sources as well as intuitive knowledge (Calabretta, 2016; Eling, Griffin and Langerak, 2014; Magnusson, Netz and Wastlund, 2014).

From the author's experience, it is clear that many data-driven executives feel very uncomfortable with this suggestion. Hence, it is worth a more detailed examination of what intuition is and what this decision-making process requires of the executive. As this is an area which was widely discussed a few decades ago, it is also interesting to overlay this concept against Big Data which came into prominence only in the current decade.

Intuition as a term has occasion to be misused as well as misunderstood, so a clear definition of how the term is used in this thesis is provided as follows. Crossan, Lane and White (1999) describe intuition as the "preconscious recognition" of either opportunity areas and/or patterns. Intuition does not represent an attempt at random guesswork or refer to a sixth sense from a "black box", rather, experts distinguish intuition as a form of reasoning (not guessing) that is based on "chunking" (Khatri and Ng, 2000; Hammond et al., 1987), that is carefully cultivated through a person's professional experience and subject-matter expertise. Three terms that are often interchangeably misused are clarified by Hodgkinson et al., (2009) as follows. (1) "instinct" refers to an "autonomous reflex action", for example, the natural instincts of homing pigeons, (2) "insight" refers to an "aha" moment when a novel solution is presented in the mind for a previously unsolvable issue, as a result of a fresh look at the same data, for example, the fabled "Eureka" moment when Archimedes had an insight about buoyancy while in the bathtub, while (3) intuition is an "effectively charged process of judgment" based on "quick, holistic and non-conscious association".

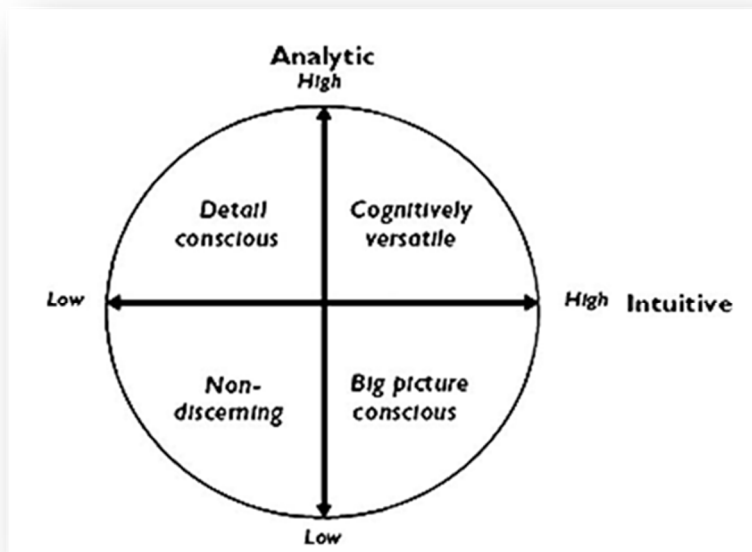
Thus, intuition is specifically endowed with rationality and reasonableness and is a product of how the human thinking process works in the mode of System-1 thinking which involves rapid, unconscious processing as different from System-2 thinking which is a more deliberate and slow process (Stanovich, 1999; Salas, Rosen and DiazGranados, 2009). These two thinking processes have been identified through magnetic resonance imaging (MRI) studies in neuroscience and are said to work through the activation of mirror neurons in system "x" versus system "c" of the brain as indicated by Akinci and Sadler-Smith, (2012), in neuroscience, and through the Cognitive-Experiential Self-Theory (CEST) (Epstein, 2010) in psychology. There have been further attempts to classify intuition as historic pattern-recognition based "expert" intuition or exploitation, and future opportunity-exploration based "entrepreneurial" intuition. They are also explained by the Naturalistic Decision-Making model (NDM)

and the Fast Frugal Heuristics (FFH) model (Crossan, Lane and White, 1999; Klein, 2015; Moxley et al., 2012; Reyna and Brainerd, 2011). Experts are shown to be able to use schemas to gain insights that are invisible to less experienced “novices” by discerning patterns, discriminating between data and noise and by thinking several steps ahead regarding potential consequences (Okoli, Weller and Watt, 2016).

Further examples of empirical studies are provided in order to demonstrate the legitimacy of intuition as a concept and shed light on some of the factors that contribute to intuitive decision-making.

Organizational size and the level of turbulence or uncertainty in the system have been shown to be predictive of effective use of intuition (Elbanna, Child and Dayan, 2013). Rusou, Zakay and Usher, (2013) conducted a study among college students in Israel, where pictorial exercises were shown to activate the intuitive thinking process, as opposed to numerical exercises which tended to activate the rational thinking process, a finding also confirmed by Dane, Rockmann and Pratt, (2012) who determined that intuition is preferred to analytics when working with “non-decomposable tasks”. An example given is that expert golfer players play their putting shots better when they are doing it intuitively than when asked to conduct a systematic analysis of their process of putting (ibid.). German chess-players studied by Moxley et al. (2012) showed that experts make rapid decisions by using intuition, whereas novice players can work their way to arriving at a similar decision by step-by-step use of deliberation when there is no time constraint placed on them. A study by Pachur and Spaar (2015) in Switzerland, revealed that executives practice a mix of the two decision-making styles and the level of fit of the manager’s thinking style with the organization’s accepted style is a predictor of the length of employment and the performance rating of the employee. Empirical studies by Sjoberg (2003) indicate that respondents rely more on intuition for personal decisions that have greater risk and controllability but prefer a more deliberate decision-making approach for professional decisions (non-personal) decisions which lower perceived personal risk but also lower controllability. Hodgkinson et al. (2009) suggest the following classificatory framework of decision-making personality profiles in Figure – 2.6:

Figure 2.6: Framework for strategic decision-making styles, by Hodgkinson et al. (2009, p. 288)



In this framework, executives who are able to exercise a mix of both analytic and intuitive skills (depending on the situation), are termed “Cognitively Versatile” while those that display a higher level of analytic abilities alone are termed “Detail Conscious” and those that display a higher level of intuition alone are termed “Big Picture Conscious”. These labels are fairly self-apparent, so further explanation is not provided here. Furlan, Agnoli and Reyna (2016) have found that decision-making when under pressure (usually time-related) depends more on fast, intuitive methods but these are overlaid with cognition, intelligence, reflection and objectivity in the case of trained experts.

Psychologists have attempted to address the cognitive aspect of intuitive decision making through the study of mental representations of the perception of the situation or problem at hand (Dane and Pratt, 2007). Intuition processes using mental short cuts or heuristics have been shown to reduce complex problems to a simpler state of judgement (Tversky and Kahneman, 1975). Pattern-matching processes can lead to a model of expert intuition as described by Baylor (2001).

Ill-defined problems require a more heuristic decision-making approach as opposed to well-defined problems that can benefit from a more linear analytical approach according to Hayashi, (2001). There

are two kinds of mental representations based on Fuzzy Trace Theory (FTT). “Verbatim representations” refer to literal perception of the problem at a surface level, while “gist representations” refer to the deeper understanding of the bottom-line sense of the situation. While the former tends to be quantitative and precise, the latter tends to be qualitative and amorphous. The gist representation is formed from a combination of lived experiences, world view, culture, emotion, empathy etc. (Reyna and Brainerd, 2011). Age and experience have been shown to augment gist-based thinking (Reyna, Weldon and McCormick, 2015). As a theory, FTT has groundings in psycholinguistic aspects of information collection, retrieval and processing. In this representation, there is a continuum from the most precise verbatim to the most fuzzy gist (Corbin et al., 2015) and it is interesting to compare this approach to data collection, processing and analysis approach of data scientists (Cukier and Mayer-Schoenberger, 2013; Dalcher, 2015).

In the case of experienced decision-makers, the choice of approach used is dependent on the situation. The traditional approach has been based on the concept of “expected value”:

$$\textit{Expected Value of Decision Option} = \textit{Magnitude of Probability} \times \textit{Size of Pay-off}$$

However, with FTT, more thoughtful decisions depend on the “categorical contrasting” of verbatim and gist representations rather than on a simple expected value of the decision option (Reyna, Weldon and McCormick, 2015). This is an area where expert human decision-making will differ from the mathematically calculated pay-off based decision model used by artificial intelligence devices such as driverless cars, at least in the current state of the technology (Bonnefon, Shariff and Rahwan, 2016).

Having established the role of cognitive intuition in the marketing decision-making process, we now consider how the role of the marketer evolves as they come to balance the fast-evolving canvas of Big Data while allowing room for intuition to play an appropriate role.

2.4.0 Evolution of the role of the Marketing Executive in the context of Big Data and Intuition

As techniques in marketing data collection and analysis have evolved over the decades (as seen earlier in Figure: 2.3 from Wedel and Kannan (2016)), marketing executives have sought to develop their skills and adapt their decision-making techniques to these new changes. The table in Figure – 2.7 from Kumar (2015) illustrates the possibilities available in every aspect of the marketing process:

Figure 2.7: Evolution of Marketing Themes, by Kumar (2015, p.2)

Timeline	Prominent Theme(s)	Predominant Metaphor	Triggers for the Themes ^a
1936–1945	Illuminating marketing principles and concepts	Marketing as applied economics	<ul style="list-style-type: none"> •Understanding of marketing principles through case studies •Need to comprehend government legislation and trade regulations •Marketing research topics and implications for marketing practice
1946–1955	Improving marketing functions and system productivity	Marketing as a managerial activity	<ul style="list-style-type: none"> •Accountability of marketing functions and system productivity to marketing theory and science •Focus on the growth of marketing discipline •Identification of marketing functions and deciding on the definition of marketing
1956–1965	Assessing market mix impact	Marketing as a quantitative science	<ul style="list-style-type: none"> •Focus on marketing theory development •Transition into analytical studies •Interest in statistical quality control
1966–1975	Uncovering buyer and organizational processes	Marketing as a behavioral science	<ul style="list-style-type: none"> •Need for establishing clear agendas for the marketing discipline •Articles highlighting directions for further research •Spotlight on marketing practice through <i>JM's</i> "Applied Marketing" section
1976–1985	Crafting market/marketing strategy	Marketing as a decision science	<ul style="list-style-type: none"> •Refocus to a "scholarly professional journal" through editorial policy changes •Emphasis on theory development and understanding market structure •Outlook toward the use of quantitative techniques in marketing
1986–1995	Identifying market/marketing contingencies	Marketing as an integrative science	<ul style="list-style-type: none"> •Use of sophisticated empirical techniques •Emergence of conceptual frameworks of marketing phenomena •Use of interdisciplinary knowledge
1996–2004 ^b	Customer profitability studies and resource allocation efforts	Marketing as a scarce resource	<ul style="list-style-type: none"> •Developments in database technology •Ability to capture individual customer data •Analyses performed at the individual level
2005–2012 ^b	Marketing accountability and customer centricity	Marketing as an investment	<ul style="list-style-type: none"> •Technological advancements •Deeper customer insights to aid marketing initiatives •Marketing investment activities directed at the customer level
Emerging (2013–present) ^b	Marketing at the core and new media influence	Marketing as an integral part of the organization	<ul style="list-style-type: none"> •Changes in media usage patterns •Focus on marketing efficiency and effectiveness •Firm value generated by engaging stakeholders of the firm

^aMy interpretations added to Kerin's (1996) categorization.
^bMy extension, based on the developments in the marketing discipline.
 Notes: I adapted and updated this table from Kerin (1996).

In the thirties, companies started grappling with the idea of influencing demand and supply economics through basic marketing levers. The next two decades saw a clearer evolution of functional expertise in various aspects of marketing such as conducting market surveys, setting prices, and understanding product value. With the advent of the "4 P's of Marketing", marketing mix and modelling became possible and the concept of input-output modeling took roots (Kotler, 2005). In the seventies, attention shifted towards the behavioral discipline behind the customer journey and the buying and selling processes, and marketers experimented with tactics that were designed for different stages in the chain. The nineties saw the evolution of more sophisticated quantitative measurements and empirical techniques as well as interdisciplinary models. The rise of information technology in the last 25 years has led to database driven marketing, measurement of marketing efficiency and effectiveness and sophisticated quantitative models for pricing, demand etc.

Finally, the last decade has seen the rise of digital marketing, machine learning and Big Data driven multichannel, multimedia, yet highly targeted and customized marketing of products, offers and messages (Bartels, 1988; Hollander et al., 2005; Kotler, 2005; Kumar, 2015). Each of these progressions has created changes and expansion in the role of the marketer, the functional expertise required to do the job and the competencies required to be successful in the role.

In the same vein, the emergence of Big Data is starting to create fundamental changes in the role of the Marketing leader. Looking at the responsibilities of a Chief Marketing Officer (CMO), Day and Malcolm (2012) draw out the divergence between responsibilities of “delivering the results of today” and “creating the business of tomorrow”. The former or day-to-day management of results requires the CMO to rely upon “proven, predictable, repeatable” processes and a toolkit that can support efficient execution and flawless delivery, through simplification of routines and decisiveness of action. In contrast, creating “the business of tomorrow” requires the ability to demonstrate and create a culture of divergent thinking, adapting to external changes, experimentation and creativity in taking measured risks. Horst and Duboff (2015) refer to this as “the classic tension for CMOs” in finding the right balance between “short-term revenue pursuit and long-term brand building”. As mentioned before, the state of the art in Big Data provides the expertise to engineer short-term outcomes with precision and speed.

As companies get more and more dependent on this steady flow of data, it becomes more challenging for the CMO to go in and defend a longer-term investment where the returns are undefinable and do not have the same level of precise data to justify the action. As today’s market gets defined by non-linear, high speed change, so also the knowledge about the market is being created, disseminated and even rendered obsolete at an increasingly rapid rate. Competitive advantage of one moment can become a commodity in the next moment. Hence marketing and business leaders have to evolve their value creation approach from “knowledge-based application” to “creativity-based transformation” (Erevelles, Fukawa and Swayne, 2007). Paradoxically so, Big Data’s emergence may actually require CMOs to rely on their intuitive decision-making skills more than ever before.

In a parallel observation from the unrelated field of experimental biology, Marder (2015) argues that intuition plays an important role in determining the mode of data analysis that will help the expert to

ensure their findings stay true to the essence of the research and help to warn the researcher from making erroneous conclusions that may arise from either bad data or bad analysis. This argument struck close to home for many marketers in September 2016 as they underwent much soul-searching regarding the consequences of misrepresentation of the metrics posted by Facebook (Leetaru, 2016). In this case, the large volume and perceived veracity of the data prevented experienced marketers from asking deeper questions that would have revealed that Facebook had changed the methods of measurement without informing the users of the data. While this was uncovered a few weeks later on media, many marketers had already made decisions and made investments with an erroneous understanding of the data that they thought was accurate.

As Big Data and big computing power spew out a large volume of analysis, these data points and analytical reports are turned loose on the marketing executives who have to make resource-allocation decisions based on data. These marketing executives are finally dependent on their human brains and human thought processes which have a limit on the volume of data that they can holistically absorb. As they then turn to advanced visualization and data display tools to help them absorb the Big Data, it is possible that impressive graphics may hide erroneous analysis, thus misdirecting the decision-making (Marder, 2015). On the other hand, intuition is a competency that is built through exercising “intelligent memory” (Bacon, 2013). Neuroscientists have shown that the human brain uses a complex compartmental system for storing information, data and memories of experiences. During decision-making, the brain overlays the data from the present with a search of the memory for past patterns. Then a fresh thought is created by combining the new and the old through “intelligent memory” (ibid.) which can lead to innovative decisions. Artificial Intelligence researchers are trying to mimic this process of the human brain, but as of the time of writing of this thesis, senior executives still rely on the human brain to make the final decision.

Satell (2014) warns against the “false choice” between data and intuition. The future marketing leader’s effectiveness has to come from not just technology or just intuition, but by integration of both. Scott Brinker, CTO of Ion Interactive is quoted as saying, “Big Data makes it cheaper and easier to test concepts, but marketing is still about coming up with the big idea. Algorithms are great at optimization, but terrible at imagination” (ibid., n.p.). The marketing leader can use this combination to (1) identify

the critical business questions, (2) set the appropriate business goals and (3) lead the organization towards transforming the business. In an attempt to solve this dichotomy, Reynolds (2015) argues that “intuition *is* data” by pointing out that (at least at the time of writing), the human brain is one of the most potent and flexible computers available to us. The intuitive processes of the brain’s working have not yet been converted into algorithms. Hence a marketer’s human intuition and human curiosity should work together to take the Big Data to insight and then to action.

This combination of Big Data combined with Intuition has application in all aspects of the Marketing profession, as illustrated by Stone and Woodcock (2014) in Figure: 2.8. In each of these elements of marketing, a healthy interactivity between Big Data across disciplines and the marketer’s human skill can work hand in hand.

Figure 2.8: Evolution of Interactive Aspects of Marketing Processes, by Stone and Woodcock (2015, p.6)

Marketing Area	Examples of how interactivity affects each area
Marketing Mix	
Branding	The <i>locus</i> of many companies' brands has shifted from the real to the virtual world, while the brands of many others are strongly affected by what is said about them in the virtual world
Product	Customer input into product design (collaborative design) can be obtained much more quickly. Customers can design their own products more easily. Designs can be tested and revised more quickly, while problems can be identified and rectified more quickly and easily
Price	Prices can be tailored more easily to different customers. Yield management can be applied in many new areas
Advertising	Web site/mobile advertising is gradually usurping advertising in conventional media, allowing greater trackability and better assessment of return on investment. This is leading to a blurring of the distinction between advertising and other marketing communications methods
Direct marketing	Direct marketing has expanded out of the conventional media of mail and telephone to include virtually all marketing communications
Personal selling	Personal selling now has much stronger information support, while improved sales management systems, sometimes integrated with response management systems, allow much more effective targeting and management of customers and prospects
Public relations	Electronic word of mouth, or "word of mouse", is replacing conventional media exposure, not solely through social networks, but through all aspects of web and mobile dialogue. In some sectors, online reviews have become absolutely critical in determining whether a product will sell
Sales promotion	The effectiveness of sales promotions can be gauged much more quickly, while online channels facilitate distribution of coupons and other incentives
Distribution	The web has become a very important channel of distribution for many information-based products and services, as well as some physical products
Marketing management	
People	Marketing, sales and service people can be much better informed about what they need to know to sell and market better, and results of their work can be obtained and distributed more easily
Processes, data and systems	Marketing processes can be migrated onto systems, sometimes running on the "cloud", enhancing the effectiveness and speed of processes. Systems allow much better access to data required for decision making on everything from individual customers to strategic decisions, and then for measurement, review and calculation of return on investment
Market research	Market research is increasingly carried out online, while customer-initiated feedback is providing a new source of information on how customers think, feel and act

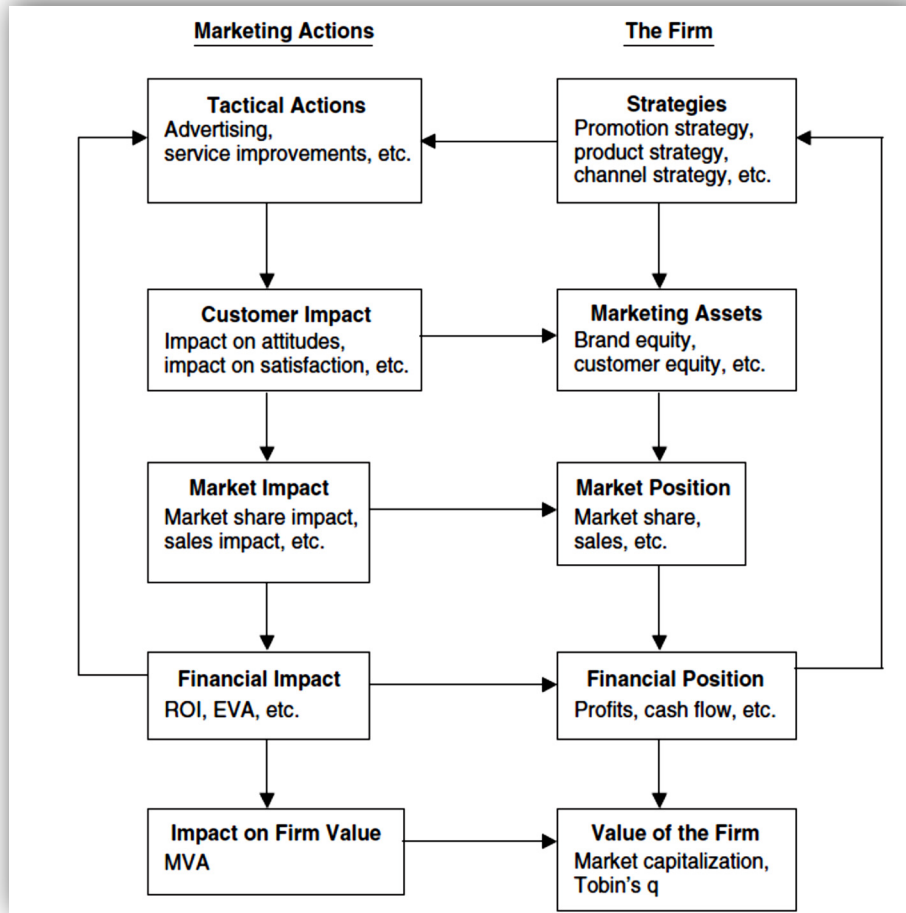
A few illustrations of the table above are included below. As brands move from the physical world to the virtual world, control shifts from the manufacturer to the user (Hudson et al., 2016; Schivinski and Dabrowski, 2016). Digital interactivity has led to collaborative design and co-creation (Frow et al., 2015).

In the field of pricing, dynamic yield management based on Big Data has been both applauded and pilloried (Alderighi, Nicolini and Piga, 2015; Carrier and Minnitti, 2016). Attribution models are getting increasingly complex as marketers try to make sense of the digital world and dynamic algorithms (Mathew, 2017). In each aspect of marketing, in addition to the creation of “knowledge assets,” marketers of tomorrow need to be able to understand and practice the concept of “imaginative intensity in the teams where the human imagination can flourish and grow along with Big Data. “We no longer are in a “knowledge economy.” We are in the early stages of the “age of imaginative intensity” according to Erevelles, Fukawa and Swayne, (2007). As the role of the CMO evolves in this environment of Big Data and dispersed marketing capabilities, in order to enhance the role played by the CMO as business leader, a dynamic partnership with a chief data officer or chief analytics officer is suggested by Purcărea (2015).

2.5.0 Potential Areas for Further Study and Application of Synthesized Frameworks

As they operate in a multidisciplinary field, it is no surprise that marketing managers use a spectrum of metrics ranging from attitudinal measures to financial measures to evaluate the efficiency and effectiveness of their various initiatives, and these diverse metrics and their effect on the company’s results are a cause of ambiguity and misinterpretation (Hanssens and Pauwels, 2016). This complexity is illustrated well in Figure: 2.9 (Rust et al., 2004)

Figure: 2.9 Marketing Productivity and Company Metrics, by Rust et al., (2004, p.77).

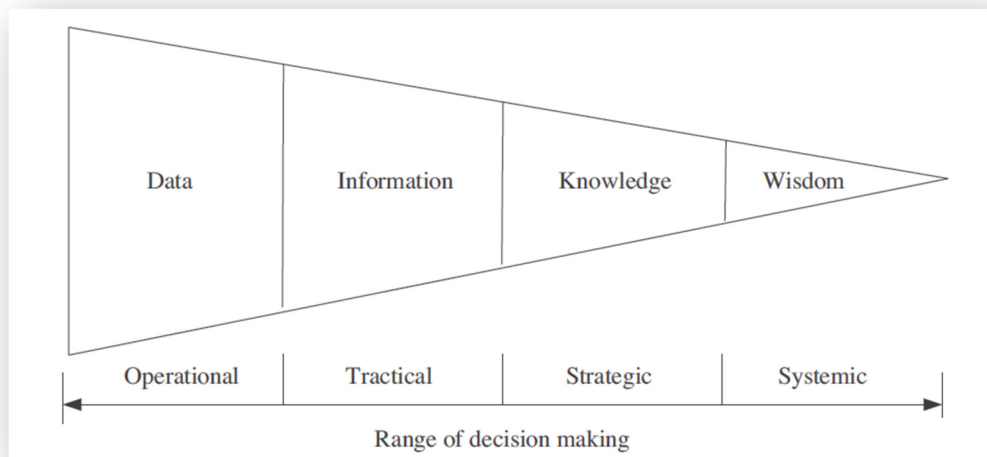


Given that our marketing (and business management) matters are concerned with multidisciplinary social, financial and psychological issues there is an opportunity to further apply theoretical perspectives from a more holistic and diverse position (Crane et al., 2016).

Is Big Data then the answer to the challenges of marketing as it strives towards the future? Despite being a comparatively recent domain, Big Data has produced a proliferation of publications in the last few years. Yet this scholarship remains at a very preliminary stage of investigation (Frizzo-Barker et al., 2016). Several gaps are identified. Firstly, conceptual papers soundly outnumber empirical papers 72% to 28% as of 2016 (ibid.). Secondly, a sizeable majority of the papers take the tone of very enthusiastic “evangelists” showing the world the infinite possibilities of Big Data. Based on the Gartner Hype Cycle (2015), Big Data scholarship has reportedly reached the “peak of inflated expectations, and is beginning

to engage in the second phase, the trough of disillusionment” (Ni, Xiao and Tan, 2016, n.p.). A more measured and balanced examination of Big Data can add to the existing knowledge base. Thirdly, a multidisciplinary approach of integrating data science, technology, decision-making, leadership and psychology can benefit practitioners of marketing who are seeking more holistic foundation of decision-making that can be applied in practice. Finally, the decision-making spectrum as seen from the perspective of Big Data analytics is provided by Wang et al. (2016) reproduced in Figure 2.10:

Figure: 2.10 Big Data Decision Making Framework, by Wang et al. (2016, p. 751)



There is an opportunity to extend this framework to encompass the decision-maker (the marketer) and a holistic view of the effects of other elements of the decision-making process such as intuition (Hodgkinson et al., 2009), marketing capabilities (Day, 2011) and the effect on teams through organization dispersion (Weil, Sabhlok and Cooney, 2014). The author plans to develop a practical toolkit based on these observations and informed by the expert interviews phase of the thesis project.

The problems observed in the workplace can be connected back to the literature review and the opportunity to create a fresh framework and apply it to an actual situation. As mentioned previously, such a framework can provide a perspective on issues such as (1) effects of attribution-based and dynamic goal-seeking algorithms on the quality of holistic decision making in various marketing channels (2) undesired effects of decision making based on correlation without apparent causality (3) the trade-offs between speed and quality of decision-making, specifically in the effect of creativity and intuition

used in the process, and (4) the relative balance of qualitative and quantitative insights and the role of visualization in leading to effective decision making.

2.6.0 Synthesis of multi-dimensional literature survey to provide relevance to subject of thesis

Unlike literature reviews that conventionally focus on one topic or provide a linear augmentative arc, the reader would have noticed by now that this particular chapter has embraced a variety of research areas including the evolution of marketing management, the emergence of big data, and the relevance of intuition and big data in strategic decision-making. Webster and Watson (2002) point out that there are two broad types of literature reviews. In the first type, the author typically works on a mature topic with a large body of historic research. In this situation, the author attempts a thorough review of extant literature and proposes a conceptual model that extends existing research. In the second type, the author typically focuses on an emerging topic that could gain benefit from a fresh theoretical approach and a multi-dimensional conceptual framework. This thesis under submission, straddles both these use cases by marrying together a mature area (intuition in decision making) with an emerging area (big data in marketing). As a result, this chapter is a merger of both approaches and hence requires an elastic mindset from the reader who may be biased by past templates.

An important outcome of this literature review is to also to support the “holistic” aspect of good marketing. Morgan (2012) argues for a holistic approach to marketing, applying cross-functional, specialized as well as dynamic capabilities to link the discipline of marketing to overall business performance. The study by Tollin and Schmidt (2015) finds “substantial, but not universal” support for the proposition that a holistic marketing mindset is more predictive of positive business outcomes as compared to a constrained marketing mindset that focuses on a limited area.

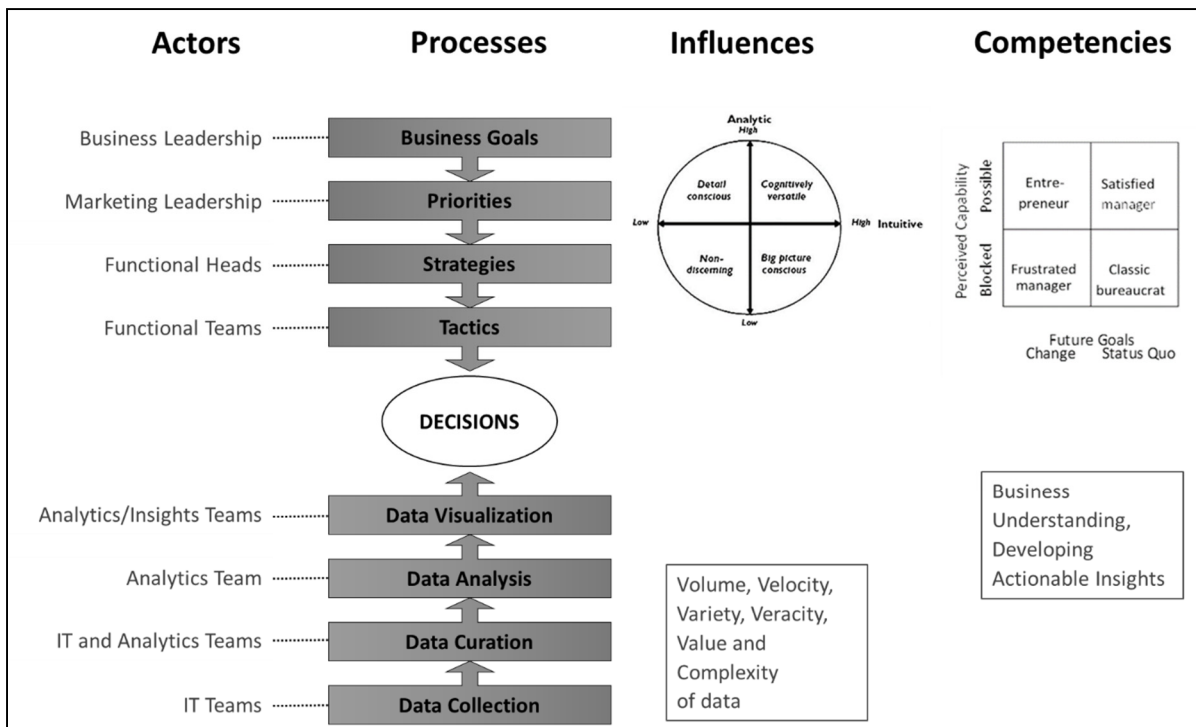
A similar theme emerges even as we look at the evolution of leadership in the marketing organization. Day (2011) points out the increasing marketing-capability gap when specialist functions are not holistically tied together in the organization. Culture, adaptability, flexibility and an integrated approach are also called out by Smith (2015) as essential to effective marketing decision making. Sheth and

Sisodia (2015) as well as Vernuccio and Ceccotti (2015) call on marketers to broaden their perspective in order to not lose their relevance in an era where the world is increasingly market-driven and globally competitive.

To put it succinctly, it is the viewpoint of this author that a diverse and multi-disciplinary literature review alone can lead to a synthesis of ideas that provides a holistic basis for improving the effectiveness of marketing. Based on the literature review, the synthesis has been developed in the form of a framework, which will be used as underpinning to guide the expert interviews in the first phase of research. This framework is presented in Figure: 2.11 below:

Figure: 2.11 Initial Framework Based on Literature Review

(Source: Synthesized by the author based on Wang et al., 2016; Stone and Woodcock, 2015; Day, 2011; Hodgkinson et al., 2009; Rust et al., 2004; Stevenson and Jarrillo-Mossi, 1986)



This framework attempts to capture the dynamics that are involved in the process of making marketing/business decisions based on large volumes of data that are made available to the business.

On the data side, the processes are illustrated from the bottom up as collection, curation, analysis and visualization. This process of information-to-insights is influenced by the distinctive characteristics of Big Data such as volume of data, velocity or speed, variety or diversity of data forms and sources, the value to the business and the complexity of the data. Actors from relevant functions of the organization get involved in the process, and these are identified as IT, analytics, insights etc. These actors are human beings, and as such, their own competencies on the job will positively or negatively affect their ability to provide quality, and these competencies could include an understanding of the business, and the ability to develop actionable insights out of a multitude of data points.

On the marketing side of the business, the processes are illustrated from the top down as setting of periodic business goals by the business leaders (three-year, annual, quarterly etc.), followed by the setting of priorities by the CMO, then these priorities being converted into marketing strategies by the functional heads of advertising, digital marketing, product marketing etc. and finally, the individual tactics or initiatives such as website optimization, email campaigns, new product launch plans etc. that are put into execution by the functional teams within marketing. The influences on this process are related to the decision-making framework of the marketing department, which is usually heavily influenced by the overall marketing approach of the larger organization, and involves the amount, timing and choice of use of analysis as well as intuition. Within the overall marketing department, the individual functionaries will make decisions based on their own competencies and approach to managing, such as an entrepreneurial approach or a bureaucratic approach.

The purpose of this skeletal framework is to create a scaffolding to observe, understand and react to the workplace problems illustratively mentioned in the previous section. Similarly, the framework should also guide actionable next steps because of receiving greater understanding of the dynamics involved in the workplace situation. The desired end-result is a purposeful mapping of recommended structure, roles, work processes, executive competencies and training program, based on the model that can address the workplace situation.

At this point, one may ask why this particular framework was chosen and what the logic was behind choosing these specific concepts to be synthesized within the framework. This goes back to the essential stress-points that the author has observed in the work-place during the evolution of marketing over more than two decades. As new functional disciplines, tools and approaches are added to the repertoire of marketing, the workplace has seen a gradual splintering of the marketing function into many specialized disciplines (Eisend, 2015). As the leader of all of marketing, the Chief Marketing Officer (CMO) struggles to span all the disciplines and come up with a holistic way to manage the practice of marketing. This has only been exacerbated by the recent explosion of Big Data, bringing with it, data scientists, information technology professionals and advanced analytical expertise to the table of marketing conversations. It is tempting to create an all-encompassing framework or the equivalent of a “Theory of Everything” for marketing. However, this would be a complex exercise in futility that will have very little relevance to application in the workplace. Hence the author has chosen to focus on a few specific dimensions that most immediately impact the workplace situation such as (1) Big Data and Intuition, (2) Strategy and Tactics, (3) Analysis and Creativity.

2.7.0 Chapter Conclusion

As previously indicated, the emergence and rapid advance of the field of Big Data has led to a body of mostly normative and descriptive literature that “evangelizes” the applications and adoption of Big Data. At the same time, practitioners of marketing are focusing on building the infrastructure, talent and processes to collect, analyze and leverage Big Data in their companies. There is a gap in literature regarding a more reflective and holistic consideration of marketing decision-making using both data and intuition in the current decade. This thesis will start to create a framework that can be one of the bridges to span this gap.

In conclusion, several implications emerge for the scholar and practitioner. Firstly, there is a clash of generations (Leeflang et al., 2014), in marketing leadership (pre and post digital marketing, Big Data etc.). Secondly, the evangelization of Big Data can lead to its blind adoption without a holistic understanding of the decision-making process, leading to non-optimal decision-making. Thirdly, the success of the future of the marketing discipline depends on finding an optimal combination of

processes, training and skills in creating a robust decision-making discipline that is connected to business results.

The next chapter will transition to the specific research questions to be addressed and the methodology to be used for the research, which is planned in two phases – phase 1 will focus on theory-generating expert interviews which will guide phase 2 which will focus on applying the theory in the workplace context.

Chapter 3 – Methods

3.0.0 Research Questions, Ontology and Epistemology

Subject Matter Experts (SMEs) in very specific areas of marketing, when faced by the need to respond to Big Data, tend to lose the big picture of being accountable for overall business goals. As a marketing leader, how can I help the team to make better decisions?

The overarching research question is:

RQ1: How can marketers balance Big Data and intuition to improve strategy development and decision-making?

The following sub-research questions provide the canvas for further investigation and translation into theory and action during this thesis project:

SRQ1: How should marketers deal with the challenges of Big Data in decision making: specifically, with reference to the unique characteristics of volume, velocity, variety, veracity, value and complexity of data?

SRQ2: How are marketing leaders balancing data and intuition in decision-making situations and what improvements can be made to this process?

Students of philosophy define ontology in reference to fundamental inquiries into the the “science of what is” (Smith, 2001). Thus, ontology refers to the researcher’s stance on the nature of existence. On the other hand, epistemology refers to the way that the researcher goes about uncovering that knowledge. Assuming that the world exists in the form of natural features, human creations and events in time and space, a researcher’s representation of the world can be considered a limited re-presentation (Lewis and Westlund, 2014). These inherent limitations of human knowledge affect the ability to determine truth in and the issues of creating a legitimacy for information to be recognized as knowledge (ibid.).

Because of the very name, researchers of “Big Data” may be tempted to view their work with a positivistic paradigm, where “reality is real” and follow an objectivist epistemological approach (Perry Alizadeh and Riege, 1997; Floridi, 2012). However, as we frame this up in the context of this study, the big data here concerns the opinions, attitudes and behaviors of human beings – it is the “cyber exhaust” of their digital life, a study of how business managers interpret those data-streams to create marketing strategies and tactics. This is better situated in the interpretivist / constructionist paradigm, where the external reality is dependent on the observations of the observer. In turn, the interpretivist epistemology relies on perceived knowledge that is “understood” through the observation and interpretation of specific and contextual issues. The methodological implication is that the researcher is studying and experiencing at the same time, with both reason and feeling, being governing factors, and with an acceptance of both science and personal experience as key influences on the research (Carson et al., 2001).

Thus, the author’s epistemological approach is interpretivist. In the following section, the two research methods that were chosen are discussed in more detail, i.e. Theory-Generating Expert Interviews and Action Research. However, before proceeding to the methods themselves, it is useful to examine how these two methods are situated in the broader research methodology. Methodology and method are used interchangeably and often confusingly. A delineation can be made that “methodology” is the overall approach to research as informed by the epistemological approach, whereas the term “method” is used to refer to systems, procedures or tools used for collection and analysis of data (Mackenzie and Knipe, 2006). While methodology is the foundation or justification for the project’s relationship with theoretical knowledge, in a practical sense, methodologies can be purposefully combined or modified, as long as the researcher anchors it to a coherent epistemological position with respect to both the theoretical and practical aspects of the research study (Carter and Little, 2007). Hence, methodological implications will be discussed within the context of the methods in the next section.

3.1.0 Research Method

The first stage consists of understanding expert viewpoints on the research questions from senior practitioners of marketing of national repute and creating a synthesis with the possibility of generating a novel framework. The second stage consists of applying some of the relevant learning in an

observational learning process at the author's workplace. The third and final stage involves the creation of recommendations and best practices that would be useful to marketing leaders in the field at large.

The author arrived at Theory-Generating Expert Interviews as the chosen methods for stage-1 after conducting a detailed search of plausible alternative methods and debating the pros and cons of each. This thought process is briefly summarized below.

The first area of choice was between quantitative and qualitative research. A quantitative study using a survey of marketing employees within and outside my company was the first option considered. The advantages of such a method are relative speed of execution, a deductive approach and greater replicability. However, the key issues of utilizing this method in this case were many. Firstly, this approach lacked an ability to provide for inductive development of novel concepts. Secondly, this approach requires the researcher to maintain a distance and remain dissociated from the respondent set, which essentially runs contrary to the tenets of action research which is the focus of this project (Carr, 1994). Thirdly, and most importantly, a survey of junior marketers would only underline the status quo and would not be likely to provide a reflective future-facing view of where the discipline is headed.

Hence it became eminently clear to the author that a qualitative study was required, and it needed to involve senior marketers who possess both the expertise and the experience to provide actionable and forward-facing ideas that could advance beyond the status-quo. At this juncture, the two options that logically come up are Grounded Theory and the Delphi Method. After careful consideration, Grounded Theory (Charmaz, 2014; Chesebro & Borisoff, 2007; Glaser & Strauss, 1967) was not found suitable in the context of this project because of the need to generate huge volumes of data, the time-consuming nature of the process including a very prescriptive and lengthy data gathering and data classification protocol. Similarly, the Delphi method (Grime and Wright, 2016; Okoli & Pawlowski, 2004; Linstone & Turoff, 1975) was also investigated but not chosen because the CMOs who will be contacted for this research are extremely busy individuals and it will not be feasible to engage them in a group process of communication or collaboration as required by the method. After considering and rejecting these alternatives, it was decided to consider Theory-Generating Expert Interviews.

"Theory-Generating Expert Interviews" is a direct and purposeful research method for providing experiential input and expert knowledge towards theory development (Meuser and Nagel, 2009). For

this method, an Expert is defined as a person who holds responsibility over the creation, development, execution or supervision of strategies, policies and solutions in the area, as well as possesses access to privileged expertise, processes, competencies and networks (ibid.). Experts have “direct or indirect decisional power” and play a vital role in shaping solutions in practice. However, they have their own, and often strong viewpoints, and these viewpoints (and the absence of “neutrality”) are critically important in choosing experts to share their knowledge (ibid.). These experts provide knowledge that is characterized by three dimensions: (1) Technical Knowledge that is very specific to the area of expertise, (2) Process Knowledge about the interactions, inner workings and the external policies and environment and (3) Explanatory Knowledge or the ability to critically communicate their expert interpretations of the consistencies, inconsistencies, the rule and beliefs, the past and the future of their area of expertise (Van Audenhove, 2007).

Here, the interviewer plays the role of a co-expert or quasi-expert and the interviews are structured in a way that allows for both objective and subjective feedback as well as a recursive discussion, using the expertise of the interviewer as a means to generate the recursion and reexamination of ideas and viewpoints (Flick, 2015; Littig and Pöchhacker, 2014; Bogner & Menz, 2009). In the epistemology of interpretivism, this allows for knowledge creation from the 'inside' of the expertise or profession. By capturing the lived experiences of the experts through the insights, thoughts, actions and experiences analyses from the point of view of the experiencing person, the interviewer is able to create an interpretation of the situation and the solutions that are relevant to the situation (Charmaz, 1996; Bogner and Menz, 2009).

During this process, detailed interviews of about an hour each are held with a few CMOs/CEOs (current and retired) who are acknowledged as experts in the industries, both through their professional reputations as well as by association with the organizations that they lead or have led. The interview sample consists of executives who are based in the US but have deep experience in US as well as global markets. Similarly, to encompass multiple eras of marketing, both current and retired executives are included in the interviews.

3.2.0 Sampling and Execution

For theory-generating expert interviews in this thesis, the population consists of experts who are defined as well-known marketing leaders in the industry or those who occupy senior marketing roles in

well-known companies. Typically, they are currently in or have recently retired from leadership positions in Fortune 500 companies (or private companies of equivalent size) and have been recognized as experts either through their professional reputation, published papers, references in industry articles or by being quoted in the media for their work. This is not intended as a quantitative study among a representative sample, but an in-depth exploration of nuanced insights on a complex topic. Hence, purposive, non-probability-based sampling is used (Teddlie and Yu, 2007). Due to their busy schedules and senior organizational roles, these experts also represent a hard-to-reach population, and hence snowballing is used to recruit respondents (Noy, 2008). This qualitative sampling leads to analytic generalizations that can be applied to wider theory based on the reflective interpretations provided by the experts that are relevant to general constructs, rather than to provide statistical generalizations based on representative statistical samples, (Curtis et al., 2000).

The theory-generating expert interviews move forward in three steps (Meuser and Nagel, 2009). Firstly, in the interview phase, subject-matter knowledge and competence of the interviewer (i.e. the author) are used to take a skeleton interview guide and customize it to the flow of the discussion in each interview, such that it becomes a productive, and smooth conversation. In the next step, thematic coding across different interviews are used for derivation of specific themes and insights. Lastly, in the phase of theoretical generalization, the “empirically generalized findings” are framed in a “theoretically inspired perspective” (ibid.).

Triangulation of three broad approaches has been used to determine the final sample size for the expert interviews in this thesis: (1) Utilizing the methodology of Fugard and Potts (2015), the prevalence of the theme (of Big Data issues in marketing) among the respondent set has been assumed to be 100% due to the nature of the selection criteria. In such a situation, applying the model (ibid.), a sample size as low as 6 can generate at least 5 instances of theme, hence providing a satisfactory lower bound. (2) At the upper end, the key factor would be saturation of information and this will be determined through the course of the interviews themselves, hence a value cannot be attached at this stage. Based on anecdotal arguments from Boddy (2016), 6-10 interviews are indicated as generally providing sufficiency. (3) Finally snowball sampling has been used to locate additional experts (Palinkas et al., 2015). The researcher has taken to heart, the following advice (Becker, 2008, n.p.; Baker, Edward and Doidge, 2012, p.15) “You can’t know at any point in your research what evidence you’ll need, and certainly not at the beginning. You can only know that when you state some kind of conclusion. Which in turn means that

you have to start making your analysis and stating conclusions early on, starting with the first day”. As will be seen in subsequent chapters, the author finally conducted 7 expert interviews with highly qualified and recognized professionals in the field and was able to achieve the sampling objectives set out here.

3.3.0 Recognition and Management of Bias

Bias is recognized and managed in this study as follows. (1) Reception Bias - The status of the interviewer/author as a co-expert or “quasi-expert status” is acknowledged and the attendant bias of non-neutrality is recognized in the reflexive phase of the coding and self-awareness to compensate for “unconscious editing”, (Berger, 2015); (2) “Hippo” effect or bias for the “highest paid person’s opinion” ahead of hard data (Tunguz and Bien, 2016; Kohavi, Henne and Smmerfield, 2007) is inherent in interviewing experts who hold positions of power. This bias is managed through probing questions and by taking a counterpoint argument during the interview discussions.

3.4.0 Initial Framework that Underpins the Discussion Guide

Based on the literature review and synthesis, a starting skeleton has been developed, and used as underpinning to guide the expert interviews. This framework is presented in Figure: 2.11 in the previous chapter.

This framework attempts to capture the dynamics that are involved in the process of making marketing/business decisions based on large volumes of data that are made available to the business.

During the expert interviews, this model is used as a starting point to be either validated or transformed based on the knowledge and feedback of the expert respondents, which in turn help to define practical approaches to solving the workplace questions that are mentioned at the beginning of this chapter.

3.5.0 Expert Interview Discussion Guide

The interview discussion guide follows the following format with very approximate timing for planning purposes only (45-60 minutes approximately per interview):

1. Introduction (5 minutes)
Introduce each other. Provide a short introduction to the DBA and to the thesis topic as well as context.
2. Expertise (5 minutes)
Discuss the expertise of the respondent in the area of the thesis. Connect their life experience, functional expertise and domain knowledge to the current state of Big Data and Marketing.
3. Process (5-10 minutes)
Using the model in Figure: 3.1 as a discussion aid, have the respondent describe the process and the actors in their own environment.
4. Influences and Competencies (10-15 minutes)
Start with an open-ended discussion on influencing factors and steer the discussion to amplify or modify the thought process set out in the model framework. Follow a similar flow for the competency factors.
5. Exploration (10-15 minutes)
Explore issues and possible solutions, with a view towards understanding the underlying causes and effects. Build scenarios of how these ideas may be brought to practical implementation.
6. Sum up (5 minutes)
Sum up with a discussion to consolidate key themes and messages, and check for understanding.
7. Close (5 minutes)
Close with thanks and a request to provide referrals for other respondents if found to be relevant and appropriate.

3.5.1 Process of Coding and Generation of Themes from Expert Interviews

Each expert interview was conducted by WebEx using video and/or voice depending on the convenience of the interviewee. The interviews were conducted in secluded settings, free from interference on both sides. All interviewers provided undivided attention during the entire period of the discussion. Each of the interviews was recorded as a digital audio file. While interviews were going on, the researcher also took very copious notes by hand. Content analysis was conducted in two ways. All the voice files were fully transcribed manually and then they were matched with the handwritten notes taken by the

researcher.

First the entire transcript was read from start to finish several times over, by the researcher, till an overall mental picture was formed. Due to the level of conversation of the participants and the nature of the interview, it was found that almost the entire volume of conversation was very relevant and insightful to the study. Then, each thought or sound-bite was documented with labels and classified by similar categories. During this coding stage, each of the relevant sentences under each category were organized by content. Themes were created from the output of the coding. The themes were then stress-tested for robustness, uniqueness and relevance through internal reflection. During this period of reflection, the researcher was able to gather thematic insights as well as overreaching insights. Each theme was then back-checked with the interview transcripts to make sure of relevance, accuracy, and to mitigate any researcher bias that may have occurred. These themes were also reflectively discussed with the thesis supervisor. At the end of the study, the researcher's overall reflection also resulted in some overarching insights that are also elaborated in Chapter-4.

3.6.0 Mitigation of Limitations and Potential Problems

The experts were carefully chosen in order to provide a good balance of B2C and B2B2C marketers, across generational cohorts and industry segments. Unlike a quantitative study, the focus was not on representative and exhaustive sampling or in precise modeling. Instead, as this is a qualitative study, the emphasis has been on uncovering nuances, exploring new ideas, and building on each expert's thoughts in a constructive manner. During the interview phase, it was recognized that quality control would have to be dynamically undertaken by the interviewer to ensure that an adequate level of richness was present in the dialog. During the coding phase, it was recognized that useful and generalizable insights needed to be developed from the output of the interviews. Using a strawman model based on previously published literature, the researcher was able to ground the practical wisdom of the experts with the theoretical stances of the researchers.

3.7.0 Action Research Method and Implications

Action Research is appropriately described as a way to solve an "immediate problematic situation" through social collaboration within a common framework of ethical principles (Susman and Evered, 1978).

Purists of positivistic epistemology require observation and evidence collection by an uninvolved researcher observing from a distance (Brydon-Miller, Greenwood and Maguire, 2003, Susman and Evered, 1978). In contrast, the proximity, immediacy and involvement of the researcher in Action Research creates a rich fusion of data, experiences and emotions (Burns, Harvey and Aragon, 2012), proximity and involvement (Coghlan and Brannick, 2002), collective action and change (Greenwood and Levin, 1999). Unlike positivistic methods, Action Research tends to be more future-facing, enables systemic development and tends to be localized and situational (Susman and Evered, 1978, Dick, 2011). Action Research also adds to creation of knowledge through developing expertise and participative application through a process of “Bildung” (Levin, 2012).

By definition, the Action Researcher is “connected to and embedded in” the research study, and thus positioned in the “thick of the situation” (Marshall and Reason, 2007). Such a “first-person” approach to research requires that the researcher grasp their own “interiority” through placement in the inside of the situation and by being aware of their actions, interactions and non-actions (Coghlan, 2014; Marshall 1999). Rather than being an activist who uses their presence to diagnose, plan, act and evaluate to solve the work-place issue, the researcher has to also simultaneously involve themselves in the meta-cycle of reflection on the content, process and premise (Coghlan and Brannick, 2014). Meta-cognition or “thinking about thinking” plays a role in the process of reflection as an actor and a researcher (Desautel, 2009).

According to Burns, Harvey and Aragon, (2012) the learning is a product of the group interaction and change efforts, while Levin (2012) proposes that learning is an offshoot of the combination of critical reflection, situational empathy and political experience. Action Research provides a socio-political platform for the development of change strategies (Isabella, 1990), and a path to manage the resistance which usually causes the failure of as much as 70% of all change initiatives (Zigarmi and Hoekstra, 2008). In praxis, change is non-linear and complex (Lawrence and White, 2013), hence the collaboration, reflection and cyclical iteration during Action Research facilitates dealing with contradictions in the workplace situation (Rigg and Trehan, 2004). Empathetically and collaboratively addressing messy problems creates a platform to motivate a real-time recursive cycle of problem definition, planning, execution, testing, evaluation and retesting (Coghlan and Brannick, 2002).

In the workplace situation, Action Research also has implications on organizational dynamics. The change from status quo to future state is achieved through interventions which are separated by periods of evaluation, reflection and looped learning. These interventions create purposeful change not only

within the action set but also a ripple effect across the wider organization. Designing these interventions require reflexive thinking and revisiting theory (Huxham and Vangen, 2003).

As a senior executive entering into the action set, the author is well aware of the observer effect which is well documented in quantum physics (de Bianchi, 2013), but is also relevant in f Action Research. Observation of the researcher taking notes in meetings, parsing and looking for hidden agendas in questions asked in meetings, the change in attitude or behavior just because of the physical presence of the senior executive are all examples of intervention in data collection that requires the researcher to (1) adopt a reflexive attitude and (2) be sensitized to the environment and act appropriately (Coghlan and Brannick, 2014, Zhang, 2014). These points have been internalized and built into the considerations of the researcher's mindset prior to approaching the action set.

3.7.1 Second and Third Stages of the Study

The second stage of the study is the Action Research phase, composed of applying the learnings from the theory-generating expert interviews, into the workplace, observing the impact on the business, the process and the people, and allowing the action group to interpret, implement and adapt the learning in a manner that leads to organizational results and improved learning. A test framework of best practices derived from the earlier stage is introduced into the action learning set, and through a multi-loop process, the framework is applied to improve the decision-making approach and further optimized based on feedback loops. This process happens in the midst of a very fast-paced workplace business flow. Hence, in order to reduce interference on the day to day business and in order to get actionable and immediate learning, this stage-2 is executed in a purposely-limited and accelerated time-frame. While in ideology, this is based on action learning principles (Coghlan and Brannick, 2014), in the actual execution, care is taken that the intricacies of the methodology do not get in the way of the executional simplicity and immediacy. Hence, key principles of problem construction, bottom-up involvement, multi-loop learning etc., are adhered to, while not letting any prescriptive process or methodology get in the way of simplicity and timeliness.

Stage-3 utilizes some of the principles of multi-loop learning and theory generation as explained earlier. At this stage, it is the richness of the experiential and learning journey leads to a reflective understanding and creation of frameworks that have wider application. Using the action research stage

as a test case, the researcher is then able to improve and qualitatively substantiate the framework. It can also be used as a tool for application to workplaces confronting similar issues, through a sharing and dissemination of best practices.

3.8.0 Ethical Approval for the Study

The ethical conduct of research is a critical feature of research quality and obtaining ethical approval from the University of Liverpool (UoL) is a mandatory requirement. Since collecting data from humans requires ethical approval, the standard process was used to obtain ethical approval for the study. For sake of completeness of the report, the process is briefly summarized here.

The application process consisted of completing an online Ethics Application Form Online, a standard Participant Information Sheet, a Participant Consent Form and an Ethics Response Form. This was reviewed by the DBA Ethics Committee and feedback provided. Based on the questions asked by the Committee, a detailed response was provided by the researcher in consultation with the thesis supervisor. Final approval was provided by the Committee and a copy of the approval is attached as Appendix-2. Informed consent was obtained from the interview subjects as per UoL-established protocol.

Chapter 4 - Theory-Generating Expert Interviews

4.0.0 Introduction

In order to develop a more holistic framework of how Big Data fits in the repertoire of tools used by CMOs as part of their business, this chapter will provide a critical summary of expert interviews conducted by the researcher and show how insights developed from these interviews will be used to create an actionable framework.

4.1.0 Composition of Experts in Panel of Respondents

Based on the arguments already made in the Methods Chapter, it was decided to recruit 7 experts for the purpose of this research. The method of recruiting was through personal/professional contacts as well as referrals (Teddlie and Yu, 2007; Noy, 2008). Care was taken to only select individuals who are highly reputed experts either with name recognition of their own personal accord, or through the senior executive position they hold at their organization. All the experts are based in the US, but most of them have also had global experience in their careers. They are all from Fortune 500 or Forbes 100 companies. In order to get a varied canvas of observations, the group included current as well as retired executives and also included an executive who has since crossed over to academics as a professor of management at a very reputed school. For reasons of confidentiality, the experts are hereafter referred to as E-1 to E-7, and a general background of each is provided below, without revealing their identities.

- **E-1: Head of Marketing** at a leading Financial Services Company (Fortune 500), with previous experience in credit cards, internet companies and a speaker at several industry forums. This person is on the cutting edge of several innovations in mobile e-commerce and payments technology. Starting as one of the first digital marketers in the world when online advertising was in its infancy, this person has pioneered innovations in digital marketing, e-commerce and advertising for more than 15 years. The company that this person represents is recognized as a world leader in the e-commerce space and is one of the largest success stories of Silicon Valley.
- **E-2: Chief Marketing and Sales Officer** at a leading Media and Telecom Company (Forbes 500, previously Fortune 500), with previous experience in global consumer products, food and beverage and internet companies in several countries, with also deep expertise in marketing

analytics and insights. This person has more than 25 years of experience and has led several businesses of more than \$5B each. This person created a global digital platform, was one of the prime-movers of a mobile marketing strategy and created new expertise in customer relationship management and loyalty marketing using Big Data analytics to drive marketing productivity and build new capabilities.

- **E-3: Chairman** of a Health and Fitness company who previously held positions as Chief Marketing Officer and Chief Strategy Officer at three Fortune 500 companies in Food and Nutrition. This person has seen the evolution of advertising and marketing over four decades and is an early trendsetter in strategic marketing. Having led the creation and marketing of world-famous iconic brands in large global companies where he held titles such as President, Chief Strategy Officer, Chief Marketing Officer and Board Member, this person has seen at first hand and influenced the evolution of marketing through the various stages of its existence. This person also serves on the Advisory Board of the College of Business at a prominent university.
- **E-4: Chief Operating Officer** at a Technology Company (Fortune 500), with previous experience in the media industry and at a world-renowned consulting firm. This person has deep experience in data-driven digital marketing and is an industry expert who functions on the board of a global marketing association that is recognized as the highest professional body in digital and data-driven direct response marketing in the world. In addition, this person spent several years in strategic roles at a top global strategy consulting firm and obtained undergraduate and postgraduate degrees from an Ivy League University. In the current position, this person has also played a pivotal role in the successful acquisition and merger between two large direct marketing organizations with a combined total of almost 60M customers around the world. This person is currently also engaged in undertaking a big-data driven transformation of the data warehousing and business intelligence capabilities of the company.
- **E-5: President of Marketing and Sales** (Retired) from a Beverages Company (Fortune 500) and currently a published professor at a reputed University. This person is a pioneer in brand positioning and strategic marketing and also functions on the board of the most premier marketing industry association. This person has worked in leadership positions at a leading

consumer products company and a world leading adult beverage company, having lead and influenced the evolution of their marketing strategies into the digital age.

- **E-6: Chief Marketing Officer** at an Insurance and Financial Services Company (Fortune 500). Having worked at large banking and e-commerce companies in the past, this person combines expertise in digital marketing, strategy and innovation with an educational background in finance and information technology. With globally recognized experience in consumer financial services, data analytics and e-commerce, this person is also active in CMO forums and in University think tanks.
- **E-7: Chief Marketing Officer** at a Consumer Products Company (Fortune 500). With wide experience in marketing as well as senior general management, this person has worked in multiple continents in very senior roles and brings a uniquely multi-cultural perspective to a business which is more than a hundred years old, but one that has gracefully moved into the new world of social and digital marketing while maintaining its leadership position. This person has particularly notable experience in creating transformative business models to reach the mass consumer base of large Asian countries through multichannel distribution, marketing and communications.

These experts provide comprehensive, world-class, yet incisive views of the topic at hand, and a reflective analysis of the interviews has provided rich and actionable insights for this thesis. While staying well-abreast of the latest advances in the field of Big Data, the experts were also not hesitant in separating the fad from the enduring, or the fluff from the substance. Possibilities were balanced against practicality and new advances were judged against the potential for impact and usability. After a comprehensive content-analysis of the interviews and codification, the following sections critically examine six essential themes that emerged. The discussion that follows is a synthesis from the experts' viewpoints which were organized and reflected upon by the researcher, who then brought his own perspective as a quasi-expert to the final summarization of insights.

4.2.0 Big Data and Marketing Leaders – Key Themes

4.2.1 Theme #1:

“Technological” Opportunities but “Human” Challenges

In this theme, the rapid advances in technology for data collection and analysis are seen in contrast with the shortage of appropriately skilled and trained human talent to take advantage of the technological advances.

Senior marketing leaders do not quite see Big Data as a new phenomenon. Some of the respondents, especially those who have worked in banking and insurance sectors point out that they have used various forms of large-scale data-driven decision-making even as far back as the nineties. Credit card companies were mentioned as pioneers in the use of prospect segmentation and targeted direct marketing campaigns using large customer-level data-sets.

“Data has always been around, and good marketers have always used data to improve their marketing. Over time, data has multiplied and shows up in a lot more places.” – E-5.

There is general agreement that in recent times, there has been a shift in data creation and distribution. Traditionally data was created by the end-users themselves or an agency specialized in creating and distributing data (such as AC Nielsen, Dun and Bradstreet etc.). However, today, there is a wide variety of user-generated content that is freely and cheaply available to be accessed. These include product reviews (e.g. Yelp) and social media commentary (e.g. Twitter). Constantly streaming data provides a real-time check of the health of the business. In contrast to periodic, published reports of the past, several experts mentioned the widespread use of dashboards that update continuously.

Combining diverse data sources provides a more holistic view of the consumer journey. This is particularly important as more and more consumer journeys cross multiple channels. For example, one of the acronyms mentioned was BORIS – or “Buy Online, Return In Store” where two different data sources have to be stitched together to understand the consumer purchase flow. Another example mentioned was that of the Disney group of companies, where one consumer may have several parallel,

but connected journeys – for example a boy who gets involved with the “Cars” franchise would participate in (1) the journey to see the latest Cars movie, (2) the journey to purchase a branded Cars toy, (3) the journey to enjoy a Cars ride at the Disney amusement park and (4) the journey to purchase school supplies and clothing with the Cars logo. All these journeys happen within different companies of the Disney group, and Big Data can provide a more holistic understanding to allow the group companies to better satisfy consumer demand.

“The API economy is the biggest trend and you see API-based companies popping up every day. These APIs are polling data from your phone. They know where you stand, what location you are at, what your credit card preferences are, where to deliver to you. – E-1

Companies are making capital investments in IT infrastructure to capture and process the data; indeed this has become the price for staying ahead of competition. On the flip side, the big issue in adapting to Big Data, is the ability to recruit talent with the right skill set. Almost all the experts seek specific talent with a business background coupled with advanced analytical expertise, but there is a relatively small pool of available talent. At the same time, the rapid changes in technological platforms means that there is not sufficient time to train and build capabilities, hence the recruiters go after a small group of people, whom one of the experts referred to as “black belts”. However, while these “black belts” tend to be sharp in their area of subject-matter expertise, they do not stay in a company long enough to understand the industry, the category or the consumer. This creates a situation where they are data-centric to the point of being consumer-agnostic, leading to a more clinical approach to analyzing data and converting it into insights.

“If you want to create a learning organization, you want both the data scientists and the business managers to sit together as one embedded team in the organization” – E-6.

The second human challenge relates to the managers or “internal clients” who use the data to achieve business outcomes. Some of the experts believe that a quantitative, data-driven approach has to be cultivated from early days of one’s careers; they find it hard to retrain more tenured managers in the

company, thus acknowledging that there is a competency-based divide between managers who are data savvy and those that are not. This is already a challenge for marketing leaders, and there is a sense that the gap will only get wider as the next generation of “human-light” or artificial intelligence starts to enter the world, such as is already happening with Watson from IBM.

“In a conference room full of opinions, the person who comes with data can help drive a more effective and more united decision” – E-4

4.2.2 Theme #2:

One-to-one, Moment-of-Truth Marketing

This theme is focused on the opportunities provided by Big Data to have a one-to-one conversation with the customer at the most appropriate time or “moment of truth” (MOT). This has been a recurrent dream of marketers who in the past had to be satisfied with one-to-many (mass marketing) or one-to-some (segmented marketing) approaches.

While data scientists get excited by the vastness and ubiquity of Big Data, marketing leaders instead hone in on the ability to deliver sharply focused, individually relevant messages at the most opportune moment in the customer purchase journey, as the big benefit of Big Data. This creates new possibilities in increased customer engagement, persuasion and conversion, and a competitive advantage; all leading to better Marketing return on investment (ROI). Several strategic areas of application highlighted by the experts are discussed below.

Direct marketing companies have long pursued strategies that help them to segment their prospective customers and target the most attractive segments with appropriate messaging. With new tools for manipulating very large data-sets, it is now possible to create a very detailed micro-level segmented profile of a company’s most valuable existing customers. These are usually the apocryphal 20% of customers that contribute to 80% sales (“80-20” maxim). In studying their behavior and preferences in depth, marketers can identify the factors that promote loyal, heavy usage of their offerings. Big Data analytics allow taking the profiles created from internal data to be matched against prospects from

external databases using “look alike” modeling. Thus, the marketer is able to identify segments of audiences from externally sourced data-sets that most closely mirror their own loyal users and create focused campaigns with targeted messages to recruit more such like-minded customers. For example, the company where the expert E-1 operates, uses a very sophisticated segmentation model, where their large consumer database has been scored along thousands of behavioral parameters. Also, by matching the customer data to transaction data numbering in millions, it is possible to serve targeted messages to a consumer based on an immediately past purchase behavior or a lack thereof. For example, an immediate offer on accessories can be made to someone who just purchased a computer. Conversely, it is also possible to provide an offer to buy a new car to someone who has not purchased a car in the past 5 years.

“We try to find new consumers who “look like” our best consumers.” – E-1

A second strategic area relates to marketing at the Moments of Truth (MOT). As direct response marketing experts seek to increase the effectiveness and efficiency of their marketing programs, they look at specific MOT when the audience is either more amenable to the marketing message or is at the point of taking a pivotal decision in the purchase journey (such as at the point of desire or when moving from consideration to purchase). As a lot of consumer behavior is being increasingly driven through mobile apps (APIs), marketers have the ability to track real-time consumer behavior and offer tailored messages at the specific MOT. Ride-sharing companies such as Uber are able to use real-time GPS-based location data about each user to provide a very quick ride right at the MOT. This was an example cited by one of the experts as they pointed out how technology is creating new ways for marketers to engage with MOT. Another example of an MOT is when a person is surfing restaurant reviews on their phone and this can be connected with a particular location where coupons can be served up for nearby restaurants. Search engine marketing (e.g. Google paid search) is another area where the prospect “signals” that they are at a MOT by typing particular search terms into the search box.

“Every Google Search is essentially a customer raising his or her hand to be identified.” – E-4

As previously mentioned, a third recurrent area is the desire to conduct seamless one-to-one marketing with each customer by following them throughout their purchase journey across a multi-channel ecosystem. Today, there are separate identifiers in different channels such as cookies or pixels in the online shopping phase, traceable tender such as credit cards in the purchase, fulfilment, refund and renewal phases, or membership numbers, log in IDs and email addresses in the case of a closed system. The end state for the experts interviewed would be one single, unique identifier that tracks the entire journey. This would also help to simplify the decision-making process and get a consumer from consideration to a purchase in a mutually efficient manner. The challenge in getting there is the availability of technology and also the capital investments required to set up data warehousing, processing and governance capabilities of such a scale. The second challenge relates to legal and privacy laws that are designed to limit irresponsible tracking of consumer behavior and acting upon it. Often labeled as “Un-Volunteered Truths”, a term coined by Eric Siegel, Editor of Predictive Analytics Times, this has resulted in fiascos like the Target store campaign on 2012 where baby product promotions were sent to consumers who scored high in the database for purchase of pregnancy-related items. This then set off a huge blowback of consumer rights, privacy and social propriety (Hill, 2012).

“Does each CMO understand on an end-to-end basis, how marketing works to create value in their organization?” – E-5

4.2.3 Theme #3:

Hypothesis-driven Decision-making

This theme addresses the clash of decision-making styles between those prevalent among marketers and the new challenges proposed by the advent of big data.

As previously mentioned, there is an emerging belief in some parts of the academic community that an analysis of the data by itself can give all the needed answers without having to craft the questions or hypotheses first. Authors such as Anderson (2008), and Cukier and Mayer-Schoenberger (2013) take this view. However, it was interesting to note that all the marketing experts interviewed unanimously rejected this view. All the respondents (across industries) advocated a fairly linear process of (1)

problem definition, (2) hypothesis creation, (3) data analysis and (4) decision-making. At this stage, the researcher's working hypothesis is that CMOs tend to be at very senior levels in their organizations, where there is a large risk/reward factor to the decisions they make, and hence they have trained themselves to follow this step-by-step process. Just as a reminder, these respondents were leaders at large global companies, so the situation may (or may not) have been different with executives at start-ups or smaller companies. As one of the experts pointed out, CMOs have to "do magic", but they are expected to do it in a predictably repetitive manner and this requires sustainability and rigor in the decision-making approach.

"The fundamental flaw I find is that people often start with the data that is available, instead of starting with the problem that they are trying to solve." – E-5

One of the experts did concede that a "data-first" approach may work for some companies that have the ability to test multiple scenarios fairly quickly. However, even this expert pointed out that A/B testing is only as good as the quality of the solutions that are put into test. Just winning a test by itself is not seen as indicative of the best option to go forward with. As was jokingly mentioned in the discussion – if five lame horses run in a race and one is declared a winner, the winner is still a lame horse. This general idea raises concerns regarding just depending on data analytics as a goal-seeking method in and of itself. The marketing leaders are conscious that they have to do more than just be testing for a winner, and they need to use several inputs before arriving at a decision, the data being just one component. Another tip mentioned by an expert is that they always try to look for triangulation of evidence against a hypothesis, with different data sets from different perspectives – such as inside-out versus outside-in, or internal sales data versus external syndicated data versus industry category estimates.

The experts also point out the necessity for a strong linkage between strategy and tactics, and do not envision a productive situation where tactics are generated in the absence of a strategy. The experts also emphasize that it is their job to make choices based on strategic plans and data. An entirely physical situation such as an engineering assembly line is seen as an appropriate venue for total data-centric

management, whereas human behavior with its social and psychological nuances is seen by the experts as an area where one has to go beyond just the data to make the choices.

“Until life turns into a 100% deterministic environment, say like a self-driving car, we are dealing with unstructured situations. Data can help to generate and validate hypotheses, but the choices don’t go away, they cannot be put on autopilot.” – E-7

4.2.4 Theme #4:

Different Approaches to Long-term vs. Short-term Decisions

Marketers have to simultaneously operate in multiple time horizons. This theme explores the differences in decision making styles for long term vs. short term.

As the custodian of the product portfolio and all the demand-generation initiatives, the CMO (compared to other C-level officers) is felt to have a closer connection with the CEO’s overall business goals. In this situation, the experts uniformly believe that the CMO needs to straddle both strategy and tactics equally effectively. The proposition of Day and Malcolm (2012) was quoted in an earlier chapter where the authors argue that “maintaining for today” requires a very different approach than for “disrupting for tomorrow”. The challenge is that CMOs are tasked with doing both. This not only requires different leadership approaches but also calls for differing investment strategies.

A further complicating factor to the above is the relatively short tenure of CMOs. Several of the experts quoted from widely published data that the average tenure of a CMO is decreasing steadily and stood at just 4 years in 2017. Another connected trend is that a lot of CMOs seem to come from outside the company and even outside the industry, but then at the end of their brief tenure, they tend to exit the company and move elsewhere. In such an environment, the incumbent CMO spends the first year (out of an average of four years) trying to learn the business and build their influence. By the time they get

past the learning phase, there is already a strong clamor to show quick results, so it is tempting to prioritize tactical efforts over long term strategic plans. And soon it is time to exit, without having left a long-term legacy. This is concerning for everyone interviewed.

“Last week I was on the phone with a new CMO at a \$20 Billion company (name withheld), and she said – “I don’t have time to think about the long term future”. I said to her “You have to find time to do both.” The biggest gift a new CMO can get is the gift of time.” – E-5.

One of the experts presented the following argument, in a simplistic but forceful manner.

“CMOs are under enormous pressure to create short-term growth. They don’t have a clear road-map of how to do it. They start to look at all the data and they get overwhelmed with the data. So, they just follow the latest shiny new tactic and hope for the best”. – E-1.

These experts see Big Data first and foremost, as an optimization tool. In that respect, there is a feeling that Big Data can be speedily harvested in service of making some short-term gains. However, the bigger challenge is how to use Big Data as an input to longer term, strategic and disruptive decisions.

“Optimization is really around doing something you’ve always done but doing it a little bit better. So, it’s not a change agent. The real power of big data is if you do a series of tests and understand your consumer insights, you can actually radically change the way you do business today.” – E-1

4.2.5 Theme #5:

The “Art” and “Science” of Marketing

This is another recurrent theme. Effective marketing is a mix of art and science, a combination of left-brain and right-brain thinking, according to the experts. The science of marketing involves copious analysis of data, running regression models, executing controlled tests and using sophisticated modeling to analyze and predict outcomes. This is an essential skill for a good marketing leader. While CMOs have been data-driven for a long time, the experts admit that data warehousing, data analysis and technological capabilities have vastly improved the ability to do this in a better, faster and cheaper way.

However, once the data has been analyzed and the dependent variables have been broken down, the CMO needs to employ the creative side of the brain – to imagine unconventional solutions and to think beyond the straight line. As a CMO explained – decisions have to be creative, but with data to back them. The function of creativity (or the “art”) is (1) to create disruption, (2) to create an emotional connection with the customer and (3) to take a data point and bring it to life in a way that changes the way people think about it. The teams that do creative thinking are often different from the teams that do the rigorous analysis, so CMOs suggest that they need to nurture teams that are focused on each aspect.

It is also opined that regression modeling alone doesn’t predict the future, instead a certain amount of creativity is required to foresee the disruptive arcs that form in the future.

“Ice hockey player Wayne Gretzky said I go to where the puck is going to be in the future, not to where it is now.”- E-4.

It is also recognized that innovation has to be separated from the core business. As one of the experts pointed out – in order to have one great idea, you need to have 99 bad ideas. Finding and nurturing that one great idea requires creativity, or the “art” of marketing as several experts refer to it. This “art” is irreplaceable with data or computing power, at least for now.

“AI is working very well for optimization, but not quite yet working that way for innovation...because we haven’t taught it what to look for. But AI is exploding, there may well come a time when AI will ask the questions for you.” – E-6.

Secondly, the experts point out that every successful marketer has to be an effective story teller. Taking quantitative insights and converting them into persuasive, memorable creative units (advertising, social posts etc.) requires the leader to be creative, to work with other creative people and to be an expert on how to touch the heart-strings of the customer. Why one piece of communication goes viral and the other doesn’t is often not easy to break down by sheer numbers alone – the experts suggest that a good CMO needs to have the soft skills to recognize and leverage good creativity.

A third area where the term “art” was used by CMOs, was in the context of navigating the relationships, emotions and politics inherent in any large organization. Data alone is seen to only get them so far. Once the data is analyzed and conclusions are made, it is the duty of the CMO to (1) persuade the other leaders to share in the vision, (2) influence the allocation of resources to carry out the vision and (3) motivate the other functions to participate in the hard work and risk involved in achieving this vision. All these activities require influencing, empathizing, persuasion and other soft skills. This important aspect of the CMO’s job is also referred by the experts as part of the “art” of marketing.

4.2.6 Theme #6:

The Co-existence of Big Data and Intuition

This last theme was interwoven throughout the other five themes and is derived from wide discussions that touched upon this topic both peripherally as well as head-on. Intuition has a very specific, academic definition that was previously discussed in the literature review chapter as follows:

As referenced previously in Section 2.3.0, Crossan, Lane and White, (1999) describe intuition as the “preconscious recognition” of either opportunity areas and/or patterns, that is carefully cultivated through a person’s professional experience and subject-matter expertise. Three terms that are often interchangeably misused are clarified by Hodgkinson et al., (2009) as follows. (1) “instinct” refers to an “autonomous reflex action”, for example, the natural instincts of homing pigeons, (2) “insight” refers to an “aha” moment when a novel solution is presented in the mind for a previously unsolvable issue, as a result of a fresh look at the same data, for example, the fabled “Eureka” moment when Archimedes had an insight about buoyancy while in the bathtub, while (3) intuition is an “effectively charged process of judgment” based on “quick, holistic and non-conscious association”.

However, during the interviews, it was found that the CMOs use these terms interchangeably and hence the researcher had to apply some amount of judgement to filter the terminology and keep the discussion grounded using previously-agreed definitions. The use of a balance of intuition and data was described by one of the experts as “whole brain marketing” – a way in which they leverage the analytical side and the creative, intuitive side of the brain at the appropriate occasion.

Interestingly, the experts pointed out a natural order in which these skills would need to be used. It was suggested that the CMO should start with the strategy first, and strategy development is a highly data driven and analytical exercise along with a vision for the future. From the strategy, the next step is the development of brand positioning, content and advertising – which is seen as more heavily leaning towards intuition and creativity. According to one expert, strategy and analysis comes first, then comes creativity and intuition. Knowing the right strategy and understanding the consumer segments, their behaviors, attitudes and barriers leads the CMO to apply creative and intuitive aspects of their trade to change the consumer behavior. This was seen to involve the “softer” skills of psychology and sociology of human beings.

Intuition is also seen by the experts as playing a big role in making the mental “leap” from information to actionable knowledge. This stems from the belief that Big Data by itself is overwhelming in its “bigness”. As one expert remarked – no one CMO reads all the data that is disseminated, that is quite

impossible. Another expert remarked that the biggest challenge with Big Data is that it is indiscriminately large and not adequately synthesized.

“The challenge with Big Data is there is too much Big Data. If you mix all colors of a rainbow, they turn to brown.” – E-1

The process of distilling insights is complex – according to the experts it requires a good understanding of the data, deep expertise in the business and an empathetic view of the consumer. For this reason, it is widely felt that data scientists and data analysts alone cannot do justice to turning data into insight. It requires the active participation of the marketer who can balance the inputs provided by data with the intuition borne out of their own observations, experiences and understanding. According to one expert, intuition is important in understanding consumer behavior, and how motivations work. He calls these intuitive skills as “creative, honed skills”, and these are developed through “informed experience”. Among senior leaders, there is also a perception that such skills cannot be created through institutional learning alone, it needs years of on-the-job experience to develop that intuitive expertise of judgment through learning by doing and learning by making mistakes.

This interplay of data and intuition also creates organizational challenges for the CMO. One of the experts mentioned that it takes 3-5 years to build that “muscle” in the organization, where the data analysts and the intuitive marketers can “understand” one another and work together.

“Every now and then, you have to step back and sharpen the axe. Do you have people stepping back (from the day-to-day data) and getting ethnographical and anthropological insights that will “explode” the performance of the business?” – E-2

As a final comment to this section, we make the point that regardless of how Big Data is generated, too much data does not get absorbed by the humans who hold decision-making rights in the organization.

There is an overarching need to simplify the data into actionable insights and create disruptive actions through the application of intuition and creativity.

4.3.0 Reflection and Insights from Research about Evolution of Marketing Leadership

“Marketing has long been a mysterious black hole in many organizations”, according to Stewart (2014, p.163) who brings up the long-existing lament about lack of procedural understanding of input-to-output relationships, the ambiguity of attribution and the grey area surrounding Marketing ROI (return on investment). While all of this is widely written about, these expert interviews provided several unique insights to the researcher that have not been seen to be directly mentioned in literary articles that the researcher has widely reviewed till date.

The first insight is – in consumer marketing, there are essentially two types of marketing leaders who derive their expertise and reputation from how they have produced results in the past. Assuming that CMOs at the Fortune 500 level have two decades or more of work experience under their belt, the path that brought them to their current leadership position would have differences.

One group of marketers came from the brand marketing discipline widely institutionalized by indirect marketing companies (B2B2C) such as Procter and Gamble, Coca-Cola, Budweiser etc. These companies do not sell their products directly to the consumer, but instead, depend on a multi-tier system of distributors, retailers, e-tailers and service outlets to conduct the actual sales transaction. The role of the CMO in these companies is to create brand awareness, brand image, brand value, brand loyalty and move the customer forward in the purchase path toward one of the sales points where further elements such as distribution, display, price promotions etc. will create the actual call to action or call to purchase. This requires working with different types of structured and unstructured data; combining transactional data, social feeds and research information to analyze and provide insights of commercial value. They must be comfortable with Big Data, its strengths and its limitations (Stone and Woodcock, 2014). Marketers from this paradigm view Big Data as a way to increase brand relevance, brand reputation and

brand consideration. In this endeavor, Big Data works side by side with other tools in their toolkit such as breakthrough creative ideas, intuitive judgement etc.

The other group of marketers have come up the ranks from direct response marketing industries (B2C), from companies such as American Express, Amazon, eBay etc. In these (mostly e-commerce oriented) companies, the sales happen during the marketing process as the company directly performs the selling and billing functions to the consumer. The role of the CMO in these companies is historically focused on the later part of the path-to-purchase, as the consumer moves from consideration to evaluation and to action. In these companies, the marketing leaders directly carry a short-term and long-term billing goal and the marketing investments are directly and dynamically tied to these revenue goals. Marketing leaders from this environment tend to focus a lot on direct marketing ROI, short term productivity of marketing investments and really involve themselves greatly in converting active shoppers into buyers through the use of promotional offers, price discounts etc. in addition to longer term brand building.

The second overarching insight is that marketers who have come up from the brand-building track tend to have built their expertise and subsequently their reputation based on what many in the industry refer to as “story-telling” or the ability to paint an appealing vision to the consumer based on advertising, imagery, social media etc. that results in greater persuasion and connectivity between the consumer and the brand. On the other hand, marketers who have come up from the direct response track tend to be experts with a reputation in data-driven quantitative and transactional marketing. They work with much shorter cycles of investments to rewards and conduct more on-the-spot testing and learning as they optimize for marketing ROI among the variables that are in their control. As shown by Nair et al., (2017) in a gaming casino environment, this sort of optimization requires the ability to run a lot of test options in real time and rapidly scale and score the options (the example given here involves 1.5M consumers exposed to 75+ different marketing promotions, and analytics conducted using Terradata database platform).

Why are these insights significant? As mentioned before, this researcher is a leader of marketing who has more than two decades of experience in the field. But unlike marketers who may have stuck to one type of business in their entire careers, this researcher spent many formative years in companies that

are brand-building indirect marketers of worldwide repute, but then changed the career path towards a leadership role in an e-commerce based direct response marketing company in the technology sector, which is also in the Fortune 500. Thus, the author has a unique perspective with which to understand the distinctions between both viewpoints as well as to cross-pollinate best practices between the two areas.

This insight-based perspective is a unique contribution of this thesis as the author has not found any direct reference to this topic in a scan of research articles. Looking further back in time, Conant, Mokwa and Varadarajan (1990) and Woodside, Sullivan and Trappey (1999) bring up the concept of the strategic typology of business as proposed by Miles and Snow (1978) i.e., defenders, prospectors, analyzers, and reactors. They then correlate these strategic types to marketing competencies such as consumer segmentation, distribution, advertising etc. However, this is more of an industry-based view of marketing and does not uncover the insights found by this researcher as specifically relating to consumer marketing. CMOs are sometimes divided into six types (1) growth champion, (2) senior counselor, (3) brand foreman, (4) growth facilitator, (5) best practices advisor and (6) service provider (Landry, Tipping and Dixon, 2005; Stewart, 2014). Again, these classifications refer more to the intra-organizational scope and influence of the CMO (as compared to the head of sales, the general manager, head of strategy etc.) rather than to the marketing approach taken by the CMO which is the insight uncovered by this researcher.

Srinivasan, Rutz and Pauwels., (2016) are probably closer in that they have attempted to study the effect of direct and indirect marketing inputs of the CMO on revenue and profits. However, in the opinion of this researcher, their study has made a few assumptions that have the capacity to be erroneous, especially as they fail to fully distinguish between direct digital marketing vehicles such as paid search, and indirect digital marketing channels such as social media audience development. Taking a different track, Anker et al., (2015) discuss consumer value creation through three different approaches, (1) product driven logic (PDL), (2) consumer driven logic (CDL) and service driven logic (SDL). This is an interesting approach worth a deeper examination. However, this also does not directly fit with this thesis proposition, since CMOs of consumer marketing companies tend to operate across at least two if not three of the above “logics”.

4.4.0 Concluding Remarks – Where do the Experts Lead to Next?

At the outset of this thesis project, a comprehensive literature review was undertaken and during this phase, the researcher had the opportunity to critically distil the extant academic knowledge as well as commentary about the industry as published in the wide body of recent literature. It did not come as any surprise that the key themes coming out of the expert interviews, in fact created a logical extension to the literature review validating and supporting many of the stances taken by the authors of the papers. Indeed, it would have been surprising if the expert interviews totally contradicted any aspect of the conclusions from the literature.

As the author looks to transfer the insights gleaned from the experts to a model framework, three key conclusions can be drawn. Firstly, marketing is a fusion of social and psychological aspects of consumer attitudes and behavior, and for the foreseeable future, Big Data and deterministic variables have to co-exist with intuition and emotional signals. Secondly, marketing leaders have to be concerned with strategy as well as tactics, and these require different approaches. Thirdly, to operate in the fast-changing dynamic environment, marketers have to exercise flexibility and judgement in their decision-making styles. These matters are further explored in Chapter-5 as they are applied towards the creation of the model.

As a researcher/practitioner, reading and reflecting on the interviews I conducted led me to a few actionable learnings. Firstly, CMOs are highly engaged in the opportunities and challenges brought to their world by Big Data. Secondly, they do see it through a healthy lens of practicality – asking “what does it do for me”? Thirdly, they acknowledge that all data and all skills of the marketers exist to create new experiences for the consumer, and in turn create new growth for the business. This grounding is important and is sometimes missing in the more “evangelical” pieces that are written in the scholarly journals.

In a subsequent chapter, the learning from the interviews will be synthesized with the literary review to update and sharpen the framework that was initially proposed at the end of the last chapter. This framework will serve as a representation of best practice that can be used by the marketing community at large. In addition, the key learning from here will be used to further define the action research phase of the project involving app store reviews and the workplace needs surrounding them.

Finally, this chapter ends with a few observations on the gaps in the expert interviews and suggestions for future research in this area. For the purpose of serving the author's workplace context, the expert interviews were conducted specifically among marketing leaders of large consumer marketing companies with a global presence but based in the US. However, there is an opportunity for future researchers to extend these expert interviews to CMOs of small businesses and to start-up companies. Similarly, there is also an opportunity to extend the interviews to a 360-degree panorama of employees who are affected by the actions of the CMO – for example the leadership team of the company on the one hand, and the lower level employees in various marketing departments on the other hand. Thirdly, the generational divide in marketing leadership is well known. It was not in scope for this research project to sub-classify and analyze the difference in views of less-experienced CMOs versus that of more tenured CMOs, and this is another interesting area for future research. The use of Big Data may also differ widely between countries depending on their technological capability, data availability and resources available to exploit the data. As such, the researcher encourages others to duplicate these interviews in developed as well as emerging economies, in Eastern and Western companies and in free markets as well as controlled markets. Finally, as a practicing marketer, the researcher conducted interviews with fellow marketers. It might be very productive for another researcher with more of a background in organizational behavior to perhaps conduct similar studies in other functional groups such as Sales, Information Technology, and Finance etc.

Chapter 5 - Proposed Framework

5.0.0 Introduction

Previously an initial framework was proposed based on the literature review and a synthesis of diverse issues that surround decision-making in the marketing department (Figure 2.11 in Chapter-2). The components of the original framework are explained in Section 2.5.0. Based on a reflective analysis of the key themes stemming from the expert interviews, there are several opportunities to refine and further sharpen this initial skeleton.

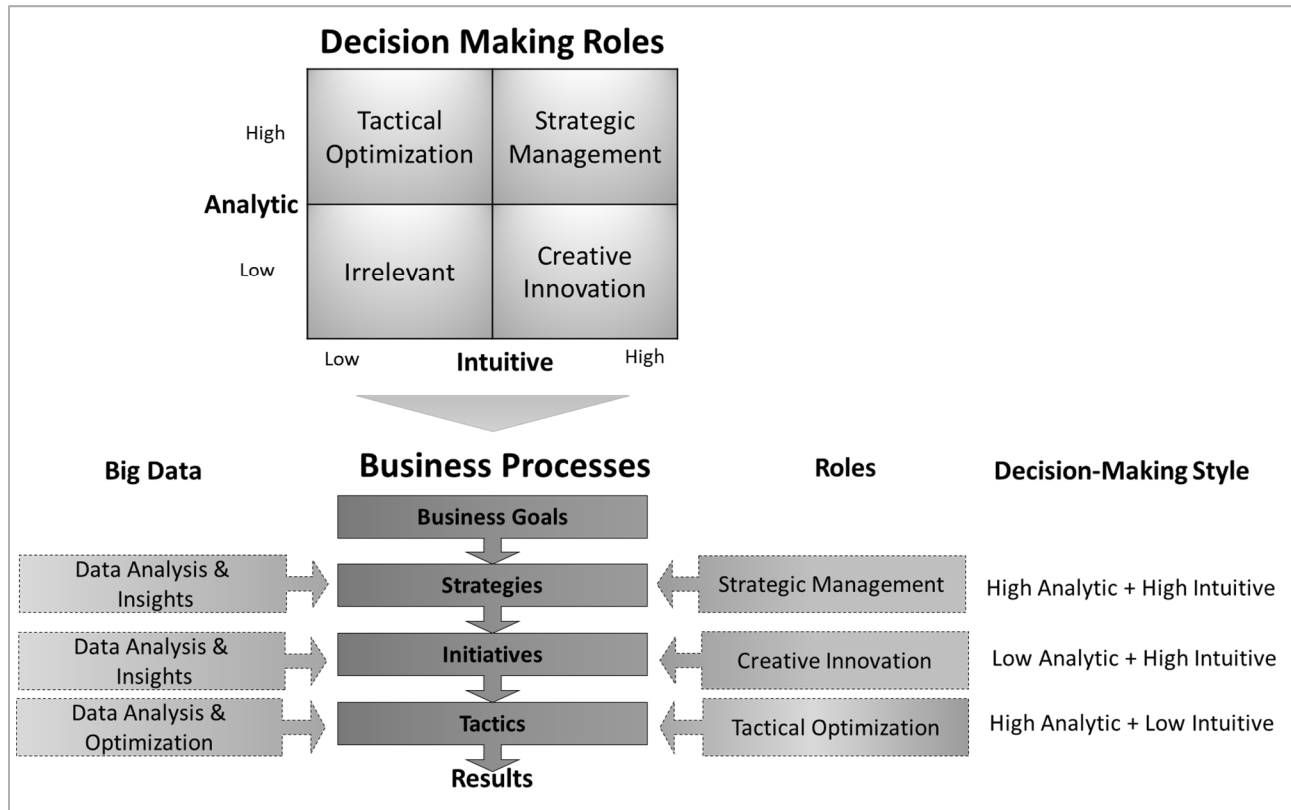
5.1.0 Introducing the Final Framework

Firstly, since the focus of this thesis is on the marketing (business) function, the construct was simplified by excluding the analytics and IT functions from the chart. Secondly, the expert interviews provided a perspective of difference between data-driven insights and data-driven optimization. As the author listened to the experts and further synthesized and reflected upon the insights and themes, it became eminently clear that marketers in the heat of the moment of running a fast-paced business, do not pause to reflect on the appropriateness of their decision-making styles or the tools that they use to arrive at optimal decisions. The tendency as borne out from the interviews and from the author's own workplace observations, is for the employees to settle upon a routine and automated process that can be mechanically duplicated without much fresh thinking. This can work very well for optimization processes, but not as well for situations that require creative problem solving. And the reverse is also applicable, when a marketer ignores hard data and makes an optimization decision just based on their intuition. Hence through this research the author was able to clearly map each step of the decision-making process, by differentiating between strategy and tactics, between optimization and innovation and between data and ideas. This also helped to create clarity around which member of the organization (or what specialization) is best applied to which area of decision-making. Thus, the decision-making framework of Hodgkinson et al., (2009) was adapted and refined for this specific context based on key discoveries made during the expert interview phase of this thesis.

With that preamble, the following Figure: 5.1 presents the final framework that is proposed as a result of this thesis:

Figure 5.1 Decision-making in the Marketing Function – Role of Data Analytics and Intuition

(FINAL FRAMEWORK DEVELOPED IN THIS THESIS)



This framework starts with a representation of the key business processes that are recommended to be undertaken by the marketing leader and their team. Business goals borne out of a 3 year or annual business planning cycle would lead to the “critical few” strategic priorities of the business that are relevant in the medium term. The business then needs to engage with the business intelligence or data team to extract, analyze and visualize key data sets that can then lead to the understanding of strategic insights against these key priorities. At this stage of data mining, the focus should be on (1) finding insights that enable the business leaders to look at the business from a different viewpoint, such that it helps create new strategies as compared to those from the historical past or as compared to the competitive set. Developing rich insights requires an embedded partnership between the data team and the business team, and joint mining will help uncover fresh insights. According to Sharma, Mithas and Kankanhalli (2014, p.435), “...despite the hopes of many, insights do not emerge automatically out of mechanically applying analytical tools to data. Rather, insights emerge out of an active process of

engagement between analysts and business managers using the data and analytic tools to uncover new knowledge. More importantly, those engagements take place within existing structures and processes for decision making.” In addition to the expert interviews, these observations (ibid.) are taken into account in suggesting a co-development model of insights between the analytical group and the business team.

As these insights are converted into strategy and strategic initiatives, a significant level of creativity and innovation are required, and this corresponds with expert observations regarding the constructive, yet disruptive change that the CMO has to create within the organization. This process involves internalizing the insights, empathizing with the target and finding innovative approaches to meet the business goals. The strategies then lead to tactical initiatives which are executed in the operational teams under the CMO. At this point, efficiency and precision are very important, so multiples cycles of optimization may take place during this stage. To aid in the optimization process, the testing at this stage would be rapid, fast-cycle work that leads to sharpened tactics that are consistent with strategy, move the needle on business metrics and optimize efficiency of resource utilization.

The four-quadrant framework at the top half of the table illustrates the decision-making modes and styles that are required in each of these phases and is adapted from a more general framework originally suggested by Hodgkinson et al., (2009). Creative Innovation requires a high level of intuition but a lower level of analytical decision making, whereas Tactical Optimization requires a high level of analytical decision making and a lower level of intuition, even sometimes the ability to suspend intuitive opinions when they go up against contradicting data points. This model also underscores a point that was made by several of the experts – i.e., good strategic management requires a high level of both analytical and intuitive decision-making styles which was termed by an expert as the science and the art of marketing. A great CMO has to be adept at walking in these two worlds simultaneously. The classification of decision-making styles to be used in each situation such as (1) tactical optimization, (2) creative innovation and (3) strategic management. The fourth quadrant where there is very little use of data or intuition is really irrelevant and is marked as such.

5.2.0 Application of the Framework for Practitioners

This framework helps marketing practitioners in several ways. Firstly, as it is distilled from the expertise of very senior leaders, it can be categorized as “best practices” for marketers to follow. Upon further consideration, the framework also provides a clear delineation of when and how the marketing team should rely on their data experts to provide the right output that they need in each phase of the marketing business process. It also provides an easy understanding of where the manager needs to use creativity and innovation more and where they need to use optimization skills more.

This has several practical uses for the marketing manager. On an individual level, this framework provides the manager with a handy tool regarding how to approach the various aspects of the business process. In a team situation, they can use this framework to provide the right focus, to make their work more efficient as well as to make faster and more aligned decisions when they get into meetings on each of these topics. They can also apply this framework as an aid to recruiting the right candidates with appropriate skills for each aspect of the job, to provide job development and training to employees who wish to move from one area to another.

5.3.0 Application of the Framework for Researchers

This thesis focuses on applied research with a clear “bias” towards action and application in the workplace. Nevertheless, several aspects of this framework should prove to be of some interest even to the academic community. Firstly, as observed by Easterby-Smith, Thorpe and Jackson (2012), Management Research is an eclectic discipline, and involves hybridization of learnings from several subject-matter areas. This framework makes an attempt in that regard, by looking across business operations, marketing management, data analytics, and organizational behavior. This framework builds upon and fills a gap in the decision-making spectrum published by Wang et al., (2016). This framework also fills a gap between the proposals of Hodgkinson et al., (2009), and Day (2011) by combining the organizational imperatives and decisional styles in a more holistic manner that mirrors the operational process used by the marketer.

5.4.0 Application of the Framework in Action Research for this Thesis

The key areas of exploration in action research were identified in Chapter-3. These include getting an understanding of (1) how a marketer should think about balancing Big Data and intuition to improve decision-making, (2) what improvements can be made to this process in the workplace and (3) how can the researcher prepare his organization to deal with such situations. This framework provides a visual schematic to get the team to a place of shared understanding, and to provide a clear visualization of the path forward. This framework will also provide a platform for reflective dialogue within the team and to also promote healthy questioning of the status quo and discussion about adapting this to the actual workplace behaviors.

In the next chapter, the researcher will document how this framework was leveraged in action research and its effect on the workplace discussions.

Chapter 6 - Action Research

6.0.0 Introduction

This chapter describes the reflective learning by the researcher while observing the organizational effects of applying the framework from Section 5.1.0 within a team that he leads in the work-place. The purpose of this chapter, within the overall thesis submission, is threefold (1) to provide a reflective platform for organizing the thoughts, and discoveries of the researcher in a way that is self-illuminating while also being beneficial to the organization, (2) to leverage the knowledge gained from extant literature (Chapter 3), the expert interviews conducted (Chapter 4) and the framework created by the author (Chapter 5) in a practical situation, and finally, (3) to take the reader of this thesis on a journey through the process of exploring, learning and doing. While doing justice to the latter, it is very important to maintain confidentiality and integrity of the researcher's position as a senior executive within the organization. Hence, it is imperative to acknowledge at this stage, that the journey described in the rest of this chapter has been sanitized to provide in-depth information in a generalistic manner rather than divulging specific operating information about the company or the strategies that fall within the realm of confidentiality. The narrative that follows is based on the structure proposed by McNiff (2016) – business context, areas for improvement, action, learning loop and results.

6.1.0 Organizational History and Context

Within this Fortune 500 technology company that is a global leader in subscription-based consumer services, based in Silicon Valley, the evolution of the product marketing team has seen three recent milestones. In 2014, the organization made a shift from products to subscription-based services which created a change in the organization to adapt to a new model based on cloud-based services and subscription-based billing. At this point in time, it was essentially a single-product business, hence all the functional teams such as engineering, product management, marketing, sales etc. were serving this one product. When the author joined the company in early 2016, the company was in the process of pivoting to a strategy of aggressive growth by expanding the company portfolio, through three parallel pathways of build, partner and buy. As a result, the company had to rapidly scale the organizational structure, talent and processes to manage four different product lines across different stages of the product

lifecycle. Apart from the original flagship product, during the last 18 months, the team has systematically but rapidly launched into three new product categories, one each through build, partner and buy approaches. On joining the company and seeing the pre-launch plans, it was very clear to the author that the single-product organization would not be able service a business with a multi-category portfolio.

While gearing up for the upcoming launches, the functional silos in the organization started to multiply rapidly. The product management function grew from one team (focused on “build”) to three teams with very different business constructs and ways of working (two teams focused on product lines of “build”, and one team focused on “partner”). A more multi-channel approach to marketing and sales was created, adding functions that serviced software as well as hardware. This also marked our first strategic foray into Google and Apple App Stores as distribution channels for a new product line. At this time, I decided to fundamentally change the product marketing organization. Instead of a product marketing team solely focused on the single product, I was able to recognize the need for two different teams with purpose-built goals and operating processes (1) a new ventures team and (2) a base portfolio team. Specifically, the new ventures product marketing team was developed around “product champions” who would own, drive and influence the P&L metrics for that product by working horizontally across the entire cross-functional organization. This product champion is successful when there is a constructive balance between their market knowledge and technical expertise on one hand and the organizational seniority and influence they are able to exercise in pursuit of achieving their business goals (Slater, Mohr and Sengupta, 2014).

The third step in our transformation came with the acquisition of another large company in early 2017 that substantially increased our business size, line-up (from three product categories to four), added a different customer base and brought in a large number of new employees, with parallel functional teams that had to be integrated within the original organization. The net result of all this change was the creation, training and operationalization of product leaders, who through their teams, owned and drove the business results of their product set. One of these product teams that specifically led the company’s new venture into Google and Apple App Stores is the focus of further observation and reflection in this chapter.

6.2.0 Areas Identified for Improvement

The team strove to find areas for improvement and greater excellence, rather than looking for problems to be solved. Specifically, the team working on the App Stores was faced with a new dimension of Big

Data that was generated by the users and the interactions taking place in the global app stores. While the organization is no stranger to dealing with Big Data per se, the new twist was the arrival of this data from individual users in the form of user reviews and purchase behaviors. This consumer data originates outside the traditional company BI (business intelligence) system and data warehouse, and also involves the collaboration of new external agencies that monitor and optimize some of the flows on our behalf. This places a greater responsibility on this particular product marketing leader to create, analyze and act on Big Data from a different perspective than the rest of the traditional organization. This involves the development of business strategies, initiatives and tactics as well as developing organizational competencies required to lead this. These are the identified areas for improvement.

6.3.0 Creating New Approaches to using Big Data for Strategic Management

In referencing Figure 5.1, this team was historically doing a very good job of using Big Data for tactical optimization. However, tactical optimization by itself is more appropriate in the context of a large established business. In a new launch situation, the team quickly realized that Big Data has to be used for creating transformative strategies and to try out bold new initiatives. Similarly, the team realized that the insights from Big Data needed to be uplifted in the organization to drive goal-setting and strategy development as well. This led to two different but parallel challenges. Firstly, the team had to understand and demonstrate the use of data in the service of strategic planning, prioritization and development of high level plans. Secondly, the team had to develop internal leadership competencies required to do this (Klotz et al., 2014), by developing new decision-making styles, i.e., Strategic Management and Creative Innovation, in addition to the prevailing style of Tactical Optimization. The following sections show how the team identified innovative ways to look at the data and the application of those insights in decision-making.

6.3.1 Generating New Insights by Looking at the Same Data - Differently

First, we took data that had already been used a lot during tactical optimization, this data comprised of the customer reviews and ratings posted on the app stores from across the globe. Approximately a million data points across the following groups were used for the first round of analysis:

Figure 6.1: Data Classification Summary

Product / Channel	Groups of Reviews and Ratings	Date Range
Product A: Google App Store	176,816	8 June 2010 to 21 July 2017
Product B: Google App Store	4,256	9 May 2016 to 23 July 2017
Product A: Apple App Store	1415	23 November 2012 to 19 July 2017
Product B: Apple App Store	729	15 June 2016 to 22 July 2017

The purpose of this study was to understand both quantitatively and qualitatively, the effect of consumer and product related factors on the numerical ratings as well as the language and tone of reviews, with a view to using the results for improvement of the product or the marketing. As mentioned previously, the purpose of this thesis is to provide a leader’s perspective on the use of data within the team, hence the findings reported here are based on analysis conducted either by the team or by an external third-party data analytics expert, and not necessarily by the author himself.

There were several interesting conclusions that opened up possibilities of how this kind of data could be used to get interesting insights, and these are examined in more detailed in upcoming pages.

6.3.2 General Relationship between Rating and Length of Review

Instead of just analyzing the ratings themselves, an approach was taken to see whether user rating and length of the review had any relationships. Interestingly, dissatisfied reviewers tended to be verbose in their commentary, whereas some 5-star ratings had just a one word review such as “Great”.

Figure 6.2: Lower Ratings correspond to More Wordy Comments

Product	Correlation between Length of Review and Rating Given	P Value	Sample Size
Product A Google App Store	-0.302	(.000)	176,815
Product A: Apple App Store	-0.204	(.000)	4,255
Product B: Google App Store	-0.100	(.000)	1,414
Product B: Apple App Store	-0.050	(.180)	728

The insight was that consumers who have something on their mind tend to be more “talkative” on the review boards. In order to understand the specific concerns to target, a quick qualitative analysis was performed by the team, by creating word clouds.

This is an interesting finding which is probably specific to this product context and may not be generalizable. Researchers of reviews in experiential categories such as hotels and restaurants have found that both the high rating and the low rating generate lengthy reviews in their categories (Park and Nicolau, 2016; Liu and Park, 2015).

Next, word clouds were generated from an analysis of the text of the reviews and these word clouds were cleaned up for brand name, generic words etc. Figures 6.3 and 6.4 portray examples of word clouds for satisfied users (those with 4 or higher rating out of 5) and for dissatisfied users (those with 2 or lower ratings out of 5).

Figure 6.3: Illustrative Word Cloud for Satisfied Users – Product B: Google App Store



[Reviews for Ratings of 4 or more/5.0]

Figure 6.4: Illustrative Word Cloud for Dissatisfied Users – Product B: Google App Store

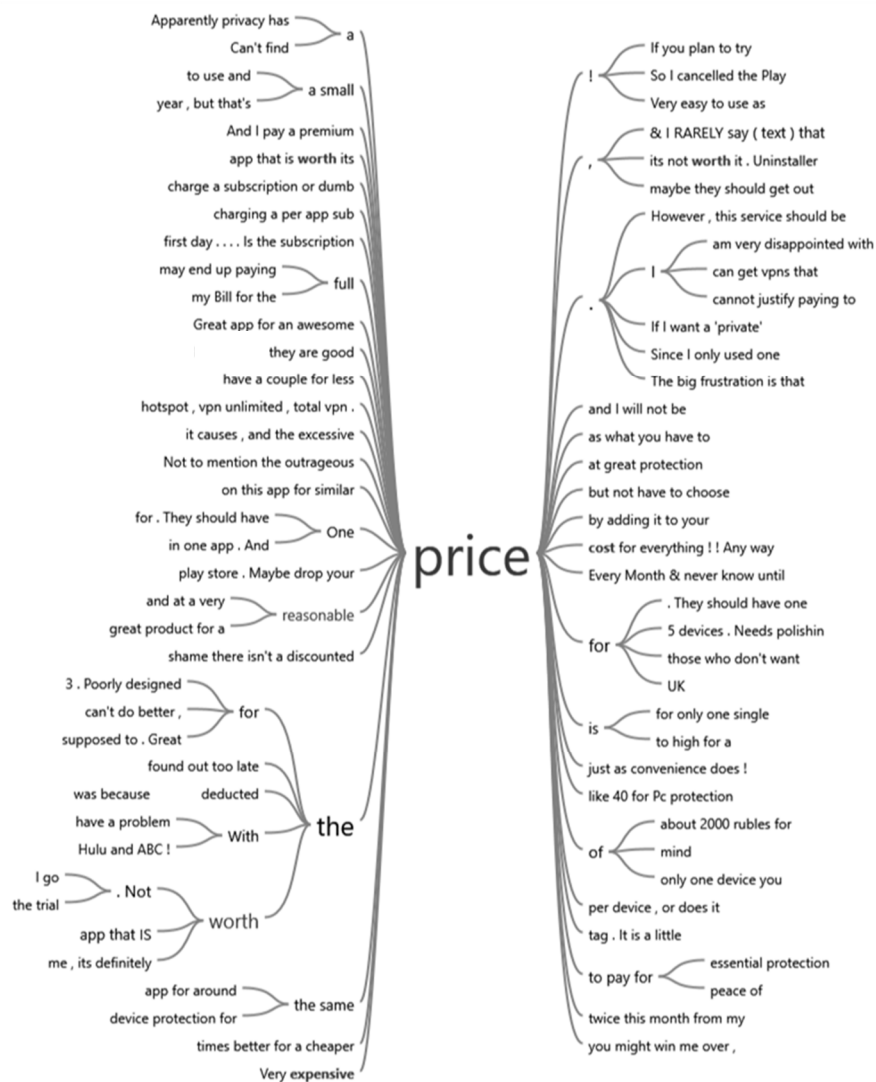


[Reviews for ratings of 2 or less /5.0]

The satisfied reviews mostly use words describing product performance and quality attributes while the dissatisfied reviews use words that describe pricing, payment terms and free trial offers. Each of these was further probed. For example, a further look at wording connected to “price” revealed the following architecture (Figure 6.5), that shows the comments about “Pricing” are not just about price alone

actually affected by a collection of actionable attributes such as (1) value of benefits (2) competitive comparison (3) versatility in use and (4) method and frequency of collecting payment.

Figure 6.5: Key Threads Related to Price Dimension



6.3.3 Effects of Country, Language and Culture of the Reviewer

Traditionally, the team would look at all reviews in the aggregate. Interestingly enough, the behaviors tend to be different based on the language and country of the reviewer.

A further cross-tabulation of the ratings by language of the reviewer showed that Chinese and German reviews had a larger proportion of lower ratings while English, Norwegian had higher ratings. The

hypothesis of the team at this stage was that a pricing imbalance between markets was leading to this variation in reviews.

Figure 6.6: Distribution of Ratings by Language of Reviewer

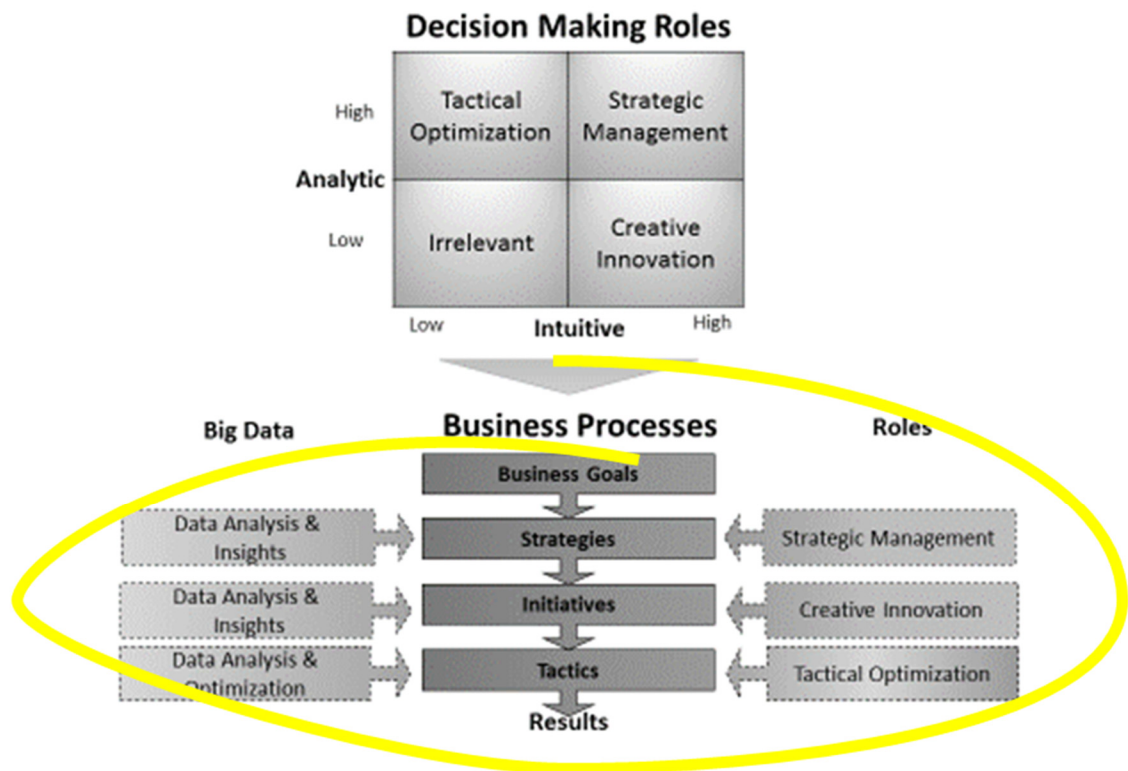
		Rating					
		1	2	3	4	5	Total
Language	Chinese	58.3%	8.3%	8.3%		25.0%	100.0%
	Danish	37.5%	12.5%			50.0%	100.0%
	Dutch	28.1%	15.6%	7.8%	17.2%	31.3%	100.0%
	English	27.0%	7.6%	7.4%	11.2%	46.9%	100.0%
	Finnish	37.5%		12.5%	12.5%	37.5%	100.0%
	French	38.8%	15.0%	7.5%	10.0%	28.8%	100.0%
	German	63.9%	10.3%	3.9%	5.8%	16.1%	100.0%
	in			12.5%	12.5%	75.0%	100.0%
	Indonesian	19.2%	4.3%	17.4%	12.2%	47.0%	100.0%
	Italian	52.9%	9.8%	9.8%	7.8%	19.6%	100.0%
	Japanese	39.0%	20.8%	10.4%	11.7%	18.2%	100.0%
	Norwegian					100.0%	100.0%
	Norwegian Bokmål	14.3%	14.3%		7.1%	64.3%	100.0%
	Polish	59.3%	7.4%	14.8%	7.4%	11.1%	100.0%
	Portuguese	35.2%	6.8%	5.5%	6.5%	46.1%	100.0%
	Russian	54.7%	6.6%	5.7%	3.8%	29.2%	100.0%
	Spanish	28.3%	2.4%	4.8%	10.9%	53.6%	100.0%
	Swedish	41.7%		12.5%	4.2%	41.7%	100.0%
	Turkish	70.0%		10.0%		20.0%	100.0%
Total		30.4%	7.4%	7.8%	10.3%	44.0%	100.0%

6.4.0 Turning Insights into Business Actions – using the Framework

The insights described in Section 6.3 were possible due to a combination of data analysis with intuition. It is interesting to see how the intuitive thinking process and curiosity led to new data analysis that had not been carried out by the analysts in the company in the last 3 years. In so doing, it is also clear that the theoretical framework that was created using literature synthesis and expert interviews can be used to optimize processes within the workplace environment. This section will illustrate how the team took these and other insights and created business actions. It is to the team's credit that I (as the manager)

had to only play the role of an observer and coach. The team used their own initiative to prioritize and start executing some actions. The way they went about doing this, in fact, follows the proposed model. We will focus on the section of the model relating to Business Processes which is marked with dashed lines in Figure 6.7 below and refer to it as we follow the journey of the team.

Figure 6.7 Decision-making in the Marketing Function – Focus on Business Processes



6.4.1 Strategies

Following the setting of three-year and one-year business goals, the team proposed and obtained approval for the following strategies. As indicated in the model, the team used a combination of analytics and intuition to arrive at these strategies.

The first strategic decision was to focus the majority of marketing efforts on Product A in the Google App Store and Product B in the Apple App Store. This strategic decision was based on the technical performance features, perceived product benefits, perceived value and the propensity to buy by the core population in each channel. The team proposed a more pin-pointed strategy which would channel

marketing investments in specific priority areas where they would produce the best return on investment as well as revenue growth.

The second strategic decision came out of the insights on pricing and user reviews. The hypothesis was that the global pricing strategy was not working uniformly in all markets. Specific geographies were identified where sales were disproportionately subdued. Early analysis indicated that local competitive pricing as well as perceived utility of the product in certain environments were contributing to the mismatch. Accordingly, the team proposed a strategic decision to decouple specific markets from the global pricing structure. This is easier said than done, due to inherent operational complications of the app store merchandising requirements set by Apple and Google, however, the team proposed that this was an important strategic need.

The third strategic decision proposed by the team was that the company should take a more proactive role in listening to customers posting low reviews and help them mitigate or solve their problems. Again, this was a new behavior for the team, and it is very heartening that the team took ownership to do something about it.

The fourth strategic decision proposed by the team was to create more frequent product releases that would dynamically fix issues that are highlighted by customers in the reviews. Thus, the team pointed to a strategic need for the company to listen to the customer even more than ever before and to make changes based on their feedback.

6.4.2 Initiatives

Following along with the model in Figure 6.7, the strategies were arrived at by a combination of Big Data analysis and intuition. The next step was to turn these strategies into actionable initiatives. The team conducted formal and informal meetings to undertake creative problem-solving at upstream, midstream and downstream points (Thompson and Schonthal, 2017). At this stage, as indicated in the model, intuitive understanding and expansive idea generation were used to find creative solutions. A few examples of the work done by the team and observed by the researcher are noted below.

Once the strategic decision had been made to focus marketing investments for Product B on the Apple App Store, the team went out of their comfort zone to identify and evaluate several marketing agencies with expertise in this area and picked lead agencies to partner with on this initiative. A survey of best in class marketing companies in this channel also provided valuable input into the key initiatives that were undertaken by the agencies. While this move was ultimately successful, it was not without its temporary setbacks. As this is an emerging field with several new and unqualified middlemen, the marketing team ran into an operator whose actions did not stand up to scrutiny. As soon as the team saw an uptick in negative reviews due to this, the team reacted intuitively to the possible causes, and immediately took steps to remove this operator and re-stabilize the ratings.

Based on the second strategy to create local pricing for certain key markets, the pricing team of the company conducted a very broad project to survey consumers and develop pricing response curves for these specific countries. Based on the findings, the team then engaged with the finance department to calibrate the business case and get approval to change pricing in these specific markets.

The third strategy called for the company to take a more proactive stance in listening to and managing the emotions of the most dissatisfied customers. This is an important issue as other researchers have found out. Longer reviews tend to be more influential (Jurafsky et al., 2014) and tend to focus on the perceived “trauma” in the experiential aspects rather than the product itself (ibid.). Research also points to a greater interest in the audience to read the wordier negative reviews (Ngo-Yea and Sinha, 2014; Bakshi, Kanuparth and Shamma, 2015). Converting this strategy into an actionable initiative required intuitive thinking and creative problem solving because this was a novel situation with this channel. Replying to negative comments online by itself does not always produce the intended response. Hence the creative idea of the support team was to set up a sequential online and offline response process (using telephone-based agents). In this case, a customer posting a very negative experience, receives a personalized apology reply online and a request to call a toll-free number so that our expert can understand and remediate the problem. This solution required lateral thinking and the core team had to bring together people from two different areas of the company to join up in executing on this initiative.

The fourth strategy of creating more frequent product releases came from an intuitive understanding of the customer pain points, and an equally intuitive understanding of how the app store review system works. As a new product release is submitted for sale on the app store and existing users get a push notification to update their apps to the new release, the app stores restart the clock on the ratings as they apply to the new release. Hence by fixing known issues through the product release, the customer is satisfied, and the ratings improve as well.

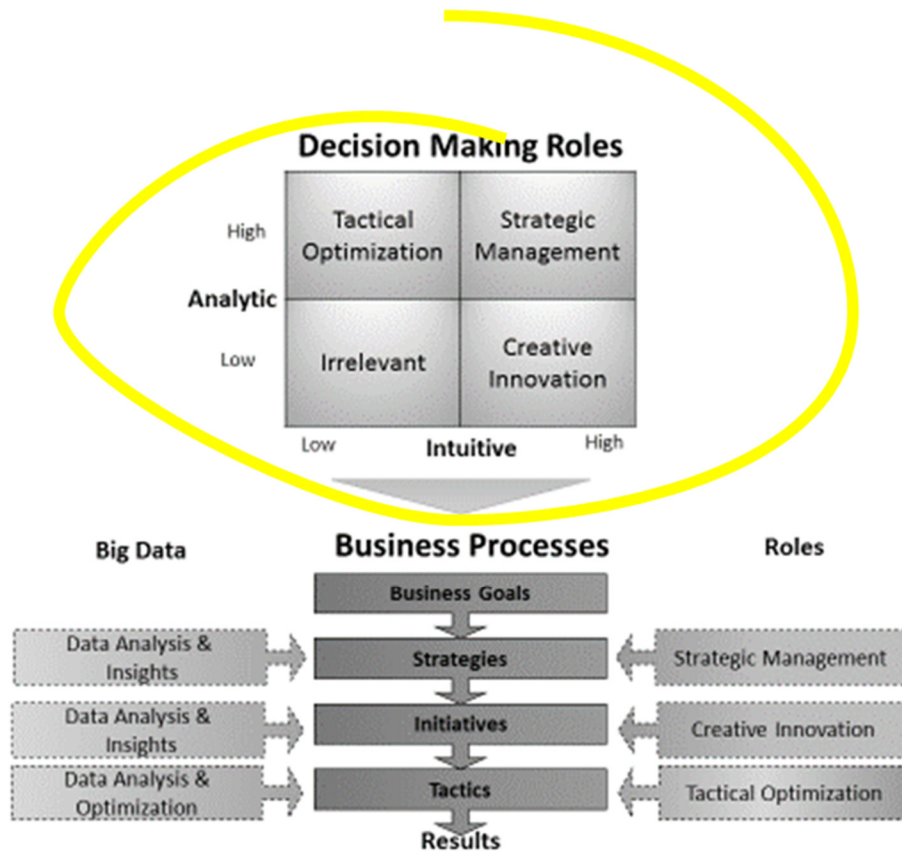
6.4.3 Tactics

Referring again to the model in Figure 6.7 the identification and prioritization of key initiatives is followed by the execution of tactics. As proposed in the framework, this step requires discipline in acquiring and analyzing data through constant testing and optimization. This is an area very familiar to digital marketers across industries. Eisenberg and Tivadar (2009) urge the digital marketer to make the commitment to “Always Be Testing” and Berman (2016) argues that mobile devices are “always on” and the same “always on” approach has to be followed in testing and optimizing mobile marketing. Linus Pauling in an audio recording transcribed by Harker (1961) says famously that the best way to have a good idea is to have lots of good ideas and throw away the bad ones. The team pursued several test experiences and continuously optimized those, to extract the maximum possible efficiency as measured by return on advertising spend.

6.5.0 Developing and Exercising Decision-Making Capabilities – using the Framework

We will now connect the action steps described in Section 6.4.2 to the efforts taken to develop capabilities, talent and processes within the team, in order to appropriately exercise decision making roles dependent on the situation.

Figure 6.8 Decision-making in the Marketing Function – Focus on Decision Making Roles



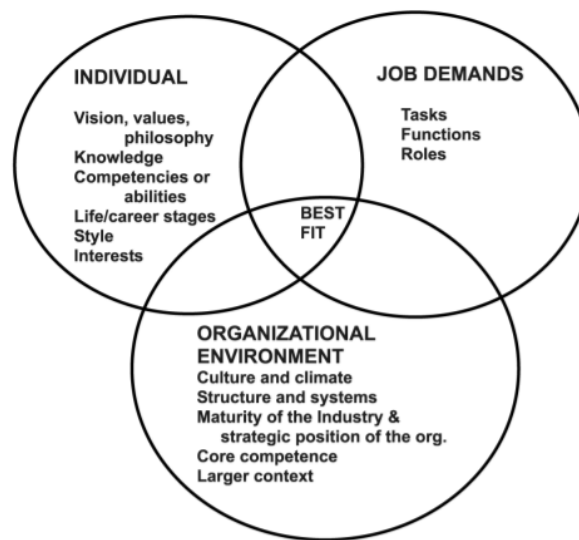
An initial review of the sub-team revealed that there was greater expertise and inclination to operate in the box of “Tactical Optimization” characterized by High Analytic and Low Intuitive mindset. Based on my past experience and the learning from the expert interviews, my submission is that it is not just enough to develop other decision-making capabilities such as “Creative Innovation” and “Strategic Management”, it also more important to give the team the ability to recognize the situation and apply the appropriate decision-making style. Again, based on my past experience and my work with the present team, developing such a style flexibility is the difficult part and one that is often likely to be ignored in training sessions.

To develop this style flexibility, a four-fold plan approach can be considered (1) defining the required competencies, (2) assessing the gaps and development needs (3) providing training and skill development, and (4) on-the-job modeling and coaching.

6.5.1 Definition of Competencies

Competency models help organizations by clearly communicating a shared set of important leadership behaviors, tightly dove-tailing leaders' behaviors to overall business goals and strategies, and helping in individual employee performance evaluation (Hollenbeck, McCall and Silzer, 2006). Competencies help in identifying, creating or developing the optimal fit between an individual employee's abilities, the demands of the job in which they function, and the organization environment in which they are situated, as can be seen from the self-explanatory Figure 6.9 from Boyatzis (2008):

Figure 6.9 Role of Individual Competencies in Performance by Boyatzis (2008, p.7)



To develop competencies, detailed job descriptions were drawn up for each key position. It was found that many of the existing job descriptions had been written years ago and did not adequately reflect the changing nature of the technology environment, the business situation or the market forces. In order to do justice to this, the author looked at several sources including journal articles, best practices from great companies and most recent advances in the field. Alldredge and Nilan (2000) list the leadership competencies at 3M, a global company with a strong reputation for having innovative leaders. These competencies are (1) ethics and integrity, (2) intellectual capacity, (3) maturity and judgement, (4) customer orientation, (5) developing people, (6) inspiring others, (7) business health and results, (8) global perspective, (9) vision and strategy, (10) nurturing innovation, (11) building alliances and (12) organizational agility. In order to adapt these best practices to the workplace environment, the author

sought to use a competency model developed by a team of researchers who had occasion to work with the author in a corporate setting in the past and therefore understood the specific ecosystem of innovation leadership (Hunter and Cushenbery, 2011; Hunter, Steinberg and Taylor, 2012). Based on these, the following competencies were identified for our managers in this specific team:

1. Business Acumen
2. Consumer Focus
3. Continuous Learning
4. Decision-making agility
5. Innovation and Creativity
6. Manage ambiguity and complexity
7. Strategic Vision and Perspective
8. Influence Others

6.5.2 Assessment of Gaps and Development Needs

Using the above competency structure, the areas where development needs were identified specific to use of data in business, were (1) Decision-making agility – Analyzing new information using the appropriate mix of analytics and intuition, revisiting assumptions, reprioritizing to stay focused on critical priorities. Demonstrating flexibility and courage to make a course-correction and redirecting efforts and resources to ensure successful execution, (2) Managing Ambiguity & Complexity - Maintaining effectiveness when experiencing major change or uncertainty in the business environment. Being resourceful in collecting information from diverse perspectives to analyze complex or ill-defined problems and (3) Strategic Vision & Perspective –Translating vision and strategy into explicit plans and actions.

6.5.3 Training and Skill Development

Based on the gaps and training needs identified above, we are following a “70-20-10” development process, or in other words (as a rule of thumb) 70% on-the-job training and coaching, 20% special projects and 10% classroom training. As a part of this exercise, we have provided classroom training on leadership style flexibility and co-active Leadership using the methodology proposed by Kimsey-House

and Kimsey-House (2015). Specifically, through classroom training, case studies and role-play, the team learnt the techniques of “Leader in Front”, “Leader Behind”, “Leader Beside”, and “Leader in Field”, and “Leader Within” (ibid.). This classroom training is being mentioned here only to provide context of the action taken and the author will not delve deep into the model here as this is not central to the thesis.

6.5.4 On-the-Job Training and Coaching

This is an on-going endeavor with the team. Specifically using the author’s decision-making styles grid, (Figure 6.9), the author as leader of the organization has mentally planned and executed coaching and ongoing feedback based on how the team currently uses and needs to appropriately use (1) Strategic management, (2) Tactical Optimization and (3) Creative Innovation depending on the situation. This coaching is happening through leading by example, by doing post-mortems and through periodic reviews.

6.6.0 Personal Reflections on Action Research

An important part of conducting the action research is the opportunity to engage in self-reflection regarding the topic of Big Data and intuition. In order to illustrate the evolution of thought process, three unrelated instances are worth mentioning here, presented in chronological order.

The first example is a personal moment of insight from the US general elections of November 2016, that provided some impetus to my pursuit of this topic. On the day of the election, Nate Silvers, one of the most respected pollsters in the country, gave Hillary Clinton a 71% chance of becoming president of the US (Silvers, 2016). This was based on numerous statistical models and a meta-analysis of dozens of national and local surveys. Right until the final hour, experts and pundits on TV maintained that Hillary Clinton would easily win the Electoral College. Of course, history showed otherwise. Looking back at the fateful night, Donald Trump shared a different, but interesting observation with The New York Times. He described his last rally in Michigan which started at 1.00 a.m. at night, after a delay of many hours and he describes how more than 30,000 people waited in wintry cold weather for several hours to hear him speak (Stack et al., 2016). He says to the Times that intuitively, he wonders why everyone predicts he is going to lose. A marketer prides her/himself in having the pulse of the people, and I wondered how a

marketing manager should have interpreted all the input that was available holistically, and how many of us did not do so.

The second example is from the month of September 2017, while engaged in the action research in my workplace setting. As we were trying to make sense of the million-plus data points provided by the app store reviews, an expert data analyst first came up with all possible learnings they could glean from the data. Significant findings were presented in Section 6.3, earlier in this chapter and these findings stood up to rigorous examination. However, there was another analytical conclusion which looked very legitimate at first glance, that did not make intuitive sense and was finally established to be erroneous after some digging.

Fig. 6.10 Length of Reviews by Language (EXAMPLE OF ERRONEOUS ANALYSIS)

		Number of words per review				Total
		less than 2	3 and 4	between 5 to 9	more than 9 words	
Language	Afrikaans	100.0%				100.0%
	Bulgarian	51.8%	16.7%	17.5%	14.0%	100.0%
	Chinese	86.1%	6.0%	4.7%	3.2%	100.0%
	Croatian	63.7%	11.9%	11.1%	13.3%	100.0%
	Czech	41.2%	19.2%	20.5%	19.1%	100.0%
	Danish	25.3%	20.9%	23.8%	30.0%	100.0%
	Dutch	31.0%	15.0%	25.5%	28.4%	100.0%
	English	30.5%	15.9%	21.1%	32.5%	100.0%
	Finnish	34.1%	22.5%	22.0%	21.4%	100.0%
	French	33.6%	17.8%	21.0%	27.7%	100.0%
	German	26.6%	16.6%	23.2%	33.5%	100.0%
	Greek	46.9%	16.4%	20.1%	16.6%	100.0%
	Hungarian	40.0%	19.9%	20.6%	19.5%	100.0%
	Indonesian	65.9%	15.9%	13.9%	4.4%	100.0%
	Italian	35.2%	14.9%	22.5%	27.4%	100.0%
	Japanese	95.1%	3.6%	1.2%	0.2%	100.0%
	Korean	47.5%	19.8%	15.8%	16.9%	100.0%
	Malay	77.3%	10.9%	10.9%	0.9%	100.0%
	Norwegian	34.8%	19.9%	24.9%	20.4%	100.0%
	Norwegian Bokmål	31.2%	19.4%	24.2%	25.2%	100.0%
	Polish	35.4%	20.4%	22.3%	21.9%	100.0%
	Portuguese	45.3%	18.4%	20.8%	15.5%	100.0%
	Romanian	50.9%	20.3%	16.1%	12.7%	100.0%
	Russian	46.2%	15.3%	18.3%	20.3%	100.0%
	Slovak	45.2%	18.7%	21.0%	15.1%	100.0%
	Slovene	40.0%	32.0%	16.0%	12.0%	100.0%
	Spanish	40.9%	16.8%	20.3%	21.9%	100.0%
	Swedish	29.7%	18.0%	23.3%	28.9%	100.0%
	Thai	89.4%	6.7%	3.3%	0.5%	100.0%
	Turkish	38.3%	20.9%	23.0%	17.9%	100.0%
Ukrainian	48.7%	16.9%	18.8%	15.6%	100.0%	
Vietnamese	63.0%	13.6%	12.9%	10.4%	100.0%	
Wikang Filipino	50.0%	16.7%	16.7%	16.7%	100.0%	

From this table, the analytics expert made the understandable conclusion that English and German reviewers were more verbose while Japanese, and Chinese reviewers were very terse, saying less than 2 words most of the time. As with any situation, the practitioner took this data to heart and started

finding possible reasons why this may be happening and how to translate this into a business initiative. However, upon later reflection, this data did not make intuitive sense. Why would oriental languages such as Chinese, Japanese, Korean and Vietnamese all have terse comments – after all, Koreans are known (at least stereotypically) to be outgoing and expressive people! When we went back to the analytical expert with this dilemma, they were able to go back and do more digging into the Microsoft software that was used to do the analysis. Long story short, it turns out that Microsoft makes an error in how their software counts words in certain scripts like Kanji, and an entire group of sentences is erroneously recognized as a single word. We were able to quickly correct the situation. However, this reflective exercise was very helpful for me to understand the limitations and errors that can be caused by the volume and velocity of Big Data, and especially taking for granted the results from the software of a company as big and reputed as Microsoft. As we start dealing with constant streams of copious data, the data scientist or analyst would control the quality of data from a technical perspective but will however miss such nuances since they don't have an intuition about the particular quirks of human behavior that a marketer might have. The challenge of course, is that the velocity and volume of Big Data provide very little luxury of time for reflection on the part of the business person. This example is quoted here with the kind permission of the data analyst who is a doctoral degree holder and is at the leading edge of that field.

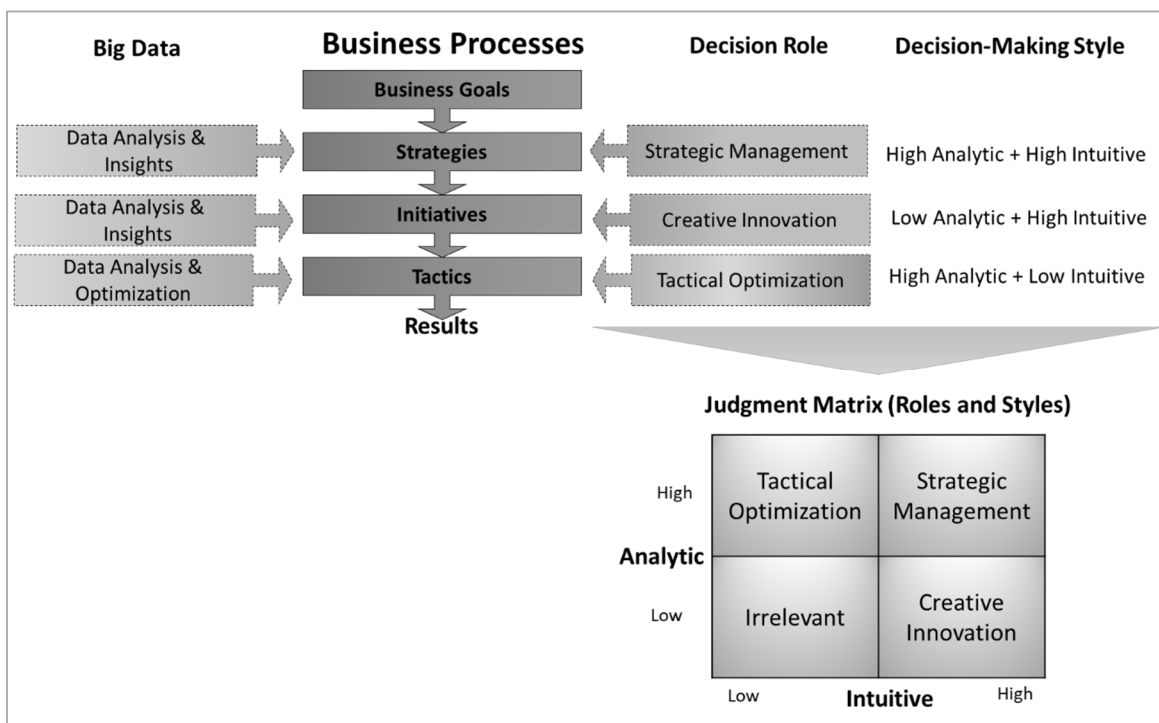
A third example is a situation that was recited to me in October 2017 by a researcher who was working with Big Data. While this has no connection to my workplace, this conversation nevertheless helped me to reflect and ponder on how I was approaching my workplace action research. This particular researcher had received an enormous amount of data (130M data points) about small business owners in the US that was supplied by the one of the world's most reputed data firms. As the researcher was working on a research paper, one of the conclusions from the data analysis was that the small business category that had the most women owners was "hairdressers", however, this category also had the lowest revenue and profitability. The conclusion was that perhaps women business owners made significantly less money. This is what the Big Data from one of the world's most reputed firms said. However, when the researcher conducted personal interviews with an expert in the hairdressing industry, they learnt that almost 80% of the earnings were cash earnings and hence unreported. Thus, if one were to believe the Big Data from a reputed analytics company, one would be making a significant error in judgement!

The above three examples fueled my personal reflection. If the most reputed pollster, the biggest software company and one of the largest data companies could all make such basic mistakes in handling Big Data, it struck me as important that the business practitioner has to use a healthy dose of skepticism while interrogating the Big Data against the expert intuition that they bring.

6.7.0 Further Evaluation of Model as Informed by Action Research

As a result of the feedback received in action research as well as from distinguished faculty who had a chance to input on this thesis, the author has looked at the opportunity to further optimize the depiction of the model. The key areas covered were visual clarity and relabeling of parts of the model for better understanding. This modification is proposed in Figure 6.11 below:

Fig. 6.11 Decision Making in Marketing Function
(Modification of Model Based on Action Research)



In this version of the model, the roles and styles matrix was repositioned at the lower right-hand side and relabeled as the “Judgment Matrix”. Based on feedback from co-workers and academics, this format

provides a sequencing that better follows the work process itself. By labelling the matrix with the word “Judgment”, it also interlinks decision making roles and styles with the broader area of management judgment.

The downsides of this new illustration are two-fold (1) it reduces the visual symmetry of the model and (2) it makes it a little more of a “process” framework rather than a “thinking” framework.

6.8.0 Results and Concluding Thoughts on Action Research

As a result of the various initiatives conducted during the past few months and as a result of ongoing strategies and tactics already being pursued by the business, the particular business segment under discussion here is showing a healthy annualized growth of 277% on a year over year basis. It has to however be emphasized that the growth is being realized due to many actions that the author’s team is taking directly as well as by influencing many, many other teams who are investing resources, time and skills to grow this business. Hence, the purpose of the author is clearly not to take individual credit or attribution of these results to a limited set of actions taken. Instead of discussing these results in depth, we are better served to reflect on the action research journey itself.

This action research, just like any other, is first and foremost, an exercise in change management. Firstly, creating change is hard in any organization, and in this specific case also, there were many stages in overcoming friction and setting plans in motion. A famous misattributed quote (combination of writings by Mahatma Gandhi and a speech by Nicolas Klein as reported in Snopes, 2016, n.p.) says “First they ignore you, then they laugh at you, then they fight you, then you win.” While corporate life is nowhere as dramatic as this, the change agents do go through a process of (1) creating awareness, (2) emphasizing the urgency, (3) removing objections and (4) moving towards the objective. This action research also followed a similar pattern. The third phase of “removing objections” also involves self-objections or self-doubts which are reconciled through reflection and re-planning.

Secondly, it is important to provide a learning environment and limit the “fear of failure” among the participants or team. “Fear of failure dissuades individuals from entrepreneurship”, according to Morgan and Sisak (2016, p.4) and the author (based on experience only) finds this to be the case in

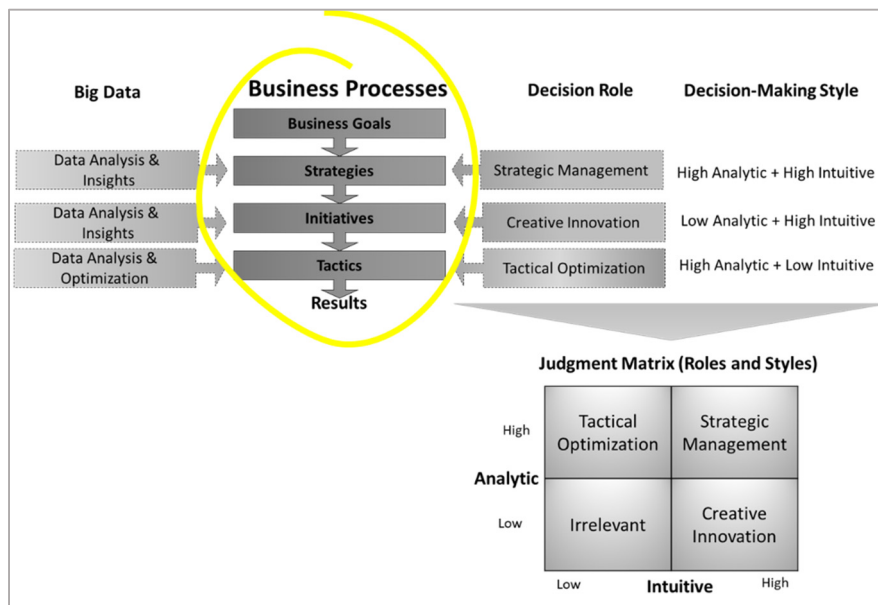
“intrapreneurs” or internal entrepreneurs as well. Discussions regarding goals, measurements and rewards and the positive consequences of failing constructively have to be made by the manager at the start of the initiative and consistently demonstrated through their actions.

Thirdly, and finally, the manager sets the tone and agenda for the entire team through their own actions and attitudes that are visible to the team. Boies, Fiset and Gill (2015, p.1081) point out that “Teams exposed to a leader displaying intellectual stimulation and inspirational motivation leadership spoke more on average per person, which was positively related to team trust. Team trust, in turn, was positively related to task performance”. Bearing this out in the workplace situation, the author consciously tries to maintain a high level of openness, transparency and communication of goals to develop motivation and trust within the team. The importance of this on successful workplace actions cannot be over-emphasized.

Chapter 7 - A Practical Guide for Applying the Framework

This short chapter is designed as an easy-to-follow “user guide” aimed at a marketing manager or leader who wishes to apply this framework in their workplace setting. The language and layout of this chapter follows the user guide format. As mentioned in the objectives of this study, it is the intent of the author to provide a simple and practical guide that can be followed by other industry practitioners who are facing similar problems as the author did, but do not have access to the industry experts or the thinking that went into this study. As a practicing executive, my bias is towards creating a model that can find application across the spectrum of marketers. A main consideration for applicability is how clear and easy it is to follow the various steps of the model. In this regard, with a view to providing transferability of the research, the following step-by-step guide is provided in a conversational format (that is different from the more deliberate style used to write the rest of the thesis).

Step 1: Map the Business Processes for the Marketing Team

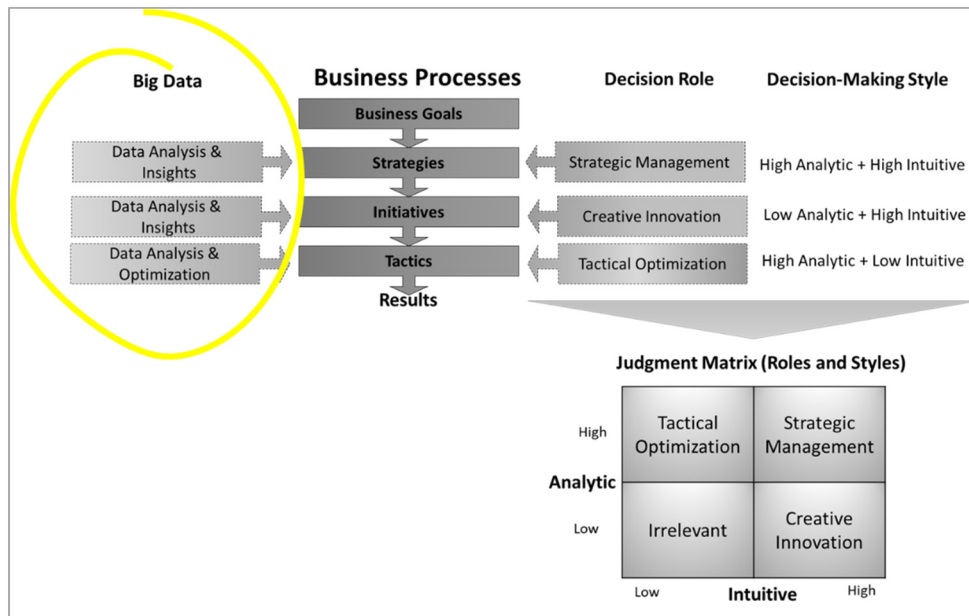


If your organization has a cadence of annual business goal-setting, strategic planning, prioritization of initiatives and executing of tactics, map that out first. In case you work for an organization that does not have a formalized planning process, you may want to start with a book that guides you. “Business Planning: A Comprehensive Framework and Process” by Wesley B. Truitt (Quorum Books, 2002) is an easy-to-follow book. Essentially, you would need to set measurable and actionable goals, typically for a

year at a time. These goals may include metrics such as revenue, profitability, market share, competitive position, corporate responsibility etc.

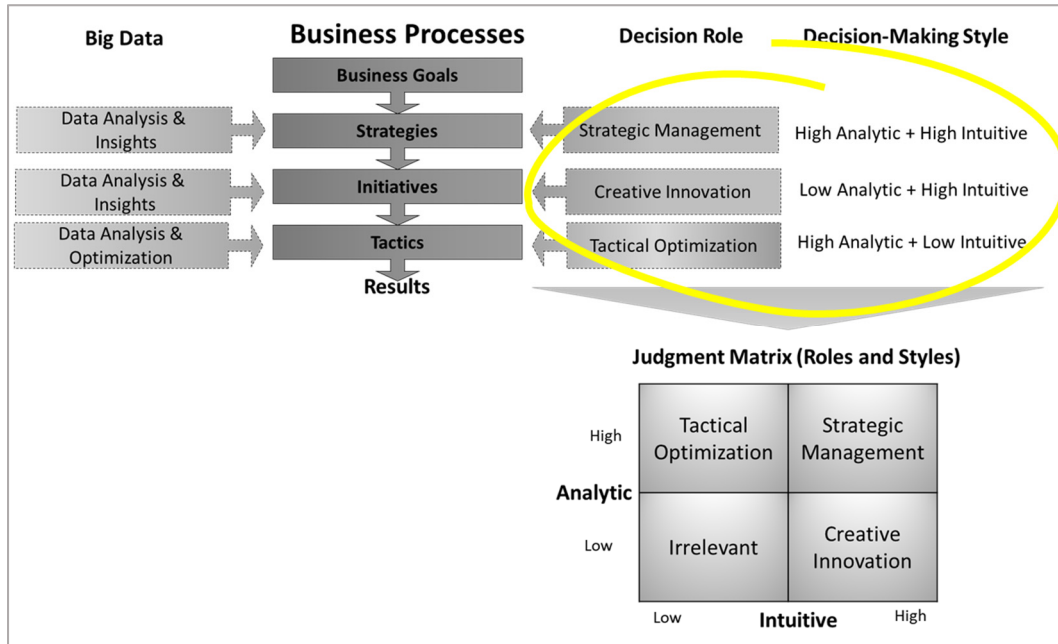
Then, the goals need to be turned into a few overarching strategies. You should typically have a strategic plan that is updated once every fiscal year. This plan lays out key strategies across your department. Based on the strategies, you would need to create and prioritize a set of key initiatives that will enable the strategy to succeed. Once these key initiatives are aligned across the key stakeholders, the day to day tactics have to be created and executed.

Step 2: Decide how Big Data Informs Each of the Steps



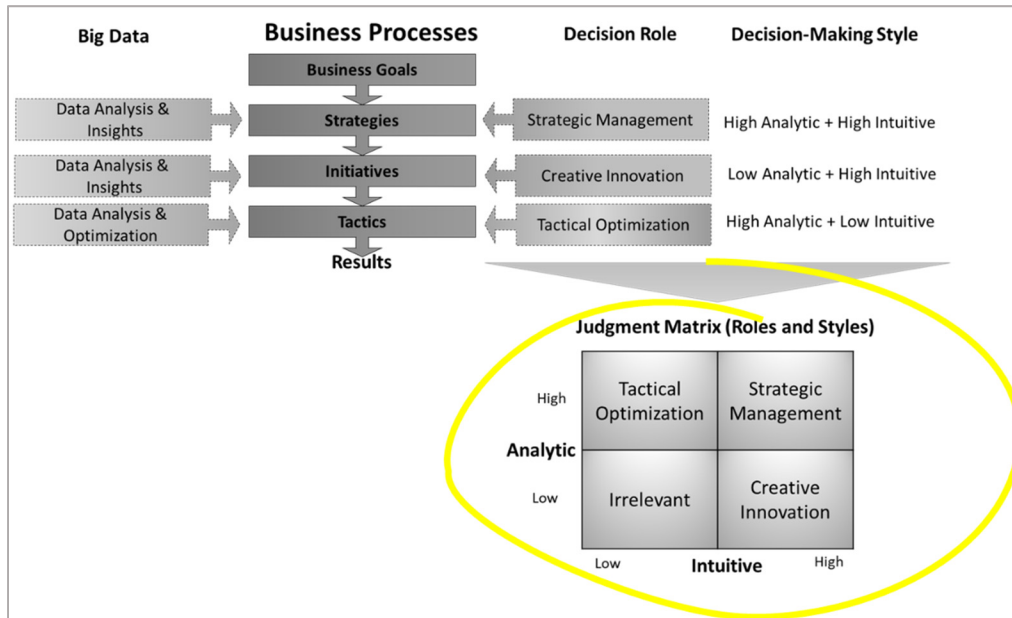
At this stage, you should be looking at each step of the process (Strategy, Initiative, Tactics) and planning out exactly how data will provide illumination, guidance or insight to each of the steps. This is a fairly extensive and detailed data-mapping exercise that lays out the data sources, the data reporting and the insight development process. For this particular phase, my recommendation is that you as the marketer be the “client” and let the data science and business intelligence experts in the company map this out for you. As the business leader, your role is to make sense of their recommendations and provide feedback on how the data architecture and analytics can best serve your business process.

Step 3: Understand which Decision-making Style to use at each Stage



At this stage, there is a two-way collaboration between the data and insights group and the marketing group. To ensure the most productive results, it is the responsibility of the marketer as the business leader to set the tone of the engagement during each phase – as it involves strategic management, creative innovation or tactical optimization. Ensure that the proper systems, routines and meetings are in place to sustain the appropriate level of dialog. This is a good time to bring in your cross-functional allies who will start contributing in each of these areas. For example, for strategic management you may want to bring in your counterparts from corporate strategy, finance, R&D etc. For creative innovation, you may want to include your counterparts from product development, advertising, finance, sales etc. For tactical optimization, you may want to include your experts from each marketing function, field operations, legal, commerce and billing, etc. It must be pointed out that no single department has a monopoly on strategy or creativity, hence the above examples are not meant to make sweeping generalizations, but rather to provide a starting point.

Step 4: Nurture and Foster Appropriate Decision-making Capabilities



As a leader, this framework shows you the specific roles that you need to identify, recruit, train and develop among your team, depending on the role or roles that they would play. For strategic management, a high level of analytical skill and a high level of intuitive decision-making ability is required. For creative innovation, a much more intuitive competency is better. For tactical optimization, it is important to be deeply analytical and develop a discipline around data-driven analysis and execution. The last quadrant of low-low is hopefully non-existent in your team or else, you may need to take appropriate action.

Chapter 8 - Contributions to Knowledge and Opportunities for Future Research

After summarizing the achievement of objectives of the study, this chapter will provide a brief summary of the key contributions made by this study and then provide suggestions for succeeding researchers and practitioners to fill gaps or build further upon the research described in this thesis. This chapter is organized in three sections, the first focusing on the framework, the second focusing on the action research and the final section positioned as a thought-starter for extendibility, based on work in the adjacent field of Artificial Intelligence, which has not been in scope for this main thesis.

8.0.0 Achievement of Objectives of the Study

In Chapter-2, the following overarching question was posed:

How can marketers balance Big Data and intuition to improve strategy development and decision-making?

Through theory-generating expert interviews, a clear framework was developed on how marketing professionals could use appropriate decision-making styles using a combination of analytics and intuition in order to improve their effectiveness in the context of the rapid evolution of big data. Based on the framework, the Action Research in the workplace setting was successful in developing process, talent and training to improve the decision-making effectiveness of marketing professionals and the success was ultimately underscored by the revenue growth and business success achieved by the action set.

8.1.0 Contribution to Knowledge and Practice

The framework that was developed based on expert interviews and subsequently tested in the workplace setting provides a structure by which marketers can map their strategic and tactical planning process and contextually apply the right balance of Big Data and intuition to solve specific issues surrounding optimization and innovation in an effective manner. This section examines how the thesis makes a timely and unique contribution to benefit the practice of marketing.

Firstly, this work acknowledges the emergence of new disciplines, discoveries and tools that create evolution and change in how the profession of marketing is carried out, with the emergence of Big Data being the latest and specific case in point. However, as evangelists of these new disciplines create a sense of inevitability and market forces create a sense of urgency for practitioners to adopt these new tools, there is a series of stresses and strains that appear on the way marketing professionals learn, adopt, prioritize and include these new techniques in their decision-making repertoire. This creates struggles surrounding methodology, organizational structure and talent. As professionals work hard to run on the treadmill of keeping the business moving, it becomes important for scholars and experts to provide a more reflective and knowledgeable perspective on how these new techniques should be adopted. This framework and action research have culminated in a transferable model or tool that can be used by marketers in other companies and industries as well.

Secondly, this study questions the relative supremacy of one approach versus another and argues that a holistic approach to marketing requires a similar well-rounded approach to the thought processes that go into the creation and execution of marketing plans. By using optimization and innovation as examples of marketing's areas of responsibility, the model provides a clear framework for how to approach decision making in each situation.

Thirdly, the study provides a distinction between the strategic and the tactical aspects of the job of a marketer and provides an insights-based model of how and where these aspects are applied contextually within the larger process of marketing management.

Fourthly, through the action research case study in the workplace context, the study provides a tactile and tangible case-study about how realistic, actionable steps can be taken to create a significant impact to the success of the business, thus providing a proof-point for the successful synthesis of research and action.

8.2.0 Extending the Framework

The framework in Figure 6.11 was created within 2 very clear boundaries (1) marketing function and (2) consumer products and services. Hence there is opportunity to expand this research in future to business products and to other functions beyond marketing such as sales, operations, product development etc. (McAfee et al, 2012).

Secondly, thought leaders in the field have been calling for greater collaboration between the Chief Marketing Officer (CMO) and Chief Information Officer (CIO). For example, Peterson et al., (2010, p.219) point out “CIOs and CMOs must work together to develop a marketing technology architecture that combines the ability to analyze consumer behavior, help make marketing decisions, and automate customer interaction, content management and publishing processes.” The framework developed here can therefore be extended to show the connectivity and interlinkage between the CMO and CIO’s functions.

Thirdly, there have been recent calls both from academia (Zhang et al., 2017) and industry, for creating the role of a Chief Data Officer (CDO). While debates continue on where the CDO position should report into within the organization, an interesting concept proposed by Lee et al., (2014) is that of a “Marketer CDO”, “The Marketer CDO develops relationships with external data partners and stakeholders to improve externally provided data services using Big Data. Marketer CDOs are often found in data product companies, where they develop working relationships with retailers, financial institutions, and transportation companies that are purchasing their companies’ data.” (ibid., p.7) There is potential to integrate this Marketer CDO role into the framework to provide a future perspective on organizational structure.

Fourthly, this framework has been created based on very rich, in-depth interviews of recognized expert practitioners by the author, who also has a standing in the profession as a senior executive leader. Such a qualitative study has been successful in developing the key framework. Even so, there is an opportunity to take this framework and more widely test its applicability and usefulness among a much broader swath of the professional population through a focused, quantitative research survey.

Finally, there is potential for applying this framework to the corporate strategy and planning function of the business. In the author’s experience with most consumer marketing companies, the role of strategic business leadership under the CEO, falls de facto to the CMO. Hence the author as well as the interviewed experts feel very comfortable talking about strategic implications within the realm of their marketing leadership positions. Even so, several larger companies (e.g. GE) have separate and independent corporate strategy teams that report directly to the CEO. There is an opportunity to build

upon the author's framework to accommodate the activities, processes and competencies required in this corporate strategic planning ecosystem.

8.3.0 Extending the Action Research

As mentioned in Chapter-3, the author went into Action Research, fully understanding its quirks, limitations and compromises as a technique itself and also as a new variable introduced into the operating cadence of the workplace. This conflict is observed by Jacobs (2017, p.588) as professional development in the workplace "requires openness and flexibility in the research design because the process matters and not so much the outcomes, whereas research output requires steering and framing of the project in order to achieve valid and transferable findings". As the researcher and the teams struggled with the two priorities, the constraints put on the research by the speed and shifting priorities of the business are freely acknowledged. Hence, the author found it very necessary to conduct the action research within a brief, contained episode of time. Future action researchers may find that they have greater staying power, or they may apply the findings in a slower-paced workplace and be able to do many more extended loops of learning and action.

Secondly, as an explicitly idiographic method, Action Research creates a conflict regarding the limitations for generalization of the learning from this study. As Baskerville and Wood-Harper (1996, p.243) continue to remind me, "only the most tentative causal links can be claimed owing to the multivariate nature of the study". Hence the author makes every effort to emphasize this position and hopes that future readers will continue to view this study within such an appropriate lens.

Finally, I am extremely aware of the collective role of the team in achieving the results and hence extremely self-conscious about not giving a mistaken impression that the accomplishments of the team are somehow my own achievements. With a high-performing team comprised of several self-motivated experts, I would consider my leadership stance as more in line with DeRue and Ashford's (2010) concept of adaptive leadership. Day-to-day leadership of the business initiatives are intertwined in interactions by team members claiming leadership identities while being so recognized by their peers (ibid.) In such a scenario, the author would like to make it expressly clear that the learning, victories and the

achievements reported in this thesis are those of the team that the author has the good fortune to work with; and the author is not in any way subsuming their credit purely by reason of being the reporter (or storyteller) of the action.

8.4.0 Cross-over Opportunities from Artificial Intelligence

During the expert interviews, a few of the senior marketers wondered how the advances in Artificial Intelligence would affect Big Data and marketing management as we know them today. While this is out of scope of this thesis, it is nevertheless worthwhile to devote a few paragraphs to wondering about the future.

When Google's AlphaGo beat a human at the game of Go, it marked a new milestone in the race between human intelligence and artificial intelligence (AI). "With its advancement in computing and storage power, AlphaGo beats the most diligent and deeply intelligent human brains. The ramifications on the next evolutionary computing step remain to be seen", according to Chen (2016, p.7). Futuristic observers are also not fazed by the Twitter "meltdown" of Microsoft's Tay Chatbot, which was meant to leapfrog into conversational computing, but ended up generating racist and objectionable tweets (Baciu, Opre and Riley, 2016). It is a question of "when" and not "if" AI will match human intelligence in all of its aspects, and not just in problem solving in bounded rationality (Felin, Koenderink and Krueger, 2017).

Let us briefly touch upon how this might affect the future of marketing management as we know it. One of the experts (in the interview) wondered aloud whether AI will be able to make creative judgements and leverage creativity as a divergent thought process, as opposed to optimizing as a convergent thought process, a topic also touched upon by Guastello (2016). If AI can foresee and react to all human emotions, irrational choices and impulses, that would allow Big Data analytics to move from just making "transactional" recommendations such as pricing and promotional offers to making creative leaps like deciding on advertising creative or picking the right emotions to present to the consumer. A "bio-inspired" architecture to manage Big Data with the inclusion of sensory cues and intuition is still a very early-stage concept (Mishra, 2017), but still worth exploring in future research on the subject.

According to Gustafson (2016, p.12), “One can easily visualize a nice triangular diagram in which information, intuition and imagination are all linked and indeed interlocked. To fix ideas, let us think of information as a big data bank, e.g. along the lines of Kurzweil, and, again oversimplified, of intuition as based upon experience. We leave imagination as a ‘module’ not yet well-enough understood to model”. A valuable extension of the current thesis can be the application of this three-pronged approach of information (Big Data), intuition and imagination, to marketing decision making.

Chapter 9 - Conclusion

This doctoral thesis set out to answer the following main question and two sub-questions:

RQ1: How can marketers balance Big Data and intuition to improve strategy development and decision-making?

SRQ1: How should marketers deal with the challenges of Big Data in decision making: specifically, with reference to the unique characteristics of volume, velocity, variety, veracity, value and complexity of data?

SRQ2: How are marketing leaders balancing data and intuition in decision-making situations and what improvements can be made to this process?

The framework developed in this thesis (Figure 6.11) was found to be substantially useful in addressing this process with marketing experts as also in addressing the workplace problems through the Action Research. Spring-boarding from the success in the author's workplace, this framework has the potential for use in other organizations facing similar issues. The challenges in dealing with the special aspects of Big Data, as well as the context-appropriate balancing of data and intuition are very relevant for practicing marketers and the framework can be used to address and course-correct the decision-making process as well as provide a training aid to practicing managers.

As an emergent and advancing field, the early literature about Big Data is seen to be "evangelizing" and characterizing, rather than critically examining the applicability and challenges of this discipline. Understandably, business practitioners tend to greet such emergent disciplines with a touch of skepticism, but a future-facing, yet practical framework can foster the insightful and considered use of Big Data in business. In-depth interviews with contemporary industry experts resulting in a framework is a unique contribution of this thesis. Based on the author's extensive literature survey, a similar approach in marketing decision-making has been conducted perhaps for the first time, and the following key conclusions can be drawn from the study.

In consumer products and services marketing, the approach to Big Data is dependent on whether the leader works in a direct marketing (B2C) environment or in a channel marketing (B2B2C) environment. However, there is broad agreement that Big Data can enhance moment-of-truth marketing and the ability to micro-target messaging.

While the possibilities of goal-seeking machine learning are very promising in optimization scenarios, the more linear hypothetico-deductive decision-making method will remain relevant in the foreseeable future as marketers see this as their responsibility to the company and its shareholders.

There is a need to use varied approaches for short term vs. long term and strategic vs. tactical decisions. These approaches require the appropriate use of data analytics as well as expert intuition. The framework in Figure 6.11 captures the role of data analytics and intuition in the decision-making process:

The proper use of Big Data and intuition requires the development of processes, talent and training that allows constructive cross-border interaction between the data science team and the business team. This is an evolving field and the use of the above framework can inform the corporate leaders in the creating and nurturing this competency.

Big Data is an exciting new field that holds tremendous possibilities for the future, which are only limited by the extent of human imagination. As one of the experts put it, there may come a time in the future where Artificial Intelligence (AI) completely takes over the exercise of human choice in consumer products and services. When the human world moves to such a fully deterministic environment, AI using Big Data could render Marketing as we know it, obsolete. However, if and until that happens, human marketers will have to balance the appropriate use of Big Data analytics and imaginative intuition to grow their business and delight their consumers.

We conclude with this quote from Albert Einstein's interview by Viereck (1929):

Interviewer: "Then you trust more to your imagination than to your knowledge?"

Albert Einstein: "I am enough of the artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."



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Appendix 1 - Verbatims

Verbatim Statements from Expert (CMO) Interviews

Coded by Themes

Note: The verbatim conversations have been lightly edited for grammar and readability as the conversations were transcribed. Also, any reference to the expert's company or business results have been removed to respect confidentiality.

Key to the Expert Speakers:

- **E-1: Head of Marketing** at a leading Financial Services Company (Fortune 500), with previous experience in credit cards, internet companies and a speaker at several industry forums. (Interview Date: 26 June, 2017).
- **E-2: Chief Marketing and Sales Officer** at a leading Media and Telecom Company (Forbes 500, previously Fortune 500), with previous experience in global consumer products, food and beverage and internet companies in several countries, with also deep expertise in marketing analytics and insights. (Interview Date: 30 June, 2017).
- **E-3: Chairman** of a Health and Fitness company who previously held positions as Chief Marketing Officer and Chief Strategy Officer at three Fortune 500 companies in Food and Nutrition. (Interview Date: 27 July, 2017).
- **E-4: Chief Operating Officer** at a Technology Company (Fortune 500), with previous experience in the media industry and at a world-renowned consulting firm. (Interview Date: 5 July, 2017).
- **E-5: President of Marketing and Sales** (Retired) from a Beverages Company (Forbes 500) and currently a published professor at a reputed University. (Interview Date: 21 July, 2017).

- **E-6: Chief Marketing Officer** at an Insurance and Financial Services Company (Fortune 500). (Interview Date: 10 August, 2017).
- **E-7: Chief Marketing Officer** at a Global Consumer Products Company (Fortune 500). (Interview Date: 9 September, 2017).

Theme #1:

“Technological” Opportunities but “Human” Challenges

- **E-7:** The use of big data is different in different parts of the world. Unfortunately, getting data is not consistent across the world. For global CPG companies like ours, the bulk of the business data is from brick and mortar retail. That will not go away in the near future, especially on a global basis. At the same time, e-commerce is growing in markets like USA and China. In e-commerce, we can look at engagement all the way to transactions, in a direct feedback loop. It is extremely important for us to be on top of these kinds of analyses. Marketing needs to be more involved with analytics and sales rather than just the brand image. This has created organizational issues in companies where marketing is not viewed as a revenue generating organization. At the same time, you cannot be responsible for generating revenue but destroy the brand.
- **E-5:** Good marketers have always found a way to use data effectively to improve their market. Then over time data has multiplied and now shows up in far more places, with far more data. Maybe the secret here is actually understanding what that marketing task is, the marketing issues that you're trying to address.
- **E-2:** Let me define how I think about big data. It is not only that there are massive volumes of

data points about specific customer behaviors - but it is also being able to tap into platforms and other databases that then expand the fields of view on a particular customer or particular decision point. So we have our own internal “large data” that looks at, for instance, media viewing behavior. Or lifecycle behaviors or triggers along the customer journey. But then we can append information from platforms like Facebook to augment and supplement information about customers and prospects. So, I would say the benefits of big data come from having a more holistic view of the customer. I would say if you add the analytical tools and enable real-time recommendations, then there are massive benefits to effectiveness and efficiency of marketing. If you think of any large organization with revenue in the ten billion dollars plus range, and if you make small adjustments and optimize a large numbers of transactions it is incredibly useful and powerful.

- **E-2:** I think the challenges with big data are cultural and I actually find it challenging to hire the skill-set. Also the capital dollars necessary to pursue big data. Another challenge is bringing all the data together. And putting it into a warehouse like Amazon Web Services in ways we can interrogate it.
- **E-2:** There are so many statistical software packages these days that allow people to do both rudimentary and advanced analytics. However in the wrong hands you can come to the wrong conclusions.
- **E-2:** I think there's a challenge around data governance and one of the things that we find in a large organization is that you need to put governance in place to assure data. You know we actually had to overcome the hurdle of different groups having different definitions for something that might seem similar.... our customer for instance. And we realized that we needed to identify the subject matter experts who could be the stewards of the definitions so that it would be a sort of a common truth.
- **E-7:** Finding the right partners who have good quality data is challenging. Then the challenge is to turn the data into knowledge and turning it into insights...right now it's a process of reducing complexity.

- **E-7:** We actually look for very specific talent for our big data analysts. Often we hire out of the consulting realm. People with analytical horse are few and far between. And we go out of our way to attract them and recruit them and create a very stimulating environment for them. And I think also we bring in quite a lot of young people and we realize we have to build their business savvy. We bring in a lot of engineers for instance, brilliant young people and we have mentors for them and there's a good partnership between more seasoned business operators who might be running the business and these young people and it's a very powerful combination.
- **E-6:** (For doing justice to Big Data), you need people that are well-trained. Bad data gives bad insights. So you need a CDO or chief data officer who cleans the data, Data Scientists who are uncovering patterns – and have these teams co-exist with the business. There could be a combination of a central team and an embedded team.
- **E-7:** I find that people either have grown up with, or developed that quantitative aspect to their leadership and their approach or it's very hard and they struggle. It's a hard thing to develop in people later in their careers to be frank. And we can build some pretty amazing attribute models. But you really need black belts to interpret them and run them. And you can lose a lot if you don't have the right people in place.
- **E-2:** We are optimistic about the future and we're optimistic about what technology is going to do to human connection and human relationships. The grandfather with robotic prosthetics, who is able to dance with his grandchild. Or a birthday party just a little bit in the future, for a young man that is enabled through 3D and Virtual Reality.
- **E-4:** I'm very skeptical of the phrase Big Data. I certainly see as you've just defined how it's relevant for a data scientist that relevant for people who actually work with data, manipulate data, store data, engineer databases and all of that and certainly the volume of data that's exploding in recent years is an incredible trend and certainly relevant for marketing practitioners. It's not clear to me that “big” is going to be revolutionary by itself. I think that direct marketing been around for a long time, at least since I began my professional career in the 1990s. It was already sort of a standard practice...now, instead of reaching consumers

through the mail in the post office you're reaching consumers through social media and so on.

- **E-4:** I tend to think it's sort of something propagated by suppliers to sell their stuff to a company in a sense - if every year companies come out with cars, but then they always add new features to make a car better and a car actually today probably has almost no resemblance to a car from twenty five years ago, but it's still a car. I have a hard time separating hype from reality so I think about it differently. I certainly think it's a great trend of companies becoming more adept at using data in their decision making and in their understanding of customers. So that's a great thing, but I'm not sure what the revolution is all about.
- **E-4:** Now there are more sources of data and there are more channels to reach people. That's just progress.
- **E-4:** I love the story of Netflix and the big data about viewer preferences are going to inform the type of shows they serve me. But remember, "House of Cards" was their first big hit they didn't develop or commission "House of cards" based on their big data. The guys who created the show had pitched it to two or three TV networks and they turned it down then Netflix picked it up. They have a great story for Wall Street about big data and updating algorithms, but at the end of the day Netflix is writing big checks and they've hired a bunch of traditional TV executives to find shows based on intuition. That's the reality of it. So it's almost like maybe their data helps them make shows 10% better than the networks.
- **E-4:** To me, well, I just have a direct marketing background. If I worked at Gillette or with a company like that, it might be a different vantage point. I just think that there can be a better definition of what big data is. Maybe the implication of big data is just that all companies are becoming direct marketers right way which to me can be a huge implication. And in order to be a direct marketer you need to invest three hundred percent more in technology and talent. I think that's really very stunning.
- **E-1:** The CDO or chief digital officer and CMO or chief marketing officer are intersecting in many ways and in some companies it's one and the same job.

- **E-1:** I think obviously Amazon is doing a great job in the area and I think different companies are doing different things really well. Wal-Mart is clearly leading the industry with a ton of different things that they're doing... they're using their employees to reach their customers and thinking about deploying employees into areas where they have high concentrations of consumers for deliveries of product. So they're actually connecting their employees with consumers, using big data. So there's a ton of great examples out there and I know you can point to most of the Fortune one hundred companies and they're all doing something. Is there one company doing everything well? No. Because as I said, it's still in the early formative stages.
- **E-4:** Well, decision making structure in many companies is totally messed up. Because of.... Well, all kinds of reasons... shared power, back channel stuff, political considerations, and so on. The clarity of roles responsibilities and decisions is a critical thing for companies to make sure they nail down. And unless that's clear you can get into an awful lot of trouble.

Theme #2:

One-to-one, Moment-of-Truth Marketing

- **E-7:** On social media, there is real-time conversation. We cannot “create” the conversation. Instead, we have to “ride” the conversation, listen and respond to the right conversations. This needs a non-traditional approach where speed, agility and pattern-recognition become extremely important.
- **E-2:** How are we able to track individuals as they move locations and they move homes and jobs... and know that we have prior relationships with them? I know it sounds like it would be a fairly rudimentary straight thing to do but it's actually more difficult than you might imagine. To have what we call a persistent identity.

- **E-1:** When I think about data big data I think about solving the problems of getting to know our consumers. When we started advertising in the early part of the century our consumer was pretty much everybody regardless of our target. As things got more complex and as the number of channels in media has expanded, the cost of advertising has gone up as well as the cost per user cost. So to manage that and to understand the best consumer targets and to limit the number of messages that we bombard our consumers with, it's best to only get to those what we know really well.
- **E-1:** If we can harness data, we can connect with those consumers in a much more relevant and meaningful way. And interact with them in a more meaningful way. So the way we're using data today is that we are actually looking at consumer trends and are able to connect to the right consumer at the right time and understand what they're really looking for. And connect with them in a meaningful way. That's the number one way data is helping us today.
- **E-1:** So I have three separate areas where we use Big Data. The area that is used the most is when we have direct consumer interaction. We don't have typically goods and services so the crux of our business is all about driving consumers to our merchants and then helping them to select our payment method once they arrive there. But that's a pretty complex journey. So for us it's all about understanding consumer preference and understanding when consumers will go into different areas in a shopping journey, and this so this area requires quite a bit of big data and quite a bit of intelligence. So a lot of times we'll do a database match and that's where I start and we only do this with a select number of partners. It's very strategic from the standpoint that we sit down with our partners and we will say what are we trying to achieve? Is it driving more net new customers for you (partner) from our base of consumers, or it reactivating and driving up engagement, or is it looking at your top buyers..the strategy for all those might be different. Then we will look inside of our database and build lookalike models again....for example, this consumer looks a lot like your consumer but they're not currently a customer.
- **E-1:** I think there are a couple of trends. One is around understanding mobile behavior. Mobile usage is the one channel that is the highest among all consumers and so you should understand that conversion trend, even if you understand nothing else. It will give you a good indicator,

because even if consumers don't finish the transaction process from their mobile device most consumers will start the process through mobile device. Mobile trends and also will help you understand you know consumer identity. And that's kind of the starting point, so consumer identity understanding consumer identity and how consumers are browsing to shopping in your different industries that would be step one. Step two is getting to new consumers. And the simplest way to establish that is by developing micro- segments of your top consumers. So just to spell that out a little bit more, the best strategy I've seen is to take your top buyers, segment them into the smallest possible segment based on where they're capturing their behavior. Now, by developing look-alike models against these segments and their shopping and media behaviors, you find more new consumers.

- **E-1:** Consumer behavior is changing, the industry is changing. The API economy is the biggest trend that that's happening right now. When I say API economy, what I'm talking about is you're now using APIs (or apps) to live your life. You're calling a ride from Uber using an API on your phone rather than hailing a cab on the physical street. You are using an API for food delivery service...or package delivery services. So the API economy is the biggest trend and you see API-based companies popping up every day. And these APIs are polling data from your phone. They know where you stand, what location you are at what your credit card preferences are, where to deliver to you. These APIs are interacting with you back and forth all the time in real time and consumers are beginning to expect that.
- **E-6:** People forget that data is not just about name, address, phone and demographic details. In the future, we should be able to look at a photograph or listen to a voice inflection. Now computing power is available that can understand your voice inflection, and we should find a way to do something about it then and there (Moment of Truth marketing).

Theme #3:

Hypothesis-driven Decision-making

- **E-7:** A series of testing things without a hypothesis is insufficient. It will make us experiment with non-strategic things. Blindly using AI or artificial intelligence will make us work on things that don't matter to strategy. There is a strong path from strategy to hypothesis development on what needs to be done to drive growth. Just a series of opportunistic choices may take you to a place which may be detrimental to where the organization goes in the longer term. As leaders, we make choices on who we want to be our customer and who we don't want to be our customer. So we have to use strategy-driven rather than opportunity driven hypotheses.
- **E-5:** I'm doing a lot of work now as a Senior Advisor with Boston Consulting Group... because there is so much data available, people start with the data that's available, as opposed to starting with what's the issue I'm trying to solve or the opportunity I'm trying to address? What's the problem and how do I use analytics to answer the question?
- **E-7:** Data alone is not enough. Data should help generate and validate hypotheses and help you to make choices. But the responsibility of the manager to make choices doesn't go away....until life becomes a deterministic environment. Downstream judgements such as programmatic media buying can be automated and mechanized, but there needs to be a feedback loop to the upstream "judgement-making" level. We can see this on a continuum from automated to strategic.
- **E-5:** Okay, so here's kind of how I would think about that. And I'd had this discussion over the years, with (a prominent colleague) at work. But he was researching on data analytics and marketing metrics, because (he) believes that analysis of the data can give you all of the answers that you need, as opposed to starting with any questions or hypotheses. I don't think you figure out strategy simply by doing regression analysis of existing marketing metrics. I think you can optimize, but not come up with strategy.
- **E-1:** The CMO's job first and foremost is to be the spokesperson on behalf of the consumer. And if you think through that thread, for being a spokesperson on behalf of the consumer, your job is to first identify consumer trends and where they're going. And be the voice of that consumer to your organization. Our job is to provide insights in terms of what we're saying. And then drive

the organization towards making decisions against those trends.

- **E-1:** We have an NPS or Net Promoter Score. And our top buyers have the highest NPS, score and then we can break it down as to why. NPS is a big driver for us and when we look NPS, we do not look at just high-level dashboards. The real thing is to understand why is this consumer saying positive things and why is this consumer saying negative things. Getting to the why is the most important part of the scorecard and then we share that.
- **E-1:** It's important to be in a constant state of testing. The industry is evolving and we don't know exactly what the next trend is going to be and how consumer behavior is going to change in the next five years but you know that it is changing. We know that the number of channels we used yesterday are not working as well as they are today. For example, take email...it's gone from a twenty five percent open rate to a twelve percent open. Your channels are not working the way that they were before, so what are you going to do. In the future you have to find flashes of information that inform your consumer's insights and you say, "how do I get to know my consumer better, to connect with them better and you think, I'm going to test OK this is my hypothesis".
- **E-4:** Because the first step is to make sure you define the problem or the opportunity correctly. Most people spend five seconds on what the problem is and ninety percent of them hit a brick wall. When they serve up the answer to management, the recommendation is completely wrong....It is better to spend a third of the time defining the problem well, so step one this is define the problem. And then the next step. You know what are the criteria that you going to examine.
- **E-4:** And you know, focus on the areas that are most critical. I would start with understanding the consumer. If you don't understand your customer and you are not positioning the product or service correctly, the odds of being successful are slim.
- **E-5:** So for me, the most important thing is understanding what the best data to use is, and how to organize that data, and how is it part of the marketing process? I tend to think of marketing process as starting with strategy, which is deciding where we are going to compete, what

segments you are going to compete in. After strategy comes planning. After planning you go to execution, after execution comes evaluation.

Theme #4:

Different Approaches to Long-term vs. Short-term Decisions

- **E-7:** As a CMO, there are three things I get involved in very deeply. Number One, it starts with the strategic plan. It could be a 5-year plan of identifying the consumer, doing a SWOT analysis, and a deep understanding of growth pathways. Number Two, is the brand from a very strategic point of view. What does the brand stand for? What is needed to make it stronger? The brand is at the heart of everything we do. Number Three is innovation, both for today and as well as for tomorrow. What are the big technology and consumer platforms going to look like in time horizons 1, 2 and 3? These are the three strategic pillars of my role. The rest is operational. We need to bridge the gap between strategic marketing and operational marketing functions in the company.
- **E-5:** The average CMO tenure was 23 months, okay? And yet there were a lot of CMOs, including myself who had eight or nine years in the job. And so I was curious, saying, so “Why is the tenure so low and yet there is are also a number of quite successful CMOs with longer tenures?” And I developed the two hypotheses of how to function as a CMO. Delivering today and creating tomorrow or disrupting for tomorrow. If all you are doing, is taking lots of reactive steps and actually not doing the thorough analysis to find a real long term solution, you're going to find that your short term solutions aren't working. On the other hand, what if you're only working on the long term solutions and not doing anything to deliver today. You're also going to fail, and not leave a mark. So therefore, you have to be balancing delivering today with creating tomorrow. So figure out how to find yourself sometime, so that you can actually figure out a long-term solution and typically, you bought yourself some time through short-term promotion activities or leverage in your sales organization.

- **E-4:** You have to separate innovation from running the business and you have to separate creative endeavors from running the business.
- **E-1:** Optimization is really around doing something you've always done but doing it a little bit better. So, it's not a change agent. The real power of big data is if you do a series of tests and understand your consumer insights, you can actually radically change the way you do business today. I actually think that big data should be more useful in understanding consumers than it is an optimization because optimization is a marginal effect on revenue.
- **E-4:** First of all everything (all that information) should be tied to the company's strategies, key initiatives and quarterly priorities. Because every business has between three and five critical drivers that impact the results and so that is a critical thing to understand. Price might be critical driver it might not like the commodity market. Or, literally shelf space - the number of inches you control in many categories in the stores has a high correlation with sales. For every single business, you need to know what are those critical drivers are. Someone who's running a business should know the three to five critical drivers and what is their order of priority and hierarchy.
- **E-5:** So, analytics is very important actually during that upfront strategic work. But the analytics of social media and the analytics of existing spending, analytics of existing data, analytics of existing promotion effectiveness etc... this is actually not going to solve the problem, because the problem is relevant to the next generation.
- **E-5:** What everybody's looking for is growth and they're looking to sell more. So certainly more and more people are shifting their marketing incentives to short term incentives, as opposed to more brand building incentives. And there are brand situations where that's the right thing to do, and there are going to be other situations be other situations (where you have to think more long term).
- **E-6:** By definition, the CMO has to operate in the short term and long term. You definitely need the capabilities to know what activities are leading to what outcomes. You have to identify the

outcomes and act on the outcomes. As you learn, you have to balance the upper funnel and lower funnel by making appropriate investments in both.

Theme #5:

The “Art” and “Science” of Marketing

- **E-2:** I think of the world of marketing as a combination of art and science. The real intuition there is brand judgment, brand stewardship and the brand experience. One has to weigh that with what the cold hard data might point out. You know it's almost like it's a team sport. We have a handful of lieutenants who are extremely good at working with data. And another group who will also stop us in the middle of a decision and remind us of other qualitative subjective factors and judgmental factors that we need to bring to bear. So, I think that's where maturity and experience come into play. I definitely leverage my team to help improve what I would call our collective intelligence and it does allow us I think to make better decisions.
- **E-3:** Data or analytical quantitative whatever you want to call it is an input to the decision and this goes back to the old “art” and “science” frame work. It's an aid to judgment. And you know an experienced leader knows when to ignore certain data or at least you know if he or she wants to go in a direction and the data doesn't say that, then that it's incumbent upon the leader to have an off ramp. If you go in a certain direction, the milestones that you would expect to see happening if you're on the right path and when it deviates from that then you go to Plan B.
- **E-4:** There are more people are looking at more data now than before. Hence, there's more of a chance of someone having a breakthrough just because of the quantity.
- **E-1:** In the retail sector, you've got a very complex ecosystem where the advent of online, mobile and footprint retail have in the last ten years been three separate divisions. But today, they're finding that the consumer behavior has actually changed to where you buy online and return in store you've got the cross divergence of all of the different channels. How do I know

that they've converted? - Do I know that they've converted when they've hit the store, hit the online shop or hit the mobile shop? Nobody has nailed that complexity yet in the industry. There is not one CMO that I've met that's been able to track with a certain level of accuracy and say "I know exactly when and how they transact and also know exactly which of those ads and what level of frequency made that happen". There's no data that can tell you with one hundred percent certainty that they understand that funnel. Because if you picture a drawing it's a squiggly line with blocks of messy circles underneath.

- **E-1:** The way marketers have thought about data is it's proving a point that they already had in their mind. So in many cases when you think about analytics the thinking is, "I did a campaign and that campaign worked and let's prove how it worked". That's not the way it should be used. The way data should be used is to inform you of consumer insights to drive you to the next campaign and to the way that you should be thinking about marketing. So having said all of that, I don't I don't think of the analytics team, I think of the insights team and what we try to do is come up with key insights that inform the next decision and then we analyze a series of tests.
- **E-5:** One of my observations from looking at companies is to really understand how marketing works in the company. The CEO, CMO, COO often don't know or they all have different approaches to the processes and goals of marketing – and they are not on the same page! Do you understand how marketing works in your company? Who in your company is responsible to deliver marketing ROI (return on investment)? If you don't know, get to work on that first.

Theme #6:

The Co-existence of Big Data and Intuition

- **E-7:** AI is a tool. No one can work in the absence of data, but data cannot replace judgement based on years of experience, intuition etc. AI can be used to simulate, forecast etc., but choices have to be made based on strategy, capability and culture of the organization.

- **E-2:** It is going to be interesting as we move into this next generation of human-like intelligence, where the Watsons of the world are going to think using collective brains.
- **E-2:** I found the worlds of brand marketing and direct marketing were like oil and water. For transformation of marketing, we identified the need to bring in just a few high powered brand people and innovative minds that could actually do the creative work side by side with the big data professionals. Their backgrounds make them very different and just managing their energy and that tension is really interesting. Demonstrating what each can do for the other. How the brand seems to understand the power of online testing in very rapid fire fashion. Some of our brand people are so switched on by the power of Adobe Suite.
- **E-5:** There is no substitute for many years of experience. I was not a good judge of advertising creative till I had 20 years of experience. That's why creative (advertising) agencies want to work with more senior clients – the more senior they are, the better they are at leading the more qualitative aspects of the creative process.
- **E-1:** The challenge with big data is that there's so much of it and it's overwhelming and you don't know where to start. Getting correlation vs causation inside of your data is almost impossible when you have so much. So to simplify, don't look at your entire consumer base. Start with one segment of your top consumers. How well do you really know them? And most companies sadly don't know their top consumers all that well. So that's why I believe in micro segmenting your top consumers only to start as a strategy in some cases that might be your only strategy and evaluating those consumers from a media standpoint where they shop how they shop developing and then building a media campaign to hem, that looks a lot like your existing consumers.
- **E-6:** The use-case of Big Data is more obvious in optimization. But that doesn't mean that you cannot pick up consumer insights from it. You have an unprecedented amount of data – how are you going to use the data to ask some questions and see what you can find? AI is working well for optimization, but quite as well for innovation. I think that is because we haven't taught it what to look for. AI is exploding, and there may well come a time where AI will serve up the questions to ask.

- **E-6:** IBM's Watson has no idea what to look for – you have to tell it what to look for.
- **E-5:** Think back to the first cup of coffee that you ever drank. I am sure you hated the taste! How would a purely analytical framework react to that data? For example, on Guinness, the intuitive marketer knows it is an acquired taste and you need to drink it many times to acquire a taste for it.
- **E-1:** Big Data can help you understand... it won't give you the full picture, but it'll definitely guide you to at least ask better questions. Getting to the root cause is all about being able to ask the right questions and you don't know which question to ask when you start. You know you have to bring a beginner's mind to your audience, and not have any preconceived notions. The data will help you tell that story and help inform what are the right questions to get you down the path of the answer. But the answer does not come from the data, it comes much later.
- **E-5:** There aren't enough winning strategies out there – and the greatest deficiency (in a business) is strategic deficiency.
- **E-5:** I say, strategy first, then creativity. Once you know you have the right strategy, and you know who the segments are why they do what they do, then you can apply the more creative aspects of marketing to change their behavior. Then you can use the softer skills of psychology, sociology etc. in advertising, branding, design etc. My advice is, understand the end-to-end process of marketing, and understand where data drives marketing and where creativity brings value. Have horses for courses. If you need to change perceptions about your brands – are you going to do it with data or with perception-changing activity that is based more on creativity?
- **E-1:** And sometimes the answer is so simple it's right in front of you all along and you never you just never manage that way. I think about all the most genius ideas that have ever happened were simple ideas. I would say, don't get overwhelmed by big data. It's not there to overwhelm you. We've always had some level of data and now we just have more access to it. The environment is incredibly complex and the level of data that we're going to get is actually going to increase exponentially over time. If you can be the marketer that is able to simplify what you

want that data to achieve, those are the marketers that can win. It's not about trying to use as much data as possible, it's about finding the relevant pieces that help you find simple insights about your consumers.

- **E-4:** Well one thing that comes to mind you know is the whole area of cognitive biases. You know we all have that, especially leaders in general are more subject to that because you have power and power brings... Over overconfidence. Overestimation. Certainly confirmation bias... We believe, so we look for evidence data supports it. So I always like to triangulate the data. Look at three pieces of just disparate distinct information and if they're all converging you know that there are some legs to it.
- **E-4:** But my belief is that that a good leader will always have a maverick thinker on his or her staff you know. And I think if he doesn't he should get one, or every time there's a decision there should be someone who is designated to play the devil's advocate role. You know in general you want to have robust dialogue with the leadership team. And then obviously someone's going to make the final call.
- **E-5:** I'm a big believer in whole-brain marketing, using thought, intuition, and data. So data is particularly important in certain parts of marketing, and intuition is important when understanding how motivation turns into a behavior. Data and analytics are useful in certain parts of marketing. Intuition is important when dealing with consumer behaviors and motivations. These are created/honed skills, based on knowledge and informed experience. Sometimes these can become institutional knowledge (in companies such as P&G).

Appendix 2 - Ethics Approval Letter Provided by UoL

Dear Mr Gopal Krishnan,

I am pleased to inform you that the DBA Ethics Committee has approved your application for ethical approval for your study. Details and conditions of the approval can be found below:

Committee Name: DBA Ethics Committee

Title of Study: **Marketers, Big Data and Intuition - Implications for Strategy and Decision-Making**

Student Investigator: Mr Gopal Krishnan

School/Institute: School of Management Approval Date: 29th of May 2017.

The application was APPROVED subject to the following conditions:

1. The researchers must obtain ethical approval from a local research ethics committee if this is an international study
2. University of Liverpool approval is subject to compliance with all relevant national legislative requirements if this is an international study.
3. All serious adverse events must be reported to the Sub-Committee within 24 hours of their occurrence, via the Research Integrity and Governance Officer (ethics@liv.ac.uk)
4. If it is proposed to make an amendment to the research, you should notify the Committee of the amendment.

This approval applies to the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Committee should be notified.

Kind regards,

Professor Hefin Rowlands

DBA Ethics Committee University of Liverpool on-line Programmes