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# New areas of research in marketing strategy, consumer behavior, and marketing analytics: the future is bright

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## ABSTRACT

In the last fifty years, marketing theory and practice has made significant advances toward becoming more scientific and rigorous. This paper reviews significant past developments in marketing strategy, consumer behavior, and marketing analytics. The second half of the paper articulates new areas of research in marketing strategy, consumer behavior, and marketing analytics. In the past, techniques were in search of data; in the future data will be in search of techniques including video analytics.

## Introduction

The purpose of this paper is to catalog past achievements of marketing practice and theory and suggest new areas of research in the decade of the twenties. The past has been bright and the future looks even brighter.

Marketing as a discipline (definition, description, and explanation) is about a hundred years old. Modern marketing practice is about 200-years old. It began with Thomas Barrett at Pears Soap Company in England. Barrett invented the techniques of awareness, persuasion and promotion, and focused on how Pears Soap was unique (translucent) as compared to other brands of soaps. This was quickly followed by Unilever in England and by Procter and Gamble (P&G) in the United States.

Roots of marketing practice go back to trading between buyers and sellers. Organized trading is about 2500 years old. It began with the famous Silk Route for exchanging Chinese silk with western products of various trading posts or markets supported by local kings and tribes. Trading was truly international. Because of its roots in trading, marketing even today is perceived as selling and buying. Selling is, of course, as old as the civilization.

## The evolution of marketing discipline

Marketing discipline was organized around three things: around channels, which led to the institutional school; around products which led to the commodity school; and around functions or activities which is referred to as the functional school of marketing (Sheth et al., 1988).

Marketing as a discipline became unified by the 4Ps of marketing (product, price, place, and promotion) with a focus on the packaged goods industry (grocery products, which are consumables as opposed to durables). The 4Ps of marketing concept was further reinforced by segmentation, positioning, and targeting (SPT) as well as by the concept of differential advantage.

American Marketing Association (AMA) was established in 1936. It provided the definition of marketing and further unified the discipline. Three decades later, Marketing Science Institute was established in 1961. It was a collaboration between the industry (mostly consumer goods companies) and the academics to jointly explore and discover answers to current and future real-world problems. MSI provided seed money to marketing scholars to conduct research on what is referred to as “MSI Research Priorities.”

Marketing both as a practice and a discipline grew enormously in the fifties and sixties. This was partly due to the post-war boom in demand for branded packaged goods and the emergence of large regional and national supermarkets such as A&P and Kroger.

At the same time, growth in demand for durable goods such as appliances (refrigerators, washing machines, dishwashers) as well as the automobiles added to the evolution of marketing both as a discipline and a practice. Finally, and probably more importantly, the popularity of television and its almost universal penetration shifted advertising and promotion from the print to the broadcast media and from the local to the national markets.

Consumers also began to eat out more often with the growth of franchise-based quick-service restaurants (QSR), such as McDonald's, KFC, and Pizza Hut.

Each of the four Ps of marketing became more professional and institutionalized through processes and systems. For example, product management became a science as did branding and brand management. Pricing became more sophisticated and price management across locations and markets emerged as a science than as an art. Universal product barcodes standardized supply chain and product information. Airlines began to utilize large-scale computers and yield management became more scientific.

As we will discuss later in the paper, in the quest to become a science, marketing began to embrace econometrics from economics; longitudinal panels from sociology and political science; behavioral experiments from psychology; and operations research techniques from the engineering sciences.

### The break up phase

Starting in the sixties, marketing began to diverge into three distinct subdisciplines: Marketing Strategy, Consumer Behavior, and Marketing Analytics. Each sub-discipline offered its own courses and their own textbooks. Finally, each sub-discipline has its own membership associations (AMA, ACR, and INFORMS/ISMS) with their own academic journals (*Journal of Marketing*, *Journal of Marketing Research*, *Journal of Consumer Behavior*, and *Marketing Science*).

The rest of the paper will examine the evolution of each sub-discipline and suggest future research opportunities. We should take pride in how far the discipline of marketing has come, especially after the second World War.

### Evolution of marketing strategy

As mentioned before, managerial marketing began to evolve into marketing strategy. This led to a shift from consumers to competition soon after the first energy crisis of 1972–1974. Competition became the focus because of the collapse of companies, especially in the airline and trucking industry.

President Carter, under lots of economic pressure, decided to deregulate the airline and the trucking industry. Both industries experienced a great deal of mergers and acquisitions. Private equity ruled the world and Warren Buffett became a billionaire. GE's PIMS databases housed at Harvard Business School led to hundreds of papers on competitive strategy as opposed to marketing operations (Szymanski et al., 1993).

Marketing strategy research expanded into services marketing and relationship marketing. Economic growth emerged from the service industries (cell phone networks, utility services, healthcare, etc.). The focus shifted from the acquisition of new customers to retaining existing customers. Loyalty programs, key account management, and customer centricity became the new mantra. The biggest boost in the strategy area came from the market-orientation perspective (Kohli & Jaworski, 1990). It became a popular construct and generated significant empirical research.

In my view, marketing strategy has run its course and is now struggling with the midlife crisis. Recently, it has discovered new areas of research such as social media, emerging markets, and societal marketing. However, it is still searching for a new paradigm or perspective. One promising perspective is customer centricity.

### New frontiers of research in marketing strategy

It appears that marketing strategy will go back to its roots and focus back on managerial marketing. There are six new areas of research which look very promising toward revitalization of marketing strategy. All of them are anchored to shifting the focus back on customers. They are:

(1) Creating Value for Customers. A customer is a buyer and an user. The buyer is looking for service value; a user is looking for performance value; and a payer is looking for the price value. In other words, you can always win customers if you offer a superior product with a reasonable price in a customer-friendly service (Sheth & Mittal, 2001).

(2) Brand Value. A second area of research is developing the intangible asset (or goodwill) through brand value linked directly to market value of the company. Brands independent of the products are becoming more and more real and it is resulting in earning royalties through licensing the brand. Examples include Disney, Harley-Davidson, and most franchise brands.

(3) Discipline of Selling. While selling is as old as the civilization, and we have many books on sales management as well as what makes someone a good sales person, there is not as much scientific research on selling. This is about to change. Selling is gaining respect in marketing as a field of scientific inquiry. This is likely to range from behavioral experiments in campus laboratories to field experiments in cooperation with companies such as Salesforce.com, to key account performance and impact of influencer marketing in social media.

Selling as a persuasion process can also learn from several disciplines in behavioral sciences, public opinion, and political sciences. The latest research on nudging by Thaler and Sustein (2008) is a good example of this new research. What we need is a comprehensive model of selling as a process similar to the model of buyer behavior (Howard & Sheth, 1969; Sheth, 2020a).

(4) Science of Pricing. As mentioned before, industry leads in pricing research. It has resulted in concepts of psychological pricing; price deals (two for one, for example); and dynamic pricing in many services such as the airlines and the ridesharing services. Pricing in practice also includes financing and leasing for capital goods in industrial markets and durable goods in consumer markets in industrial markets. In the academic research, pricing has been anchored to economic theories of price elasticity (willingness to pay and ability to pay), and price as an entry barrier for customers to make a purchase. More recently, pricing has been a focus of research in behavioral economics including research on risk-taking and price-quality relationships (Kahneman & Tversky, 2000; Kahneman et al., 1982).

Kent Monroe has been a pioneer in marketing on pricing research using Weber's concept of just noticeable difference (JND) in perception (Monroe, 2003). However, more exciting research in pricing is possible today in the world of digital marketing and social media. Fundamentally, price is looked upon as an inhibitor in between intention and purchase. Price as an indicator of quality is another major area of research. Finally, it is possible to do macro research at a nation level to measure the price image of nations. For example, China is perceived as a cheap goods manufacturer as were Japan and South Korea at one time. An index of price-based ranking of nations anchored to quality and performance is a great opportunity of research at a macro level.

(5) Reverse Marketing. Reverse marketing was coined by Leenders and Blenkhorn (1989), Blenkhorn and Banting (1991), and Plank and Francis (2001) nearly two decades ago, specifically for B to B marketing. It is also referred to as demand-driven making (manufacturing) as opposed to making the product, storing it in the warehouse, displaying at the retail outlet, and waiting for customers to shop and buy it. Today, with growing online procurement and shopping on Amazon, AliBaba and Flipkart as well as online sites of all major brick and mortar retailers (Macy's, J.C. Penney, Target), the process of buying is reversed. The order is placed and paid for first and the product or service (airline tickets, concerts, etc.) is delivered at home, office, or the factory. In fact, most B to B procurement today is

online. This means marketing and supply chain need to be integrated and hopefully in real time (Sheth et al., 2009).

Reverse marketing is another instance where marketing practice is leading the theory. For example, is reverse marketing contextual or universal? What are the side effects, such as stock out or return of merchandise? Should companies integrate supply chain into the marketing function? What outcomes (cycle time, cost reduction, productivity gain, revenue growth or cross-selling) are useful to measure for in reverse marketing's efficiency and effectiveness? Finally, what impact reverse marketing is likely to have on advertising, promotion, and salesmanship?

(6) Role of Marketing in Society. Interdependence between marketing and society is the heart of research in macro marketing including the impact of public policy on consumption (demand) and on production (supply). Examples include demarketing of harmful products such as cigarette smoking and alcohol consumption by public policy and regulations. Indeed, most industries are regulated with respect to product safety, product disclosure, product labeling, and truth in advertising and lending laws. Marketing, also on the other side, has an enormous impact on society through social and celebrity-led aspirations as well as peer group influences. Marketing can and does enhance consumers' willingness to pay even in segments of the society where there is no ability to pay. It is interesting to note that in consumer markets both the low income and the high-income segments, consumers prefer and actually buy premium brands while the middle class buys and consumes value brands.

Impact of marketing in encouraging overconsumption is another area of serious concern especially with respect to obesity and the environment. Social critics often blame marketing for climate change and sustainability (plastic bottles and packaging materials). Often market failures are attributed to bad marketing. This has resulted in reviving research on the role of marketing in society, Can marketing be a force for a better world? What is the role of the chief marketing officer (CMO) in a company? Does marketing have a role in creating value for all stakeholders including the community and the planet in addition to delivering revenue growth and profitability for investors?

Social activism with respect to climate change and the environment is not only growing worldwide but it is also led by the next generation of young adults. The most obvious example is the popularity of Greta Thunberg, a teenager from Sweden, who is invited on the world stage and challenge the business and

government leaders about their lack of commitment to climate change.

Similarly, the United Nations has established the new millennium's goals of triple bottom line (profit, people, planet) and is strongly urging both business leaders and policymakers to embrace the goals and advocate them to the masses and the markets. In my view, marketing strategy is likely to revert to managerial marketing. In the process, it will focus more on customers and community and the planet and less on competition.

## Evolution of consumer behavior

As mentioned before, Consumer Behavior (CB) as a discipline is only 50 years old. Just as marketing began to separate itself from economics (with focus on channels of distribution), consumer behavior began to separate itself from market research. The biggest change took place when CB borrowed both explanations as well as research methods of behavioral sciences (social and clinical psychology). George Katona's classic paper (1951) on the distinction between the rational consumer advocated in economics versus the behavioral consumer observed in psychology became key to the start of CB as a stand-alone discipline. It was referred to as economic psychology. This was further led by several behavioral scientists including Herbert Simon 1956 (Satisficing vs Maximization), Leon Festinger 1959 (Cognitive Dissonance), and Raymond Bauer 1960 (Risk Reduction).

However, it was the publication of the Howard–Sheth Theory of Buyer Behavior (1969) which catapulted CB as a separate discipline. This was followed by separate courses in CB with a popular textbook by Engel et al. (1968). It was further cemented by the establishment of the *Association of Consumer Research* (ACR) and later on by its top tier journal, *Journal of Consumer Research* (JCR).

Consumer behavior has evolved overtime. I have identified several stages of its evolution. It began with a focus on motivation research anchored to Freudian psychology to explain nonrational or abnormal behavior of the consumers. Motivation research was popularized by Ernest Dichter (2009). However, it was quickly taken over by social psychology and its multi-attribute attitude models. In other words, consumers develop predispositions and intentions based on past experiences as well as information provided by marketers, friends, and reference groups.

A number of models of attitude formation were advocated including what is referred to as the disjunctive, conjunctive, lexicographic, and linear additive attributes. This multi-attribute attitude model culminated in the use of Fishbein and Azjan (1975) model of reasoned actions.

Multi-Attribute models led to information processing. In other words, how do consumers process information about brands and products? It led to focus on perception and memory. It also generated interest in information overload (Jacoby et al., 1974) active search for product or brand information and perceptual bias (Howard & Sheth, 1969). Information processing also shifted research methods from field surveys to laboratory experiments in an effort to establish cause and effect relationship between the outcome and the marketing stimuli such as an advertisement. Information processing also focused on several biometric and physiological measures such as galvanic skin pressure, tachistoscope, and pupil dilation. The underlying objective was to make it more objective by observing actual behavior as a reaction to the advertisement.

In the eighties, CB began to shift away from the laboratory to the real world. Anchored to anthropology and sociology, CB scholars began what is referred to as “odyssey research” in which the researcher is deeply immersed in the field as an observer of how people consume products and services. Russell Belk (2014), led the way by organizing the field studies. The main mission of odyssey research was not to rely on any prior perspective with a priori hypotheses but to just observe, codify, and validate the observations. The hope was to develop a theory in use about how consumers behave without any explanation of why they behave the way they do. Unfortunately, several early pioneers of odyssey research moved on to other research interests. Consequently, it did not realize its full potential.

In the meanwhile, economics began to embrace the behavioral aspects of consumption soon after Herbert Simon received the Nobel Prize in economics even though he was not an economist. This was followed by Kahneman and more recently Richard Thaler. Behavioral economics became the new buzzword in economics. Economics began to accept the laboratory methods and the behavioral concepts and theories. In marketing, several scholars such as Robert Hallaway and Sheth and Venkatesan (1968) carried out similar research nearly 50 years ago.

Today, CB is expanding the scope of research into areas which were neglected in the past. These include low-income consumers and poverty reduction. This is referred to as transformative consumer research (TCR). It also includes study of the art, music, theater, and films.

## New frontiers of research in consumer behavior

In my view, the biggest new frontiers of research in CB will be user experiences. This is mostly due to the spectacular growth of social media such as Facebook,

WhatsApp, Instagram and Twitter, as well as Weibo and WeChat (Sheth, 2020b). Social media and ecommerce are generating large data for research which is unprecedented. Furthermore, social media are borderless because of their global reach. The largest nations today are not China and India but Facebook and WhatsApp, each has more than two billion subscribers. Every political leader today has a Twitter handle and some of them have as many as 50 million followers. The same is true of celebrities from the entertainment and the sports fields. Today, influencer marketing expenditures have exceeded 6 USD billion dollars and the largest consumers of social media are China, Japan, and South Korea. Below are seven areas of new frontiers of research.

### 1. Focus on User Experiences

The biggest shift in marketing and especially in consumer behavior is the shift from the buyer to the user. Today, what matters most is consumer experience and engagement. The focus is on post purchase comments and reviews. The old word of mouth (WoM) which was predominantly local (neighborhoods) has become global. Online WoM is no longer limited to people known as friends and family. Today anyone in the world with experience can be a source of information and influence.

As CB shifts from the buyer to the user, it is inevitable that research techniques and protocols will also change. It will require learning how to use natural language processing (NLP) to organize and analyze text data. What was the old qualitative research in the days of motivation research will become more sophisticated and scientific. Since Facebook and Instagram data are available everywhere (also from WeChat and Weibo) one would expect scholars from all over the world including the emerging markets will undertake research and publish in top academic journals. In short, the democratization of scholarship in CB is inevitable. It will help the discipline to have cross-cultural perspectives and contexts.

### 2. Mindful Consumption

As stated before, both public policy and business enterprises are coming to the same conclusion that sustainability is a key strategic issue of the twenty-first century. With the rise of the brand-conscious middle class in large emerging markets such as China, India, and now Africa, there is a strong consensus that planet earth cannot renew and reproduce fast enough to sustain modern consumption (Apte & Sheth, 2017). One solution is mindful consumption. In other words, informing, educating, and enforcing laws and regulations on consumption is the

only way to cope with the tsunami of consumption. It also makes sense because more than 70% of the carbon footprint comes from the consumer sector and more specifically from the home and the automobile.

Consumption also impacts water and vegetation. In addition to the three R's of mindful consumption (Reduce, Reuse, and Recycle) it is very likely that different nations will enact and enforce laws which restrict consumption as well as offer incentives and disincentives for mindful consumption. Conscious consumption is an excellent area of future research especially if it is linked to the triple bottom line (people, planet, and profit).

### 3. Shared Consumption

There is an increasing worldwide trend for sharing such as ridesharing (Uber and Lyft), room sharing (Airbnb), furniture sharing, as well as garment sharing. This seems especially true among the well-educated millennial generation in urban areas where they don't have enough cash flow to own real assets such as homes and cars.

Sharing consumption is a new phenomenon. While it can be explained by the traditional economic theories of ability vs willingness to pay or propensity to consume vs propensity to save, I believe it may also benefit from new perspectives anchored to societal changes in what consumers do today versus a century ago. It may also require to think through the side effects of ownership including the stress and the loss of property due to externalities such as hurricanes and earthquakes. At a macro-level, it will be interesting to analyze the future of capitalism which is anchored to ownership of material possessions such as homes, cars, and appliances. Are consumers becoming less materialistic? Russell Belk (1988) in a seminal paper had provided an excellent framework about material possessions as reflections of the self and the extended self. As society shifts from kinship to friendship for social interactions, materialism may get redefined altogether.

### 4. Cross-Cultural Consumption

Another area of consumer research is cross-cultural differences in consumption of basic needs such as food, clothing, and shelter. Interest in cross-cultural consumption is growing for two reasons. First, since the liberalization of trade and creation of economic regional trade blocks such as USMCA (NAFTA) and regional integration such as the European Union, product and people mobility has been increasing between nations. Consequently, in most parts of the world, there are

more cross-cultural differences within the country as much as or more than between the countries. The best representation is the United States where cultural diversity has grown significantly over time. In California, Texas, and Florida, the majority are the minorities collectively. Social media and ecommerce have provided access to foreign products and services which has resulted in more diversity of consumption within each nation. This has led to fusion in music, concerts, foods, clothing, and films.

Finally, Sheth (2017) in his book *Genes, Climate, and Consumption Culture* has documented that most cultural differences can be explained by the migration and adaptation of genes to local climate (arctic, temperate, and tropical) for sourcing calories, protein, and fat in foods and local sourcing of materials such as wool, leather, and cotton for garments and wood, stone, and clay for homes. The North-South axis not only explains differences in food, shelter, and clothing but also differences in cultural traits such as punctuality, friendship, and uncertainty avoidance.

##### 5. Low-Income Consumers

A growing area of interest in consumer behavior is the low-income consumers, defined as those who earn less than two dollars a day in income. The interest in low-income consumers began with C. K. Prahalad and his seminal book, *The Fortune at the Bottom of the Pyramid* (2005). It advocated that there is a great market opportunity if the marketer can make the product or the service more affordable and accessible.

It is estimated that low-income consumer market is at least 5 USD trillion annually and growing faster than the global GDP. It is also highly concentrated in Africa and South Asia. With the cell phone revolution in both continents, access has become more possible through eCommerce and market exchanges along with online payment systems such as Paytm in India and Mpesa in Kenya. In other words, what is local, unorganized and unbranded consumption is transformed into branded and organized. This is especially true for cell phones, television, and other consumer electronics. It is becoming increasingly true for garments and personal care products such as toothpaste, soaps, and shampoos.

##### 6. Consumption of Free Goods

Another growing but neglected area is consumption of “free” goods. They are free in the sense that the user does not pay for the product or the service when making a purchase or using it. There are three types of “free”

goods. The first and the most obvious are social media and search engines. Facebook, Weibo, WeChat, WhatsApp, Youtube, Twitter, Instagram, and Google are obvious examples. However, there are also millions of free apps on everything ranging from dating sites to entertainment and news. In all these cases, the user does not pay and the marketer has to figure who will pay such as advertisers and the investors.

The second category of “free” goods are parks and recreation places; museums and public libraries; and of course highways and freeways. The size of the free goods market is not documented but it will be safe to assume that globally it may exceed trillions of dollars.

The third category of “free” goods are products and services that are subsidized by the governments and the world organizations. These include school meals, public transit, non-thermal energy (solar, wind, electric) water, and other municipal services.

Since price is not the regulator of demand, it will be replaced by time as a scarce resource. Time is a perishable asset unlike money. Also, most of the “free” goods are services which also cannot be stored. Finally, time constraint may result in more peaks and valleys (weekend vs weekdays and evening vs day time) in demand of free goods.

##### 7. Digital First

The seventh and probably the biggest new frontier of research in CB will be the permanent shift from the physical first to digital first. Consumers will use their cellphones and laptops first for information, recommendations, new uses of existing products and services, and learn the use of new products and services. This has enormous implications for shopping malls and brick and mortar retail stores. Just as farmers' markets and flea markets were replaced by grocery stores and shopping centers, we will see both of them replaced by information malls and market place exchanges. What was peripheral will become core and what is core will become peripheral. This has happened before when print media conceded to broadcast media which are now displaced by social media.

There are several interesting observations and implications of this transformation. First, this is truly a global phenomenon, whether it is China, India, Europe, or America. Since massive data are available in the public domain, access to data will no longer be a “data divide” between the advanced and the emerging market scholars. Second, discontinuity of generations and succession of family values will make the consumer more dependent on influencers and peer groups across the globe.

Finally, and most importantly, family or households as a consumption unit will be displaced by the individual as the unit of analysis, and understanding, and influence.

If the last half-century was exciting in consumer behavior, the next half-century will be even more exciting for research. Equally important, scholarship in consumer behavior will be more democratized and equalized between the United States and Europe and between advanced economies and the emerging markets. Finally, CB will become more mainstream in behavioral and social sciences including psychology, economics, sociology, and anthropology. This will lead to further separation of consumer behavior from marketing.

### Evolution of marketing science

The roots of today's marketing analytics go back to the late fifties and early sixties when several market research companies offered their household panel data for academic research. Just as PIMs database and Porter's competitive strategy framework shifted the marketing discipline from descriptive to predictive science, these longitudinal panels with actual buying behavior (as reported by panel members) shifted marketing research from opinions and preferences to analyzing real buying behavior at a brand level. This was further augmented by Paul Samuelson's advocacy for "Revealed Preferences" as a basis for data analysis with the use of econometrics. Marketing was also criticized as a "feely touchy" science with weak measures. It needed to become more scientific. There were numerous debates and discussions whether marketing is (or should be) an art or a science. At the same time, operations research techniques such as linear programming, queuing theory, game theory, and stochastic models became accessible through software platforms such as BIOMED, SPSS, and SAS. Large-scale data analysis became feasible albeit expensive and slow in the legacy era of mainframe computers. Several scholars in quantitative marketing including Alfred Kuehn, Robert Buzzel, Frank Bass, Michael Pessemier, William Massey (and his students), David Montgomery and Don Morrison, and John D.C. Little and his MIT colleagues became dominant scholars in marketing's evolution as a science (Winer & Neslin, 2014).

This was a golden era of operation research across all disciplines of business including marketing. New journals such as *Operations Research Quarterly* and *Management Science* became dominant academic journals for quantitative papers. In marketing, there was also the birth of the *Journal of Marketing Research* (JMR) published by the American Marketing Association.

In the 1970s and all through the 1990s, operations research techniques began to give way to multivariate methods (Sheth, 1977) such as factor analysis and discriminant analysis. These were further augmented by conjoint analysis, multidimensional scaling (MDS), and cluster analysis.

Paul Green at the Wharton School and several of his former students notably Vithala Rao evangelized conjoint analysis and multidimensional scaling. Marketing discipline and market research began to shift from econometrics to psychometrics. This ultimately culminated in the use of structural equation modeling and LISREL as a comprehensive method to model cause and effect. Richard Bagozzi became a strong proponent of LISREL as an overarching conceptual as well as a quantitative method for research in marketing.

In parallel, motivation research anchored to focused groups, in-depth interviews, and projective techniques began to embrace more physiological measures such as pupil dilation, tachistoscope, and more recently, brain imaging. Just as operations research shifted analyzing and understanding consumer preferences to actual buying behavior, biometrics shifted consumer's verbal responses to physiological measures. Unfortunately, due to high cost and long cycle time, biometrics did not become mainstream in marketing science. It faded away in history and may be rediscovered sometime in the future.

Since the late nineties, there has been resurgence of marketing models anchored to economics and choice models. Most of the research is large-scale empirical research on scanner data. Equally popular has been the use of customer lifetime value (CLV) analysis following theory development anchored to relationship marketing and loyalty programs. The best-known scholars include V. Kumar, Peter Fader, Scott Neslin, Fred Feinberger, and Werner Reinhardt. The formation of ISMS and its research journal, *Marketing Science* enabled this shift to empirical research and marketing models.

More recently, there has been a significant shift toward research on big data (non-numerical data such as text messages) on social media using natural language processing (NLP). A special focus has been the impact of online word of mouth (WoM) influence of users and influencers. Social media is now becoming advertising media with user-generated content surpassing marketer content. For example, YouTube adds millions of user-produced videos each day. Video is now also a reality on Facebook and WhatsApp. Research on non-numerical data (qualitative data) has also changed the vocabulary from marketing models to marketing analytics. In the process, marketing science is less anchored to any one theory. Instead, it is becoming a discovery science.

The sheer magnitude of big data and its inherent diversity (text, numbers, emoji, video) are making traditional techniques obsolete. In the past, techniques such as Markov chains and linear programming were in search of data. In the future, data will be in search of techniques, most of it not invented yet.

## **New frontiers of research in marketing analytics**

There are at least six new frontiers of research in marketing analytics.

### 1. Text Mining

The most obvious and the growing field is text mining with the use of natural language processing (NLP). NLP is becoming a more mature technique and it is converging toward an agreed-upon methodology of transforming text and other non-numerical data into quantifiable data suitable for statistical analysis and inference. The potential in text mining is enormous, ranging from user experiences on a brand, product, or service to spread of false news and brand rumors. Another major area of text mining is a cross-cultural comparison on user-generated content and product or service experiences. This is especially useful for large global enterprises such as Starbucks, McDonald's, Walmart, and Amazon. The third area of growing research based on text mining is crisis management. How do you cope with such black swan (Taleb, 2007) events such as the coronavirus? Finally, social media and especially Twitter data are becoming mainstream for research in political marketing.

### 2. Emoji Analytics

Emojis have grown significantly as a part of large messy data. We have not yet discovered or invented a technique to analyze and provide consumer insights anchored to emojis. The number of emojis has grown exponentially in recent years. While one can use our knowledge of ideography, we are still at an infancy stage in the analysis of emoji data. Fortunately, unlike the text data, emojis are well defined and there is a dictionary of meanings for each emoji. This should enable scholars to analyze the data and discover the emotive dimensions in user-generated content.

### 3. Video Analytics

Probably the biggest wave of information on the worldwide web and social media will be the video content. This is led by YouTube today but it will be on every

major social media platform. While we know the art and science of video editing from the entertainment (movies and television) industries, we have no clue how to analyze video content.

Video content is also exploding with online learning through MOOCs such as Courseara and Edex as well as holding remote conferences and classrooms as we are experiencing now due to the coronavirus (Covid-19) pandemic. Platforms such as Zoom and Facetime are becoming mainstream. Finally, the cost of digital storage is very low. It is almost free as compared to storage of print documents. What we need is syndicated services such as A.C. Nielsen panel of television viewing so that the methodology and representations are standardized for analysis and prediction.

### 4. Imaging Research

As mentioned before, while biometrics is out of favor in marketing analytics, there is still an interest in brain research (brain scanning). Brain research is becoming a more mature science and fMRI is becoming more mainstream. At the same time, facial recognition techniques are becoming a reality, especially in homeland security. As communities install more cameras and other surveillance devices and as personal devices such as cellphones can be accessed by facial recognition. There will be a growing interest in retailing and other location-based services. The movie, *Minority Report*, articulated how facial recognition can be used in shopping as well as in homeland security. Again data will be in search of techniques.

### 5. Fuzzy Logic

It is surprising to note that fuzzy logic developed in mathematics more than 40 years ago is still not used as a technique in marketing. Fuzzy logic is pattern recognition with partial or insufficient information about an object or an incident. It is a technique embedded in cell phones and in many manufacturing industries. It is often embedded as a chip in most imaging devices. Fuzzy logic seems very useful in facial recognition and personal identification.

### 6. Forensic Research

Probably the most exciting field of research in marketing analytics is forensic research. Despite prior market tests, new product failures are still very high. Similarly, most advertising campaigns do not generate incremental revenue as forecasted despite prior pretests and consumer feedback. In order to improve the science

of marketing, it is maybe more important to analyze and identify why some products flourish and others fizzle. This is especially important in emerging markets, where many multinationals fail for the same product or service they are successful in advanced countries (Immelt et al., 2009). Forensic research is a well-established science in criminal investigations. It is becoming more and more common in accounting to investigate fraud and embezzlement. It is conspicuously absent in marketing analytics despite the availability of historical data.

As mentioned before, fifty years ago when marketing science emerged as a special field of research, the techniques were in search of data. In the future, data will be in search of techniques. Hopefully, scholars in marketing analytics will invent or develop new techniques to analyze these new types of data.

### Drivers of convergence

As mentioned before, over the last fifty years, marketing discipline has diverged into three subdisciplines: marketing strategy, consumer behavior, and marketing analytics. Each has its own academic associations, journals, and courses. In both marketing management and consumer behavior, there are standard textbooks. Marketing analytics is still subsumed under market research. It is, however, a matter of time before a stand-alone textbook for marketing analytics will be published, especially in light of offering specialized Master's Degree programs in marketing analytics.

After 50 years, it seems that there are four external drivers (forces) which may drive more convergence among the three sub-disciplines. The first is social media and the user-generated content. Each discipline now analyzes data from social media for managerial, methodological, and consumer insights, respectively.

A second external force-driving convergence is the growth of emerging markets. Emerging markets are transforming from the traditional societies anchored to the agricultural age into more contemporary societies as they transition the agriculture sector to the manufacturing sector (China) or the services sector (India). This has led to the rise of a brand-conscious middle class. The traditional unorganized channels of distribution offering unbranded products and services are replaced by branded products and services and offered by organized retailing. Examples include Walmart in India, China, and Mexico, Alibaba in China, and Flipkart and Amazon in India. Each sub-discipline of marketing (managerial, analytics, and CB) is all doing research on emerging marketing.

The third external force is the rise of corporate social responsibility (CSR) on a worldwide basis with

a focus on environmental sustainability and climate change. Once again, scholars in each of the three sub-disciplines are doing research on CSR and public policy. Finally, automation of consumption is now a reality. At the start of the industrial age, there was the automation of production. This was followed by automation of distribution, which was in turn followed by automation of commerce culminating today into full-blown ecommerce and electronic market exchanges. This is now migrating to automation of consumption including the use of artificial intelligence, machine learning, and virtual reality. For example, today it is possible to have a robot as a companion at home and virtual robots becoming personal digital assistants (PDA) to carry out most of the daily chores. Alexa and Siri are emerging as voice-activated routinization of daily chores from the time a consumer wakes up to the time he or she goes to sleep. This automation of consumption will encourage each of the three sub-disciplines of marketing to explore the fundamental shift from the consumer going to the market to the market coming to the consumer's home or office.

### Concluding remarks

The state of marketing has been bright in the last fifty years as marketing began the transition from a descriptive to a predictive science. The divergence of marketing into separate subdisciplines of consumer behavior and marketing analytics has encouraged more scholars from other disciplines to focus on marketing. The future of marketing in the next 50 years will be even brighter in each of the three sub-disciplines. I admire the younger scholars and wish them well in ensuring that marketing is well respected by other disciplines as well as the society at large. Indeed as a discipline, marketing will be even more exciting in the future.

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