Think with me, or think for me? On the future role of artificial intelligence in marketing strategy formulation

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Abstract

Purpose – This paper explores if and how Artificial Intelligence can contribute to marketing strategy formulation.

Design/methodology/approach – Qualitative research based on exploratory in-depth interviews with industry experts currently working with artificial intelligence tools.

Findings – Key themes include: (1) Importance of AI in strategic marketing decision management; (2) Presence of AI in strategic decision management; (3) Role of AI in strategic decision management; (4) Importance of business culture for the use of AI; (5) Impact of AI on the business' organizational model. A key consideration is a "creative-possibility perspective," highlighting the future potential to use AI not only for rational but also for creative thinking purposes.

Research limitations/implications – This work is focused only on strategy creation as a deliberate process. For this, AI can be used as an effective response to the external contingencies of high volumes of data and uncertain environmental conditions, as well as being an effective response to the external contingencies of limited managerial cognition. A key future consideration is a "creative-possibility perspective."

Practical implications – A practical extension of the Gartner Analytics Ascendancy Model (Maoz, 2013).

Originality/value – This paper aims to contribute knowledge relating to the role of AI in marketing strategy formulation and explores the potential avenues for future use of AI in the strategic marketing process. This is explored through the lens of contingency theory, and additionally, findings are expressed using the Gartner analytics ascendancy model.

Keywords Creativity, Rationality, Marketing strategy, Artificial intelligence, AI, TQM/Marketing synergy

Paper type Research paper

Introduction

This paper explores how firms can use Artificial Intelligence (AI) for marketing strategy formulation. AI, machine learning, and growing data availability are creating a fourth industrial revolution (Schwab, 2017). This digital transformation enables creativity, innovation, and the ability for "novel use of digital technology to solve traditional problems" (Gabriel, 2019, p. 1). Information is becoming a critical enterprise-wide asset and analytic capabilities, an essential corporate competency (Gartner, 2019). Simultaneously, improving the efficiency and effectiveness of marketing strategy creation remains an ongoing

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consideration for public and private industry firms. TQM and marketing, in synergy, enable value creation for customers and competitive market advantage (Mele, 2007). Proactive integration and coordination of key decisions between manufacturing and marketing also facilitate competitive advantage (Shapiro, 1977; Konijnendijk, 1994) and performance improvement (McTavish *et al.*, 1996).

Today new data is rapidly created, forming potential input for strategy formation (Bharadwaj, 2018). This abundant data availability brings its own set of complexities. The strategy creation process requires large amounts of data to be processed into viable alternatives, based on which decisions can be made (Bharadwaj, 2018). Yet, strategic decision-making remains a cognitively demanding task, requiring suitable options to be identified and effectively chosen among (Hambrick and Mason, 1984). Often in the interest of time, human decision makers satisfice rather than optimize by selecting among limited options founded on their extant knowledge base (Cyert and March, 1963). AI, on the other hand, provides a systematic ability to process and interpret data and learns to achieve specific goals by enabling appropriate adaptation (Kaplan and Haenlein, 2019). Firms already use AI to translate big data into manageable information and knowledge, which can form input to effective marketing and sales strategies (Paschen *et al.*, 2019).

Indeed, the use of AI is becoming embedded in our everyday life and is gaining ever more attention with regards to its uses in the business environment. Human attention is in itself a scarce resource (Hansen and Haaz, 2001), and AI has already commenced taking on tasks that in the past needed managerial attention (Hodson and Hofer, 2016; Zilis and Cham, 2016). The rise of useful AI has been called one of the most fundamental evolutions since the industrial revolution took place (Brynjolfsson and McAfee, 2014), with McKinsey (2017) referring to AI as "the next frontier." Today AI is beginning to form a fundamental component of business growth (Markiewicz and Zheng, 2018), driving a strong influx of automation (Jarrahi, 2018). AI is already automating some decisions in the marketing interface with customers (Jarrahi, 2018). While AI is in active use from a tactical marketing perspective it also offers great strategic potential (Martínez-López and Casillas, 2013). A core body of extant research addresses the use of AI from a marketing execution perspective, such as how AI support automation of data collection, analysis and use of large amounts of data, using tools such as business intelligence, chatbots, sentiment analysis, and process automation to interact with customers, and analyze and predict customer behavior (e.g. Pitt *et al.*, 2018; Chung *et al.*, 2018; Chan and Ip, 2011; Chen and Chen, 2008; Li, 2007). Additionally, research into using AI to aid marketing strategy formation offers fertile opportunity. To further the overall agenda, Martínez-López and Casillas (2013) proposed key research areas from a business marketing perspective, such as managing customer relationships, communications, pricing strategies, product development, innovation, and creativity. Paschen *et al.* (2019) recently highlighted the premise of B2B companies using AI to process big data into appropriate input for effective marketing and sales strategy creation. Further, initial empirical findings exist from a technical decision support system perspective. For example, in one study, a hybrid intelligent system for marketing strategy creation was developed and empirically evaluated through fieldwork (Li, 2000). Findings indicated that the advice that the hybrid system generated was perceived by managers to be accurate and reflect managerial judgment. Another evaluation of a hybrid approach, combining AI with human decision-making for marketing strategy creation, showed efficiency and effectiveness in improving the strategy creation process when evaluated by a small number of managers in a field study (Li and Li, 2009).

Industry is also paying close attention to the opportunities offered by AI. In their work relating to developing cognitive capabilities to achieve business objectives, Davenport and Ronanki (2018) surveyed 250 executives who were familiar with their organizations' use of cognitive technology. They found that three-quarters of the executives believed that AI

would substantially transform their organizations within three years. Their findings also showed that AI is a useful tool for businesses to gain cognitive insights; moving attention from labor-intensive manual data curation to leveraging probabilistic machine learning methods; further, they advised to look at AI as a business capability and not through a technology lens (Davenport and Ronanki, 2018). Strategy creation requires significant resources (Mintzberg, 1978). Russell and Norvig (2016) describe intelligence as it relates to rational action, expecting an intelligent agent, such as AI, to execute the best possible action in a given situation. With strategy creation being a cognitively demanding (Hambrick and Mason, 1984), yet not fully rational and scientific processing (Eisenhardt, 1997; Lafley *et al.*, 2012), questions regarding the role of AI in strategy creation are relevant.

In considering of the above, our paper aims to contribute knowledge relating the role of AI in marketing strategy formulation, and providing academic and managerial insights by inquiry into *whether and how AI can contribute to marketing strategy formulation*. Taking a contingency theory approach, the authors address this question by conducting an exploratory study to confirm the current state (e.g. how AI is being used in this context, if the use of artificial intelligence has changed the way individuals and firms make strategic marketing decisions); as well as seeking potential foresight into future use (options for how to use AI in the strategic marketing process). To make both academic and practical contributions, the authors examine the evolution of the use of AI to support strategy creation through the lens of contingency theory, as well as express our findings using the Gartner analytics ascendancy model.

This paper proceeds as follows: First, the authors review relevant literature pertaining to AI, then provide an overview of marketing strategy creation. Next, the authors situate the contingency theory approach in the literature, as well as review Gartner's firm centric analytics ascendancy model. This is followed by a description of the methodology employed, then the results and a discussion of the findings are provided, limitations are described, and a future research agenda is proposed.

Artificial intelligence

Since the time of the Second World War, the field of artificial intelligence has worked to understand intelligence and build intelligent entities. While the term Artificial Intelligence was coined in the middle of the last century, activities associated with it were underway earlier (Russell and Norvig, 2016; McCulloch and Pitts, 1943). Significant progress led to AI in the 1980s forming its own industry, driven by technical developments, the emergence of intelligent agents, and the availability of very large data sets (Russell and Norvig, 2016). Today AI is actively used in a range of fields such as autonomous technologies, medical technologies, and other robotics (O'sullivan *et al.*, 2019).

AI definition

The term intelligence is defined by a number of different factors drawn from the field of psychology. Most commonly it describes a property of an individual agent in interacting with the surrounding environment, combined with the agent's ability to succeed with a given goal, and depends on the agent's ability to adapt to different environments and goals (Legg and Hutter, 2007; Kaplan and Haenlein, 2019). In their recent work, Paschen *et al.* (2019) synthesized that intelligence relates to effectively perceiving and processing data, and transforming it into knowledge, which then is used for outcome-driven behavior. Therefore, intelligence requires the use of a combined set of processes to be effective, such as the perception of the environment, memory, reasoning, problem-solving, learning, and goal-oriented action (Paschen *et al.*, 2019). In turn, AI is founded on the notion that the human mind and machines both possess the ability to operate on encoded knowledge, which can be used to

choose what action to take (Russell and Norvig, 2016). AI is able to emulate human cognitive tasks (Jarrahi, 2018) in the form of an artifact acting as an intelligent agent, which performs actions based on a specific understanding of input from the environment (Russell and Norvig, 2016). These actions can be executed on behalf of different functions, such as acting as decision-systems, executing complex communication (e.g. chatbots), and image recognition (Brynjolfsson and McAfee, 2014; Chung *et al.*, 2018).

AI can be approached from a cognition (thinking) or behavior perspective. Different systems will be used depending on whether the outcome is expected to emulate human performance or execute "ideal" (i.e. rational) performance (Russell and Norvig, 2016). The task environment forms an important factor in identifying the most appropriate type of agent to use (Russell and Norvig, 2016). The notion of rationally thinking is a product of the field of logic. Rationality is contingent on knowledge and is reflected by doing what is right given what is known (Russell and Norvig, 2016). Rationality implies using solid reasoning processes, which can be expected to yield correct conclusions if based on the correct premises. This approach to creating AI systems has its challenges, especially under conditions of uncertainty. It is difficult to state informal knowledge in formal terms required for logical notation, and theoretically solving a problem does not necessarily solve it in practice (Russell and Norvig, 2016). Rational decision-making is, in essence, objective and impersonal, allowing machines to emulate a rational human decision-making process (Jarrahi, 2018). A rational agent approach is concerned with an agent (e.g. AI) acting rationally. In itself, an agent is an object that acts, and a rational agent acts to achieve the best expected outcome based on correct inferences (Russell and Norvig, 2016). Humans are expected to act intelligently, yet making rational decisions is a complex task for which humans tend to satisfy, that is, make decisions that are sufficiently good, rather than optimize (Simon, 1947). Intelligent agents rely on knowledge to optimize decisions. A rational agent needs to be autonomous and not only be based on what its designer may have known but also adjust prior knowledge with new learning (Russell and Norvig, 2016).

AI acting or thinking like a human

The notion of AI executing human performance has two dimensions, acting humanly and thinking humanly. The first, *acting* humanly, can be assessed by means of Alan Turing's (1950) "Turing Test." Using this, a computer's "intelligence" can be tested by providing written answers to written questions. If a human prober is unable to ascertain the written responses are provided by a person or by a computer, the computer is deemed to pass the test and be intelligent, or at least act in adherence to human performance. Passing the test requires a range of capabilities, such as natural language processing, ability to store what it knows, automated reasoning to use the stored information to reach new conclusions, and machine learning to detect patterns and adapt to new circumstances (Russell and Norvig, 2016). In contrast, humanly *thinking* is assessed using a cognitive modeling approach, founded on the premise that it is possible to understand how humans think. This understanding is formed by methods such as observing our own thoughts (introspection), by observing someone's actions (psychological experiments) or by executing brain imaging. By determining a theory of human thinking, the theory can be expressed as a computer program, and the reasoning of the computer program can be compared with that of a human addressing the same problem.

Different types of AI

Currently, AI can be categorized into two types, weak AI and strong AI. Weak AI denotes machines that simulating thinking and act as if they were intelligent (Russell and Norvig, 2016). Weak AI is able to emulate human logic by analyzing large amounts of data (Jarrahi, 2018). In contrast, the presence of strong AI would suggest that machines have a conscience and are actually able to think (Russell and Norvig, 2016). Weak AI is already present in

everyday life, for example, via Machine Learning (Brynjolfsson and McAfee, 2014) and Natural Language Processing (Jarrahi, 2018). Strong AI does not exist in practice (Paschen *et al.*, 2019). Weak AI can act as a decision-maker when the decision process required is rational and thereby can be automated, and it can support by providing predictions and proposing different scenarios to the decision maker (Jarrahi, 2018). A real-life example is IBM's Watson, an AI platform combining Machine Learning and Natural Language Processing (Jarrahi, 2018). Its ability to analyze large amounts of data and communicate using a natural language enabled Watson in 2011 to win the TV show Jeopardy!.

A question that arises is what aspects of AI is actually suitable to address, and if there is an area or an activity of a business organization that cannot be addressed by AI. Although significant technological progress has been made, humans have a comparative advantage with regards to imagination, intuition, and creativity (Jarrahi, 2018; Brynjolfsson and McAfee, 2014), therefore it seemed likely that humans retain the upper hand where artistic creativity is concerned. As seen in Figure 1 below, Kaplan and Haenlein (2019) classify AI into different types based on their potential business use. The first two types already exist. The first, Analytical AI, displays characteristics of cognitive intelligence, with learnings from the past informing future decisions. The second type, Human-Inspired AI, combines from cognitive intelligence with aspects of emotional intelligence, where a system, for example, can be trained to recognize emotions expressed by humans, such as in customer interactions. Finally, the third type is hypothesized as Humanized AI, which would demonstrate a combination of cognitive, emotional, and social intelligence.

Marketing strategy creation

Marketing strategy decisions

A strategy is formed by a pattern of decisions (Mintzberg, 1978), which are of critical importance for firm performance (Eisenhardt and Zbaracki, 1992). It is a foundational building block in the achievement of organizational objectives (Hambrick and Frederickson, 2001). The view on strategy has developed over time. Miles and Snow (1978) looked at strategy as a typology of alternative options for organizations to identify and address the product-market domain to achieve competitive advantage. Porter (1980, 1996) viewed business strategy as relating to the type of customer value creation a firm offers compared with competitors (such as differentiation or low cost) and how to approach the market (taking marketwide or more focused approach).

Day and Wensley (1988) explained how strategy is two-fold, simultaneously a search for new market opportunity while limiting the negative impact to existing advantage. An effective strategy requires matching a firm's internal skills and resources with external risks and opportunities (Grant, 1999). In their work, Nutt and Wilson (2010) confirmed Minzberg's (1978) view that strategy formation cannot be attributed to a single decision; rather, it is a pattern

	Expert Systems	Analytical AI	Human-Inspired AI	Humanized AI	Human Beings
Cognitive Intelligence	×	✓	✓	✓	✓
Emotional Intelligence	×	×	✓	✓	✓
Social Intelligence	×	×	×	✓	✓
Artistic Creativity	×	×	×	×	✓
		Supervised Learning, Unsupervised Learning, Reinforcement Learning			

Source(s): Kaplan & Haenlein, 2019

Figure 1.
Types of AI systems

formed by multiple decisions. Marketing strategy is developed to support specific objectives (Dean and Sharfman, 1996; Varadarajan *et al.*, 2010), such as gaining and maintaining customers, and ensuring that the firm's customer portfolio generates revenue (Simkin and Dibb 2012). The strategic decisions are concerned with, for example, products, markets, resource allocation, and appropriate marketing activities (Mintzberg, 1978; Nutt and Wilson, 2010). Marketing strategy serves a key role in communication with customers, product creation, and delivery, and ultimately value creation for customers (Varadarajan *et al.*, 2010).

The science and the art of strategy making

Strategy creation requires a significant amount of cognitive managerial processing (Hambrick and Mason, 1984). A traditional view of strategic decision-making follows a path of identification of a managerial issue, search for, and review of relevant information, modeling, and evaluation of possible alternatives, to subsequently make a decision (Bharadwaj, 2018). Yet, it has been established that strategy creation is not a fully rational, scientific process (Eisenhardt, 1997; Lafley *et al.*, 2012). Extant research addresses intuition and reasoning as two different aspects in human decision-making (Kahneman *et al.*, 2003), giving humans the ability to infuse imagination and creativity in their decision-making (Brynjolfsson and McAfee, 2014; Jarrahi, 2018). Human decision-making is often in combination of rational and intuitive, with intuition and rationality acting as dual processes in the decision-making (Sadler-Smith and Shefy, 2004).

In the past, a number of rational or incremental marketing strategy-making models have been introduced (Smith, 2003). Most common has been the rational strategy formulation approach, characterizing strategy creation as a rational and proactive process involving monitoring of the environment, the definition of alternative actions and goals, followed by the development of action plans (Fredrickson and Mitchell, 1984). The rational view is also held by many business executives (Martin and Golsby-Smith, 2017). In contrast, the incremental model is founded on the recognition that decision makers have cognitive limitations (Hart, 1992). These limitations lead decision makers to view the world in the abstract; accept incrementally, rather than radically different, options; and satisfice in their decision-making (Cyert and March, 1963; Hart, 1992). In her work, Eisenhardt (1997) also asserts this balance, that decision makers indeed are rational, but not always. Needing to make rapid yet effective choices in various competitive, uncertain, and high-velocity industries, decision makers improvise and rely on heuristics that are only partially rational. Said differently, decision-making requires a bit of science and a bit of art. In their work, Lafley *et al.* (2012) recommend an approach to a strategy where science and art are indeed combined to maximize the business strategy benefits. This approach is based on understanding the issue at hand, constructing an inventory of strategic possibilities to consider, specify the conditions required for success, identifying the barriers different potential choices entail, checking the conditions against the barriers, and finally making a choice. With this approach, Lafley *et al.* (2012) call constructing new strategic possibilities "the ultimate creative act in business" (p. 7), making strategy creation contingent on both rational assessment and the manager's creativity.

The contingency theory approach

For over 50 years, management and organizational studies have used a contingency theory approach, arguing that internal and external situational factors influence firm organization and management (Fiedler *et al.*, 1964; Hofer, 1975; Scott, 1981; McAdam *et al.*, 2019). Marketing scholars effectively use it for prediction and explanation, by analyzing commonly occurring situations to determine what structures, environments, strategies, and leadership choices leads to enhanced prosperity in the specific situation (Zeithaml *et al.*, 1988; Atuahene-

Gima, 1995; Olson *et al.*, 2005; Krush *et al.*, 2016). The contingency approach is founded on an open systems perspective (Scott, 1981; Zeithaml *et al.*, 1988), which views complex organizations as problem-solving entities. The organizations are in themselves whole, made up of a combination of interdependent yet interactive parts. Consecutively, the organizations are also interdependent, yet interactive with the larger environment, to which they must relate (Scott, 1981; Zeithaml *et al.*, 1988). Zeithaml, Varadarajan, and Zeithaml outline two characteristics of specific importance, adaptation and equifinality, in this setting. Adaptation contends that parts within a system adapt to each other "to preserve the basic character of the system," while equifinality "holds that a system can reach the same final state from differing initial conditions and by a variety of paths" (1988, p.38–39). In complex environments decision makers tend to satisfice rather than optimize (Eisenhardt, 1997) and contingency theory explains how decisions are contingent upon various environmental, strategic, structural, and leadership related factors (Fiedler *et al.*, 1964; Hofer, 1975; Hambrick and Cannella, 2004; Krush *et al.*, 2016).

Contingency theory argues for the examination of contingency variables as antecedents made up of internal (organizational) and/or external (environmental) factors (Hofer, 1975). A contingency model is built on three types of variables, which Zeithaml *et al.* (1988, p. 40) described as follows: Contingency variables "represent situational characteristics usually exogenous to the focal organisation or manager"; response variables "are the organisational or managerial actions taken in response to current or anticipated contingency factors"; and, performance variables "are the dependent measures and represent specific aspects of effectiveness that are appropriate to evaluate the fit between contingency variables and response variables for the situation under consideration." This theory recognizes the importance of internal and external factors as determinants of strategy (Hofer, 1975). Specifically, Zeithaml *et al.* (1988) argue the value of contingency theory for marketing, where a contingency perspective grants the ability for concepts and variables to be systematically related to theory. This thinking is underpinned by the notion that firms adapting effectively to internal and external factors perform better than others (Hofer, 1975; Zeithaml *et al.*, 1988). By taking a contingency perspective for this exploratory work, our inquiry is modeled as follows (Figure 2).

Gartner's analytics ascendancy model

The maturity of a firm's analytics implementation can be assessed using the Gartner Analytics Ascendancy Model (GAAM) (Maoz, 2013). Gartner highlights the ability to achieve a competitive advantage by leveling up the organization's analytics maturity. Following the steps in GAAM, the analytics maturity evolve from the analytic relating to relatively obscure concepts–with reactive information reporting (descriptive analytics) - to explicit meaning and predictive knowledge creation (prescriptive analytics). The model reflects that, when reaching what is described as the highest steps of the model, the organization has comprehensive data analytics abilities ranging descriptive ("what happened"), diagnostic ("why did it happen"), predictive ("what will happen") and prescriptive ("how can we make it happen"). In this paper, the authors use the GAAM model to assess current and potential future maturity available for firms as it relates to strategy making (Figure 3).

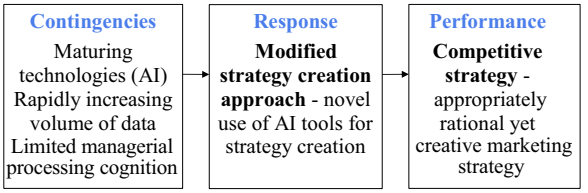
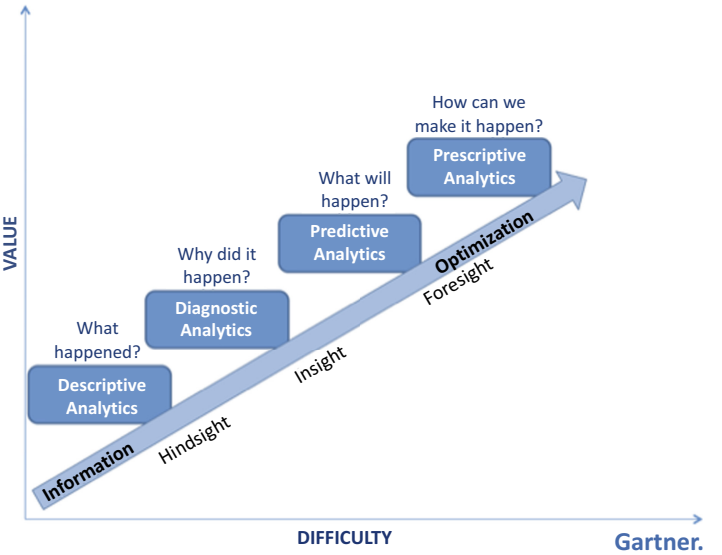


Figure 2.
contingency model for novel use of AI for strategy creation



Source(s): Maoz, 2013

Figure 3.
Gartner analytics ascendancy model

Having now established the theoretical underpinning for our work, the authors next describe the methodology used, followed a report of the results and discussion of the findings.

Methodology

Research design and data collection

The objective of this exploratory study is to address if and how AI can contribute to marketing strategy formulation, to inform the direction for further theoretical inquiry and understanding of the area (Eisenhardt, 1999). This research employed an exploratory in-depth interview-based approach, conducting semi-structured interviews with industry experts. This method was deemed appropriate since it allows researchers to collect and interpret the sentiments of experts to generate rich information for a rapidly evolving topic (Eisenhardt, 1999; Yin, 1994). Considering this, the selected interviewees were marketing managers and top managers currently working with artificial intelligence tools. Interviews were carried out with specific stakeholders representing different organizations currently working with AI in different capacities. These individuals were selected using a purposive snowball sampling procedure, described further below. Subsequent analysis of data was carried out based on the research question.

Data collection for this study was executed in Italy, where AI is a topic of current interest, and the researchers were able to gain access to industry experts. Italy has recently seen the Italian Ministry of Economic Development establish an expert group aiming to enhance research, establish IA on the market, encourage qualified investment in AI, establish regulatory frameworks and improve public service by means of AI (Digital Government Factsheet, 2019). In addition, the advancement of a national project "Impresa 4.0" sponsored by local chambers of commerce and the universities, aiming to provide support and training to create a uniform understanding of digital transformation and artificial intelligence advantages broadly applicable for business. After establishing the location, a snowball sampling procedure was adopted, through which appropriate initial participants were

selected based on their pre-existing experience. Data saturation (i.e. same themes surfacing repeatedly) was used to assess our final sample size; a total of 13 interviews were undertaken. Drawing evidence-based conclusions from a purposive non-probabilistic sample require the sample size to be sufficiently large to provide for metatheme saturation (Guest *et al.*, 2006). In their work to systematically document thematic data saturation and variability, Guest *et al.* (2006) consistently found saturation to occur within twelve interviews, with basic elements for metathemes to surface already at the six first interviews. Upon completing the initial interviews, the first participants were asked to suggest other candidates suitable for the interview (Flick *et al.*, 2019; Kemper *et al.*, 2003). Additional experts were identified and contacted using Linkedin, specifically searching for expertize in AI. For commencing the study, the first interview was conducted with the president of the "emphatic technology" firm Neosperience. This interviewee was specifically chosen since the firm focuses on AI and suggest that they offer a cloud platform which "is enriched with a personalization system based on artificial intelligence" (Neosperience, 2019).

The interviews were carried out by three independent researchers, who adopted a consistent interview protocol using pre-defined, semi-structured questions. These questions were developed based on the above-reflected literature review concerning AI, the development of efficient and innovative strategic marketing decision processes, and the influence of AI in the definition of the strategic approaches to addressing the market. For ensuring the aligned and consistent understanding of all researchers, the questions were first developed in English, and updates were made until a common agreement was reached. Upon agreement within the research team, the questions were translated into Italian. Interviews were carried out in Italian by two individual researchers. The interview individuals were assigned at random, aiming to prevent bias in the division of individuals between the researchers. Each interview lasted for 30–60 min, was recorded and transcribed. The transcripts were then reviewed and coded by three independent researchers, identifying common themes.

Data organization and coding

Due to the exploratory nature of this research, the collected data was analyzed manually rather than by means of using existing software (Saldaña, 2015). This allows for exploratory data analysis as the researcher adds new information to their extant knowledge (Saldaña, 2015). A cyclical qualitative analytic approach was used, employing a complementary first and second cycle coding. With this approach, the first cycle coding addresses initial, elemental coding of data. Followed by a second cycle to classify, prioritize, integrate, abstract, and synthesize the coding. This, in turn, allows for conceptualization and theory building. For this work, first structural and descriptive coding were sequentially conducted, followed by pattern coding (Saldaña, 2015). Structural code analysis allows identification of segments of data in the transcripts that addressed the same topic. Structural code is suitable for interview transcripts and open-ended survey responses (Saldaña, 2015), it provides a foundation for further detailed coding, next descriptive coding assigns labels to the data to provide a topical inventory. By using this approach, similar structurally coded segments were identified for further analysis (MacQueen *et al.*, 2008; Saldaña, 2015) through descriptive coding, which generates a categorized inventory, followed by pattern coding to develop meta-code and associate meaning to the coded data (Saldaña, 2015). Pattern coding is particularly suitable when the researcher wants to study social networks and identify causes and explanations in the data (Miles and Huberman, 1994). The principal investigator conducted the initial analysis and developed a codebook for the team to maintain consistent coding (MacQueen *et al.*, 2008). It was subsequently given to other Italian researchers, as the transcripts were written in Italian. As the interviews progressed, they independently coded the transcripts and updated

the codebook when new codes were identified. New interviews were compared with previous interviews. The iterative comparison process was undertaken until the final interview was completed and coded. During the process, the researchers communicated regularly. Once the final interview was completed, the members of the team met to agree on the final codes and, where necessary, to make final changes. Upon reaching the final coding consensus, insights could be identified from the interviews. These insights were reported below in the analysis of results. The quotes provided have been translated from Italian by the researchers.

Analysis and discussion of results

Insights from the interviews can be grouped into five main themes outlined below.

(1) Importance of AI in strategic marketing decision management;

(2) Presence of AI in strategic decision management;

(3) Role of AI in strategic decision management;

(4) Importance of business culture for the use of AI;

(5) Impact of AI on the business' organizational model.

Overall, the importance of AI (theme 1) addresses the perceived relevance of AI in the organization, as an element that adds value to the entire system. The presence (theme 2) evaluates the effective use of AI in decision-making, and finally, the role (theme 3) investigates how and where AI is used in decision-making and relation to strategic marketing managers. The last two themes investigate the business culture and its impact on the adoption of AI, and the subsequent impact of its adoption to the organizational model. In essence, the five themes represent two main perspectives. The first, which includes three themes, the importance, the presence and the role of AI, relates to the use of AI for strategy formulation. While the second perspective focuses on the adopting organization, it includes the importance of business culture and the impact of AI on the organizational model. Next, the themes are further described and discussed.

Theme 1: importance of AI in strategic marketing decision management

With theme 1, experts discuss the increasing importance of AI for strategy formulation (Martínez-López and Casillas, 2013). They deliberated on how they perceive the role of AI in the strategy formation process, both currently and in the future. Responses highlighted the ability to use AI for data collection and analysis, to systematically and effectively identifying patterns and underlying signals that may be missed by humans. These patterns and signals form important input for the strategic marketing manager to consider when forming their decision. Additionally, the experts also discussed how these might be used directly by AI acting as an independent agent, able to make strategic decisions without human support. The responses explained that the perceived AI value-creation ranges from situated at the GAAM lower analytics maturity step Descriptive Analytics to the mature Predictive Analytics step. The value is directly attributable to being able to address data abundance. Some respondents referred to mitigating the complexity of consumer behavior analysis. Additionally, AI importance was linked to its use to overcome human resource scarcity, for example, in smaller companies. The Descriptive Analytics was reflected in one interviewee calling AI "*[an] advanced data analysis machine for the manager,*" another: "*an advanced classification system.*" Then progressing via the Diagnostic Analytics step:

> [AI's role is] to elaborate quickly and correctly a manifold series of information, and to bring certain evidence [forward].

To the Predictive Analytics step as a predictive tool for scenario analysis:

> The other very important topic is the use of artificial intelligence in predictive analyzes, for example how a stock will move, how a market will move.
>
> What happens is that thanks to this tool [AI] you can identify what the heuristic values are, as we call them in research [1]. That is those dimensions, those suspended themes, that you would probably not be able to see probably with the naked eye or in the middle of an interaction. Instead through the mechanisms of artificial intelligence, planning, you can synthesize and focus in a much more evident way.

From a contingency perspective above may be a positive indicator for the use of AI as an effective response–at different steps of analytics maturity–to the contingency factors of high volumes of data, uncertain environmental conditions and limited available managerial processing cognition. Said differently, to mitigate the negative impact of high volumes of data, uncertain environmental conditions, and limited available managerial processing cognition, a firm could modify its strategy creation approach, by means of the novel use of AI tools for strategy creation.

Theme 2: presence of AI in strategic decision management

Regarding the presence of artificial intelligence in strategic decision management, two contrasting views surfaced, with sub-themes. In common, both sides agreed that AI indeed is already practically present in the business context (albeit maybe not always understood). On one side, one view refuted any current use of AI in a strategic context, rather highlighting its tactical value. In contrast, the other view presented that AI analytics in their firm is already mature to the point where the AI makes strategic decisions. Tactical uses included playing an operational role in data analysis, conducting sentiment analysis, executing customer interactions (e.g. chatbot) and making immediate, autonomous non-strategic decisions (e.g. making short term investment decisions), comments included:

> Artificial intelligence helps to reduce tasks in a company. . . it is certainly a help, it is better to have it.
>
> We apply artificial intelligence to both the survey part, the open-ended questions and the whole sentiment analysis part which then becomes the prediction of what the hot topics are.
>
> [AI] speeds up the time to make a faster screening, but not to make the decision; only to speed up information. But then the whole process is done on a human level.

One interviewee described how they are using an AI-based copy-edit functionality, which in the view of the interviewee has been trained by humans to a point where "*the student now outperforms the master*." AI was described to support strategic decisions:

> There is a moment in which the synthesis [AI] offers you
>
> becomes evident. . ., so you can deduce a whole series of
>
> implications that become strategy, that become interpretation, that become vision.

As well as making autonomous strategic decisions, even without complete data:

> . . . there are artificial intelligence systems that decide autonomously what to write and what emotion to arouse.
>
> AI takes decisions even with incomplete data

Further, from a contingency perspective, some interviewees highlighted that technology in itself no longer poses a barrier but rather an enabler to using AI for strategy creation. Instead,

they identified other contingencies such as the readiness to accept the change if introducing an AI still forms barriers.

Theme 3: role of AI in strategic decision management

As reflected below, expert responses with regards to the role of AI as a support to strategic management decisions can be mapped along two steps of the traditional strategic decision-making path, search for and review of relevant information, and making the decision (Bharadwaj, 2018). The rise of AI is influencing how decision-making is happening in organizations, and overall, the interviewees identified a few different interaction modalities between AI and strategic decisions. While one interviewee stated that AI did not affect strategic decisions at all, most declared that the capability of AI to identify, summarize and extract information useful for strategic decisions without solicitation would represent a first step in marketing strategic decision-making.

> Basically, with the use of artificial intelligence, it is also possible to have a database of data which can then be analyzed and then used to make strategic decisions.

> AI will permit to take more deep and rational decisions. Obviously the final decision will be in charge of the manager, but it is incontrovertible that an expert system could influence the final decision.

Three interviewees asserted that AI already can and is taking strategic decisions covering all required aspects, contending that AI can make creative decisions with a human acting as a supervisor only.

> In the future AI will give order and the manager will not be needed.

As discussed, the strategic decision process entails rationality combined with creativity. AI is suited to play a role in the rational process, either identifying required information or to substitute a manager in making a final decision related to imagination and creativity. Since the decision-making process is a combination of these two aspects (Sadler-Smith and Shefy, 2004), any use of artificial intelligence influences the final output. With this in mind, AI may, in the future, enable an additional step of analytics maturity, which the authors posit to call Creative Analytics. As discussed further below, the authors propose to modify GAAM to include this further step.

The interviews highlight that AI has an important role to play in the strategic marketing process. AI has already started to modify, directly or indirectly, the strategic decision taken by companies. This does not only entail a decision quality improvement or reduction in time, but a partial or total content contribution marketing strategy creation. Effective use of AI for marketing strategy creation may, over time, influence the structure of the organization. Generally, this is not yet evident, as many organizations (as it is possible to see in the next themes) are not ready yet to make this shift.

Theme 4: importance of business culture for the use of AI

Insights provided by the experts raise key barriers to the use of AI for strategy formulation, which themes 4 and 5 in-part address. Theme 4 addresses the importance of business culture readiness for the use of AI. The importance of business culture can be further broken into two key sub-themes: overarching business culture and digital culture. In their research, Davenport and Ronanki (2018) found that AI is a useful tool for businesses to gain cognitive insights, moving attention from labor-intensive manual data curation to leveraging probabilistic machine learning methods. They found that 35% of surveyed executives have "making better decisions" as a key goal of their AI initiatives. They suggest that using AI in marketing, which is an information-intensive domain, simultaneously adds value and

decreases cost. Specifically, they advised us to look at AI as a business capability and not through a technology lens (Davenport and Ronanki, 2018). Adding a business capability to a firm's repertoire requires effective change management, this also holds true for introducing and augmenting human decision-making by using AI.

> It's a culture of change talk that I'm still not seeing. The real change in my opinion will happen when we stop talking about AI but it will be integrated into the [actual] business processes

For business culture readiness, interviewees addressed challenges associated with firms "*not [being] internally prepared to face such a change.*" Digital culture readiness was identified as a second challenge:

> only a few [companies], the big brands that we usually find in the financial and banking sector are a little ahead of the rest, but it is a machine that moves very slowly. This was summed up by one interviewee as:

Overall, proactive change management, communicating the intent and potential value of the AI toolset, is required to fully harness its potential.

> The potential [of AI] is enormous, the problem is that companies do not realize [it] because those in power are a little old, in my opinion it is also that, or the new generations do not really want to change, they are out of time.

Interviewees discussed that the use of AI for marketing strategy creation cannot be fully adopted without business culture change. They identified how people are not yet ready for such change. In many cases, business culture is anchored to old models making it difficult for even new generations to address the change.

Theme 5: impact of AI on the business' organizational model

Finally, the interviews also revealed how the successful use of AI influences the way human resources are used and how it leads to changes in a business's organizational model. The observations echo that human attention is a scarce resource (Hansen and Haaz, 2001) and that current AI is indeed appropriate to automate some tasks requiring managerial attention (Hodson and Hofer, 2016). Further, by using AI to replace humans for some tasks, the manager's cognition can be "freed up" to focus on other issues. Managers need to move from tactically asking, "What is the right answer?" to strategically focusing on "What are the right questions?" (Lafley *et al.*, 2012). The results of these interviews provide an indication that this is possible, not only by using the rational view provided by AI but also by allowing AI to assist with creatively identifying and analyzing the problem at hand. This, in turn, leads to the opportunity to re-allocate resources, and in the long term, potentially re-draw the firm's organizational chart.

> Yes absolutely yes, [we use AI] in order to move people from more manual and repetitive activities . . . removal of humans from certain tasks where they do not give added value, moving them to areas where the machines still do not add value.

Creative analytics

Overall, the results of the interviews provide two perspectives of AI use, tactical and strategic. The first perspective argues that AI is limited to being a tactical marketing tool. Four of the experts urged that AI use is limited to being tactical and cannot currently or in the future be used as a tool for marketing strategy creation. The other perspective is that AI can be a tool for marketing strategy creation. The rest of the interviewees explained how they view AI as a "perfect partner" for a manager making strategic decisions. Additionally, one of the experts maintained that AI is already an effective part of some strategic board of companies. They all agreed that limits to using AI are not technological, but rather directly pertain to a lack of

business knowledge and adaptability. The interviews address the importance of AI as an effective tool for identifying weak signals coming from the market, serving to help the managers in formulating difficult and complex strategic decisions. According to the experts, AI is well positioned to explore and examine data using different and unconventional approaches to give the managers more information and a more prescriptive view of the future than the one they were used to working with data with standard methodologies. From a contingency perspective, this confirms the potential of using AI as a response to internal and external contingencies, such as limited managerial attention in combination with an abundance of data. Additionally, this leads us to posit that a "creative-possibility perspective" may form an appropriate managerial contingency response, executed by using AI to augment human creativity in the strategy formulation process.

Further, as previously discussed, GAAM describes a firm's analytic capability progression along four steps, and with each step, both the difficulty and potential for value increase. By using AI at each of the four discrete steps, firms can increase the ability to execute the analysis, improve the precision of the diagnosis, and enhance the accuracy of the foresight. With the "creative-possibility perspective" emerging from the interviews, the article proposes that this view could inform a practical extension of the GAAM perspective, adding an analytics maturity step called Creative Analytics. Figure 4 is an adapted extension of GAAM (Maoz, 2013), which indicates the possibility to mature from prescriptive analytics ("how can we make it happen") to using AI for creative strategy creation purposes ("what innovation can we imagine"). This capability addresses the potential of artistic creativity (Kaplan and Haenlein, 2019), and would allow for the use of AI in the creative part of the strategy creation process.

Implications for research and practice

It is important to understand how AI enables different types of knowledge to appropriately select and use the potential of AI to manage knowledge (Paschen *et al.*, 2019). With this work,

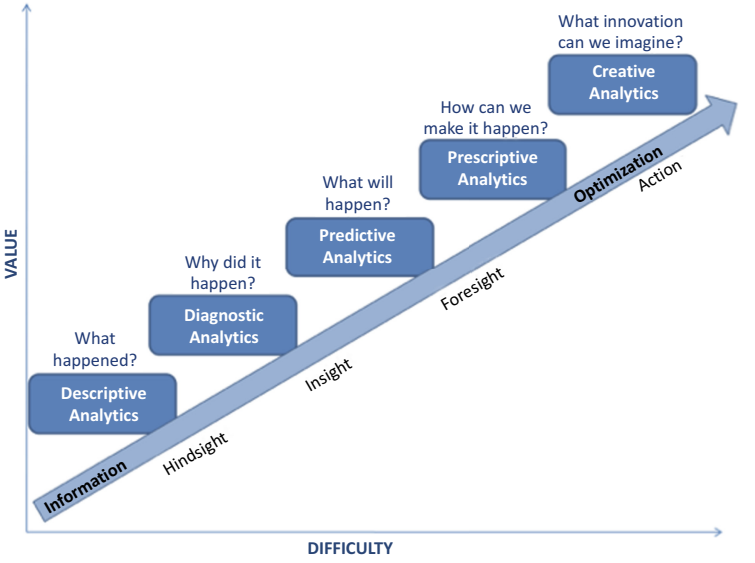


Figure 4.
Adapted GAAM model with a proposed extension to include Creative Analytics

the authors hope to add knowledge and research opportunities relating to the use of AI for strategy creation. The results provide evidence that AI can augment, replace, or complement the human decision-making process (Jarrahi, 2018) for marketing strategy creation. It especially serves to further highlight the potential of a complementary relationship between managers and machines (Jarrahi, 2018). The research has provided empirical evidence that AI can be a tool for marketing strategy creation. One area emerging from the interviews is what the article suggests to call a creative-possibility perspective. The authors hope this creative-possibility perspective provides an avenue to further study how managers can partner with AI in strategy formulation activities. Further, the expert interviews highlight the opportunity from a business school curriculum perspective. They identified how many organizations are not yet ready for the change AI entails. The main factor to help in facilitating change is the creation of a link between universities and industry. For example, in Italy, this has commenced through a series of projects funded by the Italian government, and the creation of eight competence centers. Evidence provided regarding AI can be a tool for marketing strategy creation and may form input to future business school initiatives and partnerships.

Additionally, the present study proposes that this view could inform a practical extension of the GAAM perspective, adding an analytics maturity step called Creative Analytics. This indicates the possibility to mature from Prescriptive Analytics ("how can we make it happen") to using AI for creative strategy creation purposes ("what innovation can we imagine"). Strategy creation requires a combination of science and art. Today we live in a world where data is abundantly available, available to inform marketing. Instead, considering that human attention is a scarce resource (Hansen and Haas, 2001) and that current AI is appropriate to automate some tasks requiring managerial attention (Hodson and Hofer, 2016), the authors contend that by contributing avenues where AI can augment human attention for alternative creation, the human cognition is "freed up" to provide the art. Managers need to move from tactically asking, "What is the right answer?" to strategically focusing on "What are the right questions?" (Lafley *et al.*, 2012). This exploratory work gives an indication that this is possible by not only using the rational view provided by AI but also by allowing it to help with creatively identifying and analyzing the problem at hand.

Limitations and a future research agenda

This exploratory work aims to scratch the surface of if and how AI can be used in marketing strategy creation, yet it has many limitations. First, the study has focused only on strategy creation as a deliberate process. Mintzberg (1978) described how only some strategy is deliberate, that is, proactively formed by patterns of strategic decisions. Other strategies emerge by virtue of initially unconscious patterns of strategic decisions. Further, Hart (1992) proposed that to establish a practically applicable strategy creation process, the dimensions of management intentionality (the degree to which marketing strategy is deliberately created) and organizational actor autonomy (the degree of involvement of organizational actors in the strategy creation process). These aspects are not addressed by our work, and future comprehensive inquiry focusing on these dimensions is required.

Based on the initial findings of this work, the article posits that in the process of marketing strategy formulation AI can be used as an effective response to the external contingencies of high volumes of data and uncertain environmental conditions, as well as being an effective response to the external contingencies of limited managerial cognition. The barriers to use, such as business culture and digital readiness, appear worthy of further inquiry. Among the interviews, the notion arose that not all firms are equal. There is research needed to further explore as to what are the contingencies for firms to actually benefit from using AI, and basically, if its cost and required change effort are worth the benefit.

Conclusion

With this work the authors hope to make a small contribution toward investigating if and how AI can contribute to marketing strategy formulation. It provides qualitative evidence for AI as a tool for marketing strategy creation. The article proposes a creative-possibility perspective and the notion of Creative Analytics', to aid with the strategy creation related question "what innovation can we imagine?" Additionally, barriers to adding AI as a business capability to a firm's repertoire are discussed, and a future research direction is suggested.

Note

1. The interviewee meant market research, not academic research.

References

Atuahene-Gima, K. (1995), "An exploratory analysis of the impact of market orientation on new product performance: a contingency approach", *Journal of Product Innovation Management*, Vol. 12 No. 4, pp. 275-293.

Bharadwaj, N. (2018), "Strategic decision making in an information-rich environment: a synthesis and an organizing framework for innovation research", *Review of Marketing Research*, Vol. 15, pp. 3-30.

Brynjolfsson, E. and McAfee, A. (2014), *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, WW Norton and Company, New York, NY.

Chen, L.T. and Chen, J.M. (2008), "Collaborative marketing and production planning with IFS and SFI production styles in an ERP system", *Journal of the Chinese Institute of Industrial Engineers*, Vol. 25 No. 4, pp. 337-346.

Chan, S.L. and Ip, W.H. (2011), "A dynamic decision support system to predict the value of customer for new product development", *Decision Support Systems*, Vol. 52 No. 1, pp. 178-188.

Chung, M., Ko, E., Joung, H. and Kim, S.J. (2018), "Chatbot e-service and customer satisfaction regarding luxury brands", *Journal of Business Research*.

Cyert, R.M. and March, J.G. (1963), *A Behavioral Theory of the Firm*, Englewood Cliffs, NJ, Vol. 2 No. 4, pp. 169-187.

Davenport, T.H. and Ronanki, R. (2018), "Artificial intelligence for the real world", *Harvard Business Review*, Vol. 96 No. 1, pp. 108-116.

Day, G.S. and Wensley, R. (1988), "Assessing advantage: a framework for diagnosing competitive superiority", *Journal of Marketing*, Vol. 52 No. 2, p. 1, doi: 10.2307/1251261.

Dean, J.W. Jr and Sharfman, M.P. (1996), "Does decision process matter? A study of strategic decision-making effectiveness", *Academy of Management Journal*, Vol. 39 No. 2, pp. 368-392.

Digital Government Factsheet (2019), available at: https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Italy_2019_0.pdf.

Eisenhardt, K.M. (1997), "Strategic decision making as improvisation", *Strategic Decisions*, Springer, Boston, MA, pp. 251-257.

Eisenhardt, K.M. (1999), "Strategy as strategic decision making", *MIT Sloan Management Review*, Vol. 40 No. 3, p. 65.

Eisenhardt, K.M. and Zbaracki, M.J. (1992), "Strategic decision making", *Strategic Management Journal*, Vol. 13 No. S2, pp. 17-37.

Fiedler, F.E. (1964), "A contingency model of leadership effectiveness", in Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology*, Academic Press, New York, NY, Vol. 1, pp. 149-190.

Flick, U. (2006), *An Introduction to Qualitative Research*, SAGE, London.

Fredrickson, J.W. and Mitchell, T.R. (1984), "Strategic decision processes: comprehensiveness and performance in an industry with an unstable environment", *Academy of Management Journal,* Vol. 27 No. 2, pp. 399-423.

Gabriel, M. (2019), "What does digital transformation really mean", www.cio.com, available at: https://www.cio.com/article/3404876/what-does-digital-transformation-really-mean.html (accessed 15 December 2019).

Gartner (2019), available at: https://www.gartner.com/en/doc/374107-predicts-2019-data-and-analytics-strategy (accessed 10 December 2019).

Grant, R.M. (1999), "Transforming uncertainty into success: the strategic leadership forum 1999", *Strategy and Leadership*, Vol. 27 Nos 4/5, pp. 31-36.

Guest, G., Bunce, A. and Johnson, L. (2006), "How many interviews are enough? An experiment with data saturation and variability", *Field Methods*, Vol. 18 No. 1, pp. 59-82.

Hansen, M.T. and Haas, M.R. (2001), "Competing for attention in knowledge markets: electronic document dissemination in a management consulting company", *Administrative Science Quarterly*, Vol. 46 No. 1, pp. 1-28.

Hambrick, D.C. and Cannella, A.A. Jr (2004), "CEOs who have COOs: contingency analysis of an unexplored structural form", *Strategic Management Journal*, Vol. 25 No. 10, pp. 959-979.

Hambrick, D.C. and Frederickson, J.W. (2001), "Are you sure you have a strategy?", *The Academy of Management Executive*, Vol. 19 No. 4, pp. 51-62.

Hambrick, D.C. and Mason, P.A. (1984), "Upper echelons: the organization as a reflection of its top managers", *Academy of Management Review*, Vol. 9 No. 2, pp. 193-206.

Hart, S.L. (1992), "An integrative framework for strategy-making processes", *Academy of Management Review*, Vol. 17 No. 2, pp. 327-351.

Hodson, J. (2016), "How to make your company machine learning ready", *Harvard Business Review*.

Hofer, C.W. (1975), "Toward a contingency theory of business strategy", *Academy of Management Journal*, Vol. 18 No. 4, pp. 784-810.

Jarrahi, M.H. (2018), "Artificial intelligence and the future of work: human-AI symbiosis in organizational decision making", *Business Horizons*, Vol. 61 No. 4, pp. 577-586.

Kahneman, D. (2003), "A perspective on judgment and choice: mapping bounded rationality", *American Psychologist*, Vol. 58 No. 9, p. 697.

Kaplan, A. and Haenlein, M. (2019), "Siri, Siri, in my hand: who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence", *Business Horizons*, Vol. 62 No. 1, pp. 15-25.

Kemper, E.A., Stringfield, S. and Teddlie, C. (2003), "Mixed methods sampling strategies in social science research", in Tashakkori, A. and Teddlie, C. (Eds), *Handbook of mixed methods research in social and behavioral research*, SAGE, Thousand Oaks, pp. 273-296.

Konijnendijk, P.A. (1994), "Coordinating marketing and manufacturing in ETO companies", *International Journal of Production Economics*, Vol. 37 No. 1, pp. 19-26.

Krush, M.T., Trainor, K.J., Malshe, A. and Agnihotri, R. (2016), "What marketing strategy matters? Examining a contingency model of the relationship between marketing performance management and business unit performance", *Marketing Challenges in a Turbulent Business Environment*, Springer, Cham, pp. 321-322.

Lafley, A.G., Martin, R.L., Rivkin, J.W. and Siggelkow, N., (2012), "Bringing science to the art of strategy", *Harvard Business Review*, Vol. 90 No. 9, pp. 3-12.

Legg, S. and Hutter, M. (2007), "A collection of definitions of intelligence", *Frontiers in Artificial Intelligence and applications*, Vol. 157, p. 17.

Li, S. (2000), "The development of a hybrid intelligent system for developing marketing strategy", *Decision Support Systems*, Vol. 27 No. 4, pp. 395-409.

Li, S. (2007), "AgentStra: an Internet-based multi-agent intelligent system for strategic decision-making", *Expert Systems with Applications*, Vol. 33 No. 3, pp. 565-571.

Li, S. and Li, J.Z. (2009), "Hybridising human judgment, AHP, simulation and a fuzzy expert system for strategy formulation under uncertainty", *Expert Systems with Applications*, Vol. 36 No. 3, pp. 5557-5564.

MacQueen, K.M., McLellan-Lemal, E., Bartholow, K. and Milstein, B. (2008), "Team-based codebook development: structure, process, and agreement", in Guest, G. and MacQueen, K.M. (Eds), *Handbook for Team-Based Qualitative Research*, AltaMira Press, Lanham, pp. 119-135.

Maoz, M. (2013), "How IT should deepen big data analysis to support customer-centricity", Gartner G00248980.

Markiewicz, T. and Zheng, J. (2018), *Getting Started with Artificial Intelligence. A Practical Guide to Building Enterprise Applications*, O'Reilly, Boston, MA.

Martin, R.L. and Golsby-Smith, T. (2017), "Management is much more than a science", *Harvard Business Review*, Vol. 95 No. 4, pp. 128-135.

Martínez-López, F.J. and Casillas, J. (2013), "Artificial intelligence-based systems applied in industrial marketing: an historical overview, current and future insights", *Industrial Marketing Management*, Vol. 42 No. 4, pp. 489-495.

McAdam, R., Miller, K. and McSorley, C. (2019), "Towards a contingency theory perspective of quality management in enabling strategic alignment", *International Journal of Production Economics*, Vol. 207, pp. 195-209, doi: 10.1016/j.ijpe.2016.07.003.

McCulloch, W.S. and Pitts, W. (1943), "A logical calculus of the ideas immanent in nervous activity", *The Bulletin of Mathematical Biophysics*, Vol. 5 No. 4, pp. 115-133.

McKinsey (2017), available at: https://www.mckinsey.com/~/media/McKinsey/Industries/Advanced%20Electronics/Our%20Insights/How%20artificial%20intelligence%20can%20deliver%20real%20value%20to%20companies/MGI-Artificial-Intelligence-Discussion-paper.ashx (accessed 10 December 2019).

McTavish, R., Gunasekaran, A., Goyal, S. and Yli-Olli, P. (1996), "Establishing a strategic framework for improving productivity", *Integrated Manufacturing Systems*, Vol. 7 No. 4, pp. 12-21.

Mele, C. (2007), "The synergic relationship between TQM and marketing in creating customer value", *Managing Service Quality - An International Journal*, Vol. 17 No. 3, pp. 240-258.

Mintzberg, H. (1978), "Patterns in strategy formation", *Management Science*, Vol. 24 No. 9, pp. 934-948, doi: 10.1287/mnsc.24.9.934.

Miles, M.B. and Huberman, A.M. (1994), *Qualitative Data Analysis: An Expanded Sourcebook*, Sage, Beverly Hills.

Miles, R.E. and Snow, C.C. (1978), *Organizational, Strategy, Structure, and Process*, McGraw-Hill, New York, NY.

Neosperience (2019), available at: https://www.neosperience.com/our-story/ (accessed 2 December 2019).

Nutt, P.C. and Wilson, D.C. (Eds) (2010), *Handbook of decision making*, John Wiley and Sons, Vol. 6.

O'sullivan, S., Nevejans, N., Allen, C., Blyth, A., Leonard, S., Pagallo, U., Holzinger, K., Holzinger, A. and Ashrafian, H. (2019), "Legal, regulatory, and ethical frameworks for development of standards in artificial intelligence (AI) and autonomous robotic surgery", *The International Journal of Medical Robotics and Computer Assisted Surgery*, Vol. 15 No. 1, pp. 1-12.

Olson, E.M., Slater, S.F. and Hult, G.T.M. (2005), "The performance implications of fit among business strategy, marketing organization structure, and strategic behavior", *Journal of Marketing*, Vol. 69 No. 3, pp. 49-65.

Paschen, J., Kietzmann, J. and Kietzmann, T.C. (2019), "Artificial intelligence (AI) and its implications for market knowledge in B2B marketing", *Journal of Business and Industrial Marketing*, Vol. 34 No. 7, pp. 1410-1479.

Pitt, C., Kietzmann, J., Botha, E. and Wallström, Å. (2018), "Emotions and sentiment: an exploration of artist websites", *Journal of Public Affairs*, Vol. 18 No. 2, pp. 1-12.

Porter, M. (1980), *Competitive Strategy*, Free Press, New York.

Porter, M. (1996), "30. HBR ' s must-reads on strategy what is Strategy?", *Harvard Business Review*, Vol. 1, pp. 1-143.

Russell, S.J. and Norvig, P. (2016), *Artificial Intelligence: A Modern Approach*, Pearson Education Limited, Malaysia.

Sadler-Smith, E. and Shefy, E. (2004), "The intuitive executive: understanding and applying 'gut feel'in decision-making", *Academy of Management Perspectives*, Vol. 18 No. 4, pp. 76-91.

Saldaña, J. (2015), *The Coding Manual for Qualitative Researchers*, Sage, London.

Schwab, K. (2017), *The Fourth Industrial Revolution*, Crown Business, New York, NY.

Scott, W.R. (1981), *Organizations: Rational, Natural, and Open Systems*, Prentice Hall, Englewood Cliffs NJ.

Shapiro, B.P. (1977), "Can marketing and manufacturing co-exist", *Harvard Business Review*, Vol. 55 No. 5, p. 104.

Simon, H.A. (1947), *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*, 1st ed., The Macmillan Company, New York.

Simkin, L. and Dibb, S. (2012), "Leadership teams rediscover market analysis in seeking competitive advantage and growth during economic uncertainty", *Journal of Strategic Marketing*, Vol. 20 No. 1, pp. 45-54.

Turing, A.M. (1950), "The word problem in semi-groups with cancellation", *Annals of Mathematics*, Vol. 2 No. 52, pp. 491-505.

Varadarajan, R. (2010), "Strategic marketing and marketing strategy: domain, definition, fundamental issues and foundational premises", *Journal of the Academy of Marketing Science*, Vol. 38 No. 2, pp. 19-140.

Yin, R.K. (1994), *Case Study Research: Design and Methods*, 2nd ed., Sage publications, Thousand Oaks, CA.

Zeithaml, V.A., "Rajan" Varadarajan, P. and Zeithaml, C.P. (1988), "The contingency approach: its foundations and relevance to theory building and research in marketing", *European Journal of Marketing*, Vol. 22 No. 7, pp. 37-64.

Zilis, S. and Cham, J. (2016), "The competitive landscape for machine intelligence", *Harvard Business Review*, available at: https://hbr.org/2016/11/the-competitive-landscape-for-machine-intelligence (accessed 15 December 2019).

Further reading

LaPlaca, P.J. (2013), "Applied intelligent systems in business-to-business marketing", *Industrial Marketing Management*, Vol. 42, pp. 467-469.

Miles, R.E., Snow, C.C., Meyer, A.D. and Coleman, H.J. Jr (1978), "Organizational strategy, structure, and process", *Academy of Management Review*, Vol. 3 No. 3, pp. 546-562.

Negnevitsky, M. (2004), *Artificial Intelligence: A Guide to Intelligent Systems*, 2nd ed, Pearson Education, London.

Parry, K., Cohen, M. and Bhattacharya, S. (2016), "Rise of the machines: a critical consideration of automated leadership decision making in organizations", *Group and Organization Management*, Vol. 41 No. 5, pp. 571-594.

Pomerol, J.C. (1997), "Artificial intelligence and human decision making", *European Journal of Operational Research*, Vol. 99 No. 1, pp. 3-25.

Simon, H.A. (1979), "Rational decision-making in business organizations", *American Economic Review*, Vol. 69, pp. 493-513.

Sharfman, J.D.M. (1996), "Does decision process Matter? A study of strategic decision-making effectiveness", in James, W., Dean, Jr and Sharfman, M.P. (Eds), *The Academy of Management Journal*, Vol. 39 No. 2, pp. 368-396.

Smith, B. (2003), "The effectiveness of marketing strategy making processes: a critical literature review and a research agenda", *Journal of Targeting, Measurement and Analysis for Marketing*, Vol. 11 No. 3, pp. 273-290.

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