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ABSTRACT

The age of artificial intelligence is here! Artificial Intelligence, robotics, machine learning, and automation are impacting the field of marketing and sales in an unprecedented way. In this study, the qualitative research methodology will be used to better understand the revolution and evolution of marketing and sales field in the AI age. Multiple case studies will be performed in various marketing and sales units in different organizations. This research is of value to both academics and practitioners as it aims to provide a detailed analysis and documentation of the changes in marketing and sales functionalities and job markets as AI technology advances.

Keywords: Artificial intelligence, Robotics, Machine learning, Deep Learning, Automation, Marketing, Sales

INTRODUCTION

Artificial Intelligence (AI) is an information technology-based computer system or machine that has the ability to complete tasks that require human intelligence. AI can be classified into Weak and Strong AI. Weak AI, also known as artificial narrow intelligence, focuses on specific narrow tasks. One example of Weak AI is the burger flipping robot in a fast food restaurant. It is specialized for flipping burger. Another category is the Strong AI, also known as artificial general intelligence. Strong AI is a machine that can perform intellectual tasks at least as good as a human. Strong AI is regarded by many as an existential threat to humanity. In this article, we focus on Weak AI. In the rest of the article, AI will refer to Weak AI.

The main threat poses by AI are job losses and upheaval of the society as a result (Siau, 2017, 2018; Siau and Wang, 2018). A report published in February 2016 by Citibank in partnership with the University of Oxford predicted that 47% of US jobs are at risk of automation. In UK, it is 35%. In China, it is 77%. Across OECD, it is an average of 57%. In the past, technology advancement has consistently generated more new jobs than it destroys. Many are wondering if it will be the same for the AI revolution. Marketing and sales is one of the jobs that is predicted to be easily replaceable by AI. Is that true? What is the process of such transitions from humans to AI in organizations? What is the resulting impact on the marketing and sales personnel? Are the replaced marketing and sales personnel provided with other career options in the companies? Is re-training provided? These are the questions that we are going to study in this research.

LITERATURE REVIEW

We classified the literature on AI, robotics, machine learning, and automation on marketing and sales into eight categories (see Table 1). Some representative literature works are listed.

Category	Paper Title	Marketing Usage
AI Platforms	The Impact of Artificial Intelligence and Virtual Personal Assistants on Marketing (Marinchak, Forrest & Hoanca, 2018)	Discusses neural networking, and deep-learning algorithms and lists some real examples about marketers who are currently utilizing an array of advanced AI platforms, services, and technologies.
	Public Policy in an AI Economy (Goolsbee, 2018)	Discusses business practices of large AI platforms—their pricing, their use of personal data on customers, their behavior toward competitors, and the continuing consolidation of market power.

	Conversations as Platforms (Machiraju & Modi, 2018)	Article discusses chat bots and provides example applications such as Skype SDK.
Natural language processing (NLP)	Designing Natural Language Processing Systems with QuickScript as a Platform (Khanna, Garg & Bhalla, 2018)	Company started the development of QuickScript as an open-source platform for creating artificial conversational agents, with an intention to generate wider interest in the field of Natural Language Processing (NLP) and chatbot design.
	Big Pharma Reads Big Data, Sees Big Picture: Linguamatics Brings Natural Language Processing to Non-Experts, Expediting Drug Development (Dutton, 2018)	Using an artificial intelligence (AI) approach called natural language processing (NLP) to replace manual searches.
	Natural Language Processing Approaches to Understand HPV Vaccination Sentiment (McGregor & Whicker, 2018)	Using natural language processing (NLP) techniques to examine the ways in which people use social media to talk about HPV vaccination.
Fraud Prevention	2018: the year of the AI-powered cyberattack (Deepak, 2018)	Machine learning was used to study patterns of normal user behavior within a company's network. Also list some real examples about AI impacts on fraud prevention.
	Why 2018 Is the Year of AI for Financial Institutions (Todd, 2018)	As AI gathers large amount and various types of data, it crunches numbers to make predictive decisions. List trends regarding AI such as fraud prevention and detection, and customer service.
	Collaboration Between Human and Intelligence (AI), the Future of Fraud Prevention (Putri, 2018)	Financial institutions can manage thousands of data to overcome and even prevent fraud from occurring by adopting artificial intelligence (AI) – a device capable of mimicking human cognitive functions related to 'learning' and 'problem solving.'
	Managing Complex Work Systems Via Crowdworking Platforms: How Deutsche Bank Explores AI Trends and the Future of Banking with Jovoto (Mrass, Peters & Leimerister, 2018)	Crowdsourcing has evolved into a powerful new instrument for companies. The paper investigates three seminal projects that Deutsche Bank completed with the crowdworking platform Jovoto and that aimed at exploring AI trends and developing concepts for the future of banking.
Social Semantics	Artificial Intelligence in Retail – 10 Present and Future Use Cases (Daniel, 2018)	Five examples of AI in retail such as pepper robot and Conversica "sales assistant." Explaining how retail companies are using these technologies to stay ahead of their competitors.
	Big data analytics services for enhancing business intelligence (Zhaohao, Lizhe & Kenneth, 2018)	Examines how to use big data analytics services to enhance business intelligence (BI). Lists some examples about AI in e-commerce.
	Electronic Commerce 2018: A Managerial and Social Networked Perspective (Turban, Outland, King, Lee, Liang & Turban D, 2017)	Discusses AI and its applications to smart commerce as well as the use of analytics and big data to enhance electronic commerce.
AI Website Design	Sentient Ascend: AI-Based Massively Multivariate Conversion Rate Optimization (Miikkulainen, Iscoe, Shagrin, Rapp, Nazari, McGrath & Epstein, 2018)	Describes an AI-assisted technology for conversion optimization based on evolutionary search. The technology depends on optimization tools such as Optimizely and Visual Website Optimizer. The tools make the task of designing effective web interfaces easier.

	AI Website Builders: Are They Any Good? A Detailed Review (2018) (Catalin, 2018)	Explains AI website Builders' disadvantages and advantages.
	Artificial Intelligence in Web Design, Development and Marketing (Bharat Mamtora, 2017)	AI promises far more sophisticated website development with chatbots, artificial intelligence in web design, AI-powered search engine optimization, and marketing.
Predicting Product Price and Customer Behavior	AI in Action (Burgess, 2018)	Lists some real-life examples in three different areas; enhancing customer service, optimizing processes, and generating insights.
	How Artificial Intelligence and Machine Learning Can Impact Market Design (Milgrom & Tadelis, 2018)	Provides some recent examples of how AI helps market designers improve the operations of markets, and to better predict fluctuations that can cause friction in markets.
	Intelligent (Smart) E-Commerce (Turban, Outland, King, Lee, Liang, & Turban, 2018)	Predictive analytics and AI are used to customize and automate e-mail marketing campaigns to help companies predict consumer behavior and to decide what to offer and when.
Advertisement Target	Artificial Intelligence in Marketing and Advertising – 5 Examples of Real Traction (Daniel, 2018)	Provides some examples on the use of AI for marketing and sales in companies such as Facebook, Baidu, IBM, and AT&T.
	Marketing and Advertising in E-Commerce (Turban, Outland, King, Lee, Liang & Turban, 2018)	Consumer behavior can be analyzed for creating personalized services. Describes various AI use of online advertising strategies and types of promotions.
	How AI Helps Marketers Invest in the Right Ads (Green and Seven, 2017)	With massive amounts of data, measurements, and algorithms to support its growth, AI can now solve media buying problems much better than humans.
Customer Segmentation	Artificial Intelligence in Sales – How Artificial Intelligence is Changing Sales and Selling Right now (Marc, 2018)	More and more companies are already utilizing AI in sales to analyze sales data. With AI, it is easier to find potential customers, and analyze customers' data.
	How Banks Can Better Serve Their Customers Through Artificial Techniques (Vieira & Sehgal, 2018)	Using AI tools to get information from and offering different services to customers.
	The Future of Artificial Intelligence Marketing is Here (Duran, 2016)	AI systems excel at parsing and crunching massive volumes of data from disparate sources, and can take information from a variety of inputs, find relationships, connect dots, and make predictions in ways that are not humanly possible.

Table 1. AI Impact on Marketing and Sales

THEORETICAL AND CONCEPTUAL FOUNDATIONS

AI will result in organizational change in marketing companies and sales units (Siau and Yang, 2017). Low level marketing and sales jobs may be replaced. Marketing and sales techniques will be revolutionized by AI. To understand such changes, organization change theories will be utilized in this research to provide the theoretical and conceptual foundation. Lewin (1951) developed a change model involving three steps: unfreezing, changing, and refreezing. In the unfreezing stage, it entails creating the atmosphere and conditions for a change. Change is then pursued and finally, refreezing solidifies that new behavior as the norm.

Figure 1. Kurt Lewin's Change Model

Another conceptual foundation is the Transtheoretical Model (TTM), which is commonly used to analyze personal behavior in different stages (Wayne 2016). The TTM focuses on the decision-making of the individual and is a model of intentional change. The central premise of TTM is that people do not change behaviors quickly and decisively. Rather, change in behavior occurs continuously through a cyclical process. The six stages of TTM are precontemplation, contemplation, preparation, action, maintenance, and termination.
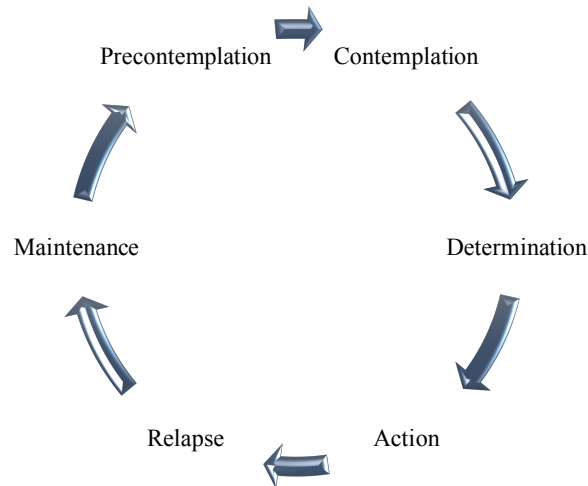

Figure 2. Six stages Model

RESEARCH QUESTIONS, METHODOLOGY, AND PROCEDURE

Qualitative research methodology, case study, will be used to better understand the impact of AI on the revolution and evolution of marketing and sales. Qualitative research is used because AI is a new phenomenon, and qualitative research enables us to have an in-depth understanding of the behavior and allows the researchers to better interact with the interviewees. Also, qualitative research provides the opportunity for us to examine existing theoretical and conceptual foundations which may not apply in the AI age. Multiple case studies will be conducted in various marketing and sales units in different organizations. We will interview marketers and sales personnel as well as their managers and executives. Convenience sampling will be used.

CONCLUSIONS AND EXPECTED CONTRIBUTIONS

AI is undoubtedly revolutionizing marketing and sales. As a pioneering effort to understand the impact of AI on the field, the results of this research will inform academics about the organization changes impacted by AI. The research will also enable us to study the impact of AI on marketing and sales personnel as their jobs are displaced and replaced by AI.

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