

Application of Artificial Intelligence to Cross-Screen Marketing: A Case Study of AI Technology Company

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Abstract—The study constructs a framework for a multi-screen marketing platform through comprehensive analysis of theory and practice, the model provides practical insights and strategies to help marketers successfully deliver against business goals, while they implement the application of artificial intelligence (AI) to cross-screen marketing. Also, the model can help companies effectively leverage the multi-screen advertising opportunity. Finally, the study adopts a case study of AI technology company to examine how they make it easy for businesses to use AI to grow and succeed in a cross screen era.

Keywords—application; artificial intelligence; cross-screen; marketing; ai

I. INTRODUCTION

According to [10], some 55% of all digital advertising dollars will be driven by programmatic initiatives in 2015 where computer speed and machine learning take precedence over human guess work. By 2016 that number is expected to rise to 63% representing over \$20 billion in programmatic ad buys. Today's marketers have more opportunities to analyze content and data to deliver campaigns that would benefit the marketer, but more important, the consumer. Smarter marketing strategies should also make room for more hypertargeted services offered to the consumer [14]. Though this increases the complexity of media planning and analysis, it also offers marketers an unprecedented opportunity to target audiences with a unified experience that will generate significantly more value than traditional approaches [11]. It is evident that AI is impacting on a variety of subfields and marketing. However literature regarding its integrated application to the field of marketing appears to be scarce. Therefore, the study aims to explore what are the integrated applications of AI to cross-screen marketing?

II. APPLICATIONS OF AI TO MARKETING

The study of [1] aimed at identifying the effect of using AI in electrical engineering applications. [27] proposed an artificial neural network is a form of computer program modelled on the brain and nervous system of humans. From a marketing perspective, [25] indicated neural networks are a form of software tool used to assist in decision making. Neural networks are effective in gathering and extracting information from large data sources [25] and have the ability to identify the cause and effect within data [26]. Also, [25] indicated Neural networks are composed of a series of

interconnected processing neurons functioning in unison to achieve certain outcomes. Once knowledge has been accumulated, neural networks can be relied on to provide generalisations and can apply past knowledge and learning to a variety of situations [26]. Neural networks help fulfil the role of marketing companies through effectively aiding in market segmentation and measurement of performance while reducing costs and improving accuracy. Due to their learning ability, flexibility, adaption and knowledge discovery, neural networks offer many advantages over traditional models [6]. According to [23], classification of customers can be facilitated through the neural network approach allowing companies to make informed marketing decisions. [13] proposed sales forecasting "is the process of estimating future events with the goal of providing benchmarks for monitoring actual performance and reducing uncertainty". He took an example of forecasting using neural networks: the Airline Marketing Assistant/Tactician; This system has been used by Nationalair Canada and USAir [12]. According to [26] and [30], Neural networks provide a useful alternative to traditional statistical models due to their reliability, time-saving characteristics and ability to recognise patterns from incomplete or noisy data. [15] assumed organizations' strive to satisfy the needs of the customers, paying specific attention to their desires. A consumer-orientated approach requires the production of goods and services that align with these needs. Understanding consumer behaviour aids the marketer in making appropriate decisions. In the study of [16], he pointed out that expert systems are they key of real success in the field of AI despite the large number of intelligent developments in the different domains of human knowledge. The study of [19] indicated that when the organization needs to take a decision to solve a complicated problem, it usually resorts to the advice of experts who have enough experience about the nature of the problem and realize the available alternatives, success chances and expected costs. [15] indicated the use of an expert system that applies to the field of marketing is MARKEX (Market Expert). These Intelligent decision support systems act as consultants for marketers, supporting the decision maker in different stages, specifically in the new product development process. Also, [8] proposed an Expert System is a software program that combines the knowledge of experts in an attempt to solve problems through emulating the knowledge and reasoning procedures of the experts.

[29] indicated Adherents have long predicted that AI will revolutionize marketing and sales. The new iterations of AI technology can understand consumers' online

questions and input, deliver appropriate answers, and track consumers' online behavior to suggest products to purchase. Companies can use AI combined with voice recognition technology to respond to consumers' phone calls. "As software advances, the sophistication and perception of virtual customer care agents will radically change". The technology is becoming powerful enough to soon assume a major customer service role [29]. The AI applications can handle much of the manual, time-consuming tasks of trying to contact sales leads, according to the company. Marketing and sales teams no longer need to play endless phone and email tag. The new technology creates personalized, automated engagement [29]. AI integration in the virtual assistant will allow for a smart lens while people shop in their favorite apps. AI can help marketers create the following types of virtual assistants [14]: A. Human-like mobile recommendations. B. Personalized mobile discovery. C. Virtual shopping assistants. [22] indicated AI is a field of study that "seeks to explain and emulate intelligent behaviour in terms of computational processes" through performing the tasks of decision making, problem solving and learning [5]. According to [20], AI is concerned with both understanding and building of intelligent entities, and has the ability to automate intelligent processes. The study of [21] aimed at identifying the effect of applying and using AI and emotional intelligence methods in taking decisions. [28] indicated marketing is a complex field of decision making which involves a large degree of both judgment and intuition on behalf of the marketer. [15] assumed the generation of more efficient management procedures have been recognized as a necessity. According to [24], the enormous increase in complexity that the individual decision maker faces renders the decision making process almost an impossible task. Marketing decision engine can help distill the noise. Also, [18] proposed the application of AI to decision making through a Decision Support System has the ability to aid the decision maker in dealing with uncertainty in decision problems.

Time spent watching video on TV is still greater than on other devices. However, with the proliferation of mobile

devices entering the market and multiscreen usage growing, video habits are shifting. The rise in mobile video viewing is part of a larger transition to multiscreen usage. More than a third of mobile users worldwide said they would be less likely to skip digital video ads and pay more attention to them if they were funny or humorous. User attitudes toward video advertising are a hurdle marketers need to overcome. [17]. According to [11], Research has documented the emergence of the multi-screen world. [11] have analyzed the key features of multi-screens, across various consumer experience characteristics. For instance, multi-screen consumers are often willing to share their personal information to ensure they get more relevant coupons, deals and offers [11]. Cross-screen is the new standard for digital ad campaigns (mobile marketer), Marketers are no longer treating mobile devices as add-ons to a desktop-centric advertising campaign. Cross-screen marketing offers advertisers a huge opportunity given the massive proliferation of the devices and the way consumers have adopted them to consume media on a daily basis [9]. According to [7], the past year has seen exciting changes in the way that marketers connect with their consumer audiences, both online and off. "Cross-Screen" can be a number of things including [7]: A. Running ad campaigns across multiple channels separately, such as display, mobile, and in-app. B. Ingesting data from siloed, channel-based APIs and combining for measurement purposes, often used by analytic platforms, C. Cookie-only based methods, which are extremely limited and often inaccurate.

III. BUILDING A MULTI-SCREEN MARKETING PLATFORM

According to above comprehensive literature review and modified from Wipro Technologies, the study builds a framework for a multi-screen marketing platform (Figure I) that allows companies to help marketers deliver targeted, personalized ads. The core components of the framework include: Integrated Inventory Management, Integrated Ad Management, Integrated Analytics; And the benefits of a multi-screen marketing platform.

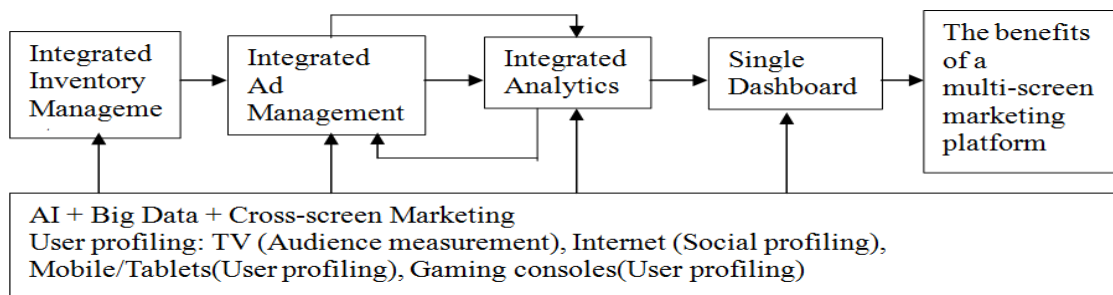


FIGURE I. A FRAMEWORK FOR A MULTI-SCREEN MARKETING PLATFORM

IV. CASE STUDY: AI TECHNOLOGY COMPANY

Appier is a technology company that makes it easy for businesses to use AI to grow and succeed in a cross screen era. AI technology is at the heart of Appier's solutions [2]. Appier's latest Cross Screen User Behavior Report analyses over 850 billion campaign data points from Appier-run campaigns across 11 markets in Asia, from the second half of 2015, to help better understand user behavior across

devices. Key highlights include [3]: A. Interacting with 3 or more devices is the norm for Asia's multi-device users. B. Mobile-first doesn't mean mobile only. C. Behaviors across screens are varied and complex. D. Majority of multi-device users show a preference for different ad formats on different screens. Appier has released a comprehensive research report on the cross-screen user behavior in the first half of 2015. The research report provides an overview of key trends in multi-device usage and corresponding user

behaviors in 10 Asian markets during the first half of 2015 by analyzing 490 billion data points from the Appier database. Markets covered in the report include Australia, Hong Kong, Indonesia, India, Japan, Malaysia, the Philippines, Singapore, Taiwan, and Vietnam [4]. Consumers now own many screens, moving between smartphone, tablet, desktop PC, and even smart watches. Here in Asia, eight markets experienced growth in both two and three-device usage in the first half of 2015. In other words, cross screen is no longer an option: it's a reality. Appier CrossX AI Technology enables you to reach your customer effortlessly across all screens. CrossX provides information on device ownership, usage, and demographics. Appier CrossX Programmatic technology identifies and buys the best audience for your campaign, thanks to AI algorithms that predict cross screen behavior minute by minute. Appier's CrossX Programmatic Platform combines audience targeting, inventory, and bidding infrastructure to take the guesswork out of cross screen campaigns. Additionally, CrossX Programmatic's AI algorithms evaluate performance of specific creatives, channels, times, and screens, and optimises accordingly [3].

V. CONCLUSIONS

The study analyzed Marketing and AI includes Artificial Neural Networks, Pattern Classification, Forecasting, Marketing Analysis, The Structure of Marketing Decision, Expert System; AI and Automation Efficiency includes Application to Marketing Automation, Automation of Distribution; Use of AI to Analyze Social Networks on the Web includes Social Computing, Data Mining; Programmatic Marketing Platform. Moreover, the study analyzes the emerging Applications of AI in Marketing, Sales and Customer Service includes AI marketing solutions, Virtual Customer Service Agents, Automating Marketing and Sales; AI integration in the virtual assistant; Application of AI to Marketing Decision Making. Furthermore, the study constructs a framework for a multi-screen marketing platform through comprehensive analysis of theory and practice, the model provide practical insights and strategies to help marketers successfully deliver against business goals, while they implement the application of AI to cross-screen marketing. The strategies and model can also help companies effectively leverage the multi-screen advertising opportunity. Finally, the study adopts a case study of AI technology company to examine how they make it easy for businesses to use AI to grow and succeed in a cross screen era.

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