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# A Review Of Technological Enhancements In The Field Of Marketing And Migration Policies

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### **Abstract**

Traditionally, marketing researchers have long been studying the impacts of novel technologies within their field. Their research has consistently shown that companies which are focused heavily on technology tend to be more agile as well as competitive than companies which fail to do so. Nevertheless, the existing literature findings are rather scarce with regard to the ways by which these novel technologies could innovate the techniques, tools, as well as approaches in the marketing field per se. Specifically, scholars need to further expand on the theoretical paradigms concerning the ways by which these novel technologies could be utilized by marketers to increase their competitive edge. This review delineates the contemporary scholarly research which focus on these novel technologies' underlying roles in steering the theoretical and practical aspects of the marketing sector. The research findings highlighted in this review pertain to an extensive range of novel technologies. The objective here is for these findings to encourage additional research regarding the role of novel technologies within the marketing field and their practical applications. Several frameworks are put forth in this review, which should facilitate contemplation regarding the way by which the marketing field is impacted by the novel technologies. These frameworks serve to organize the findings within this paper, highlight potential gaps that warrant additional study, and present recommendations for future studies.

Key Words Novel Technologies, Marketing Technology, Marketing Sector.

### 1 Introduction

Earlier researchers have interpreted "technology" as being a sort of scientific knowledge which could be applied for utilitarian purposes (Polas & Raju, 2021). According to this interpretation, technology could be related to both, the goods or the services which arise out of this scientific knowledge as well as to the knowledge in itself. This does away with the need to differentiate between the goods or service (i.e.<sup>1</sup>, chatbots) and the technology (i.e., AI) that make up this scientific knowledge (Farooq & Raju, 2019a). Over time, technology tends to mature, and hence the term novel could be interpreted as indicating the scientific knowledge applications which have not yet substituted existing ones. Put differently, technology can be seen as being "novel" if it is in the innovator phase or if its adoption cycle is still in the initial stages among organizations or end users. The findings in this review pertain to a host of novel marketing technologies are based on an assorted range of research methodologies. Technologies which have been established over longer timeframes are likelier to generate more hard data due to their more widespread adoption. This allows for empirical observations as well as quantitative

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analytics regarding the groundwork or consequences related to such technological adoptions (Chetty & Phung, 2018). Some technologies are categorized as being positioned within the adoption cycle's initial phase and hence the groundwork or predeterminants as well as the consequences related to them can merely be concluded experimentally. Examples of such studies would be: (Raju, 2018) involving chatbots; (Polas, Raju, Muhibbullah, et al., 2022) involving AI-based recommendations; (Phung & Chetty, 2018) involving platforms; (Anggoro et al., 2018) involving avatars; etc.

By a consolidation of the points highlighted above, novel technologies related to the marketing field could be defined as: "scientific knowledge and its applications during the initial adoption cycles involving organizations and /or users, which could positively affect the organizational activities, institutions, creative processes, communications, consumers, and the greater society" (Mohd Adnan & Valliappan, 2019)

### 2 Novel Technologies and the Marketing Field

When conceptualized, it can be seen that there are four intertwined ways by which the field of marketing is affected by novel technologies (see Figure 1). These involve: (1) the bracing of evolving interactive forms between users and businesses; (2) fresh data types which facilitate innovative analytic processes, (3) marketing innovations; (4) fresh models concerning strategic marketing processes. It has to be borne in mind that these different technologies could simultaneously and to different extents, fulfill the various functions highlighted above.

**Innovations Within** Marketing Bharadwaj et al., (2020) Crolic et al., (2022) Longoni & Cian (2022) Tan et al., (2022) Beneficiary/ **Company** Initiator User Wichmann et al. (2022) Daviet et al. (2022)Wichmann et al. (2022) Company Bharadwaj et al., (2020) Wichmann et Crolic et al., (2022) al. (2022) Longoni & Cian (2022) **Novel Data** Miao et al. (2022) **Novel Strategic Analyses** Tan et al., (2022) Models **Approaches** Daviet et al. (2022) Bharadwaj et al. (2020) Miao et al. (2022) Chandrasekaran et al. Wichmann et al. (2022) Daviet et al. (2022)

Figure 1 The Effects of Novel Technology & the Marketing Field

# 2.1 Evolving Interactive Forms Amongst Users and Businesses

Novel technology may be an enabler of new and evolving forms of interactive processes involving: user to user; user to company; company to user; and company to company. To enhance user-company interactions, the effective deployment of novel technologies as an innovative marketing tool is being increasingly seen. A case in point would be the usage of powerful AI engines to substitute a company's human representatives with machine agents and employing the "word of machine" to facilitate user-company interactive processes (Polas, Raju, Hossen, et al., 2022) According to (Raju, 2021) anthropomorphized chatbots are capable of influencing user responses within service interactions initiated by the users. Also, more and more companies have started utilizing avatars to interact with their clients, wherein their effectiveness is dependent on their form as well as realistic behaviors (Raju & Phung, 2020) Retail firms utilize Augmented reality (AR) to smoothen the user-company interactions, with this technology's "try before purchasing" concept being particularly effective among undecided buyers (Farooq & Raju, 2019b) Findings also show that computer vision as well as facial recognition technology could be leveraged by marketers toward enhancing the effectiveness of sales via livestreams (Raju & Phung, 2018)

# 2.2 Fresh Data & Innovative Analytic Processes

The rise of novel technologies leads to a concurrent increase in the generation of fresh and unique data, which in turn necessitate innovative analytic processes. (Saigopal & Raju, 2020a)) put forth an analytic framework which employed computer vision technology to analyze the effectiveness of facial expressions in increasing sales over livestream. According to (Kebah et al., 2019), in future, consumers may not hesitate to allow their genetic data to be utilized for the enhancement of consumer targeting as well as the development of new goods. Such new data types then necessitate the development of innovative data analytics or the updating of existent ones.

# 2.3 Innovations Within Marketing

Novel technologies have an immense potential toward providing fresh marketing tools and approaches which could lead to innovative processes. (Younus & Raju, 2021) work with computer vision technology demonstrates how this could be utilized to optimize sales done over livestreams. Likewise, (Rana & Raju, 2019) were able to demonstrate the effectiveness of the "word of machine" based on AI technology, with (Polas et al., 2019) doing the same concerning the effectiveness of chatbots, and (Hmedan et al., 2018) with AR's effectiveness within the retail sector.

### 2.4 Strategic Models

Novel technologies also have a great potential to enable the generation of fresh strategic models. According to (Adaletey et al., 2018) conceptualization, digital platforms could be seen as consumer crowdsourcing domains and also domains involved in the crowd sending of goods or services. (Raju et al., 2021)) findings offer suggestions for marketers on the ways by which they could design and utilize their avatars. In their study, (Saigopal & Raju, 2020b) put forth a model which consolidates genetics and the theory of consumer behavior; utilizing the same to offer an understanding of how the marketing sector could leverage on genetic data.

# 3 Novel Technologies and Decision Making Within the Marketing Sector

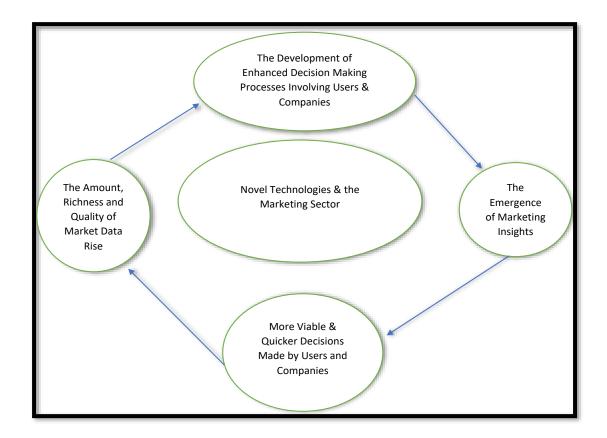
Figure 2 demonstrates the processes that are related to companies investing in novel marketing technologies. As can be seen in the figure, novel technology serves to increase the amount,

richness as well as quality of market and user related data. Today, huge data streams- which capture the thoughts, feelings and behaviors of digital users as well as how they interact with other users and companies at different points across their consumer journeys- have become the norm (Simeng et al., 2020) Particular forms of data which could not be accessed by most companies in the past like eye movements, speech, facial recognition, etc. are slowly becoming ubiquitous, in tandem with the dropping of costs related to their accumulation and analyses (Yizhou et al., 2020) Technology which involves digital data captures, generating data related to user-company interactions via images, videos, speech, text, etc., allow for extensive field research, along with A/B testing. These activities provide insights to companies regarding the viability of their marketing activities. Based on the information gleaned from such data, it becomes possible for marketers to optimize website designs, create targeted advertisements, and asses the worth of novel marketing tools.

The growing ubiquitousness of rich data results in fresher and more relevant approaches to decision making processes among users and companies. In A/B testing, the mechanism which generates data is under the control of researchers or companies, hence allowing for the usage of basic models (Tan et al., 2022). With the increasing richness of accumulated data, more intricate models or machine learning techniques need to be employed, with greater amounts of data minimizing errors related to sampling and measurements. Together, this rich and voluminous data allows for greater predictive performances of machine learning approaches, which in turn facilitates marketers in gleaning valuable insights. A case in point would be the methodology developed by Chandrasekaran et al. (2022) which provides leadership with the insights on whether it would be best to adopt a novel technology, persist with their older technology, or consolidate the novel and older technologies. In line with this, Tan et al.'s (2022) findings indicate that it is possible to reduce users' uncertainties regarding particular goods by leveraging on AR technology, hence enhancing the outcomes of sales and marketing processes.

The deeper insights provided by novel technologies also allow for enhanced and quicker decision making processes involving both, users and companies. The usage of AR technology within the retail sector provides users with better information and hence leads to better decisions concerning purchases (Tan et al., 2022). Real time interactions are enabled by company chatbots which are capable of providing users with the relevant insights and information, that positively affect satisfaction levels and buying intentions (Crolic et al. 2022).

Figure 2 Novel Technology & Decision Making Processes in Marketing



# 4 The Future of Novel Technologies in the Marketing Field

# 4.1 Automation, Personalization & Recommendation Systems

Technologically enabled interactive processes, methodologies, innovations and models (see Fig. 1), in tandem with the market settings and generated marketing knowledge (see Fig. 2), provide marketers with the opportunities to make real-time, or automated decisions. An example of this would be the AI technology today, which is already becoming indispensable for its automatic generation of personalized offerings which are in accordance with individual users' online activities and search histories. The automation and augmentation processes within AI technologies (Raisch and Krakowski 2021) are indicative of massive opportunities being present for research concerning the forms of human/AI collaborations which will be most efficient within the various marketing contexts.

Today's technologically enabled interactive processes also allow marketers to observe the unique ways by which users engage with goods, brand names, stores, companies, as well as other users. Such observations offer a more profound understanding concerning users' relationships, likes and dislikes, thus providing businesses with opportunities to generate fresh value sources for themselves and also their customers.

## 4.2 AR, VR & Decision Making Processes Among Users

Technological advancements have paved the way for users to come into contact with goods, companies, or each other, by means of virtual and augmented reality (VR & AR) technologies. Though most consumer behavioral theories could quite easily be extended into virtual spaces, others would need substantial updates in order to account for contemporary users' searches,

selections, consumption practices, etc. This involves the way by which contextual information (i.e., product information or recommendations) are presented and processed within virtual or augmented settings; the consequences of engaging with VR/AR technologies for users' self-image, social interactions, etc. This also involves the impact of shared platforms in developing users' self-presentation approaches, political opinions, self-image, etc.

Also, consumer research needs to expand on the existent theories toward understanding the ways by which users perceive and interact with the large amounts of autonomous devices available today (De Bellis et al., 2021). Hoffman and Novak (2018) who studied the repeated interactions between humans and smart devices driven by AI state that presently, it is necessary to study consumer behaviors from a wider, non-human-centric contexts. On top of being unique this "object-oriented" strategy carries a lot of importance due to modern day users' increased active interactions with novel technologies which in turn are capable of their own autonomous actions.

# 5 Novel Technologies & Future Directions for Marketing Research

Some of the issues which crop up with the advent of novel marketing technologies pertain to the ways by which they alter the role of marketing within companies. For instance: 1) the effects of adopting novel marketing technologies on companies' overall performances; 2) technology shifting the marketing sector's collaborations with functions, such as operational interfaces (i.e., push notifications, product returns, etc.), R&D processes (i.e., development of fresh goods/services, upgrades of goods, quality control processes), along with ICT (i.e., budgetary considerations of marketing technologies, decision making processes, etc.). Other areas of interest involve social and policy impacts regarding the usage of novel technologies like issues relating to user privacy and data accessibility. Also included here are issues related to the ethical development, commercialization as well as utilization of novel technologies and their consequences for users, companies and society in general.

From the standpoint of businesses, the elimination of personal interactions could lead to more efficient transactions, but the effect of this on their client relationships needs to be further delved into. Also, the inevitable privacy loss which results from the utilization of novel technology is another huge worry for users. Additionally, the integration of novel technologies with the marketing practice, tend to raise questions regarding companies becoming biased when making decisions. There exist algorithmic biases which involve every digital application, especially social media and this necessitates a proper understanding regarding the 'darker aspects' of these systems, which could potentially result in negatively consequences. This is summarized by Mehrabi et al. (2022) who state that with the development of fresh marketing approaches driven by richer and larger data flows, care has to be exercised toward ensuring that such "improvements" do not unintentionally harm the stakeholders.

# 5.1 The Applicability for Marketing Researchers

To begin with, the novel technologies should be aligned with the practical aspects related to the marketing field (Deighton et al., 2021).). The deployment of most of the novel technologies related to marketing occurs at breakneck speeds within firms, whereby the insight function here consists of quickly learning as to what is viable and what is not. Marketing researchers who are able to delve into the more practical aspects would be able to evaluate the effects of companies' real time activities and sustain their 'knowledge developer' roles instead of remaining as mere knowledge distributors (Stremersch et al., 2021).

Also, researchers could become more future oriented by doing away with some of the limitations that empirical requirements create. Put differently, more focus should be given to conceptual research, which resonates with Yadav's (2010) recommendation of staying abreast with technological implementations within the real-world. In addition, attention should also be paid to mixed methods approaches which are capable of generating crucial insights, instead of selecting approaches dogmatically because they are easier, more empirical or trendy.

When marketing researchers rigorously address pressing questions with unbiased, futureoriented mindsets, together with tighter collaborations involving businesses, it becomes possible to leverage the massive opportunities available within the contexts of novel technological advancements and the marketing field.

# 5.2 The Applicability for Marketers

Unsurprisingly, in today's fast advancing technological environments, it becomes necessary for marketers to possess highly specialized skillsets. In view of this, companies are increasingly seeking for marketers well versed with the scope of current novel technologies. Some researchers refer to marketers who are involved with digital transformations undertaken by companies as "marketing technologists" (Brinker and Heller, 2015). These specialists are aware of the capability of novel technologies in gaining traction at any point of time and disrupting the established ways by which businesses operate or fulfil their clients' needs. The marketing technologists are focused on their company's objectives and purpose and are agile when deploying novel technologies. It is also anticipated that nondigital technologies which involve genetic data or decision science will soon fall under marketers' job scopes also.

#### 6 In Conclusion

This paper illustrates the wide range of research which examine the ways by which novel technologies steer the marketing sector and their potential to drive future studies. Focusing on technologically enabled new interactive varieties involving users and companies, this paper demonstrates that new data forms, innovative analytic approaches, marketing innovations as well as strategic models are constantly being generated by novel technologies. The virtuous cycle described in this paper shows that when companies leverage novel marketing technologies- they accumulate rich and voluminous market data that necessitate innovative analytic approaches- giving rise to novel insights- upon which more informed marketing decisions are based on- which allows for the accumulation of additional market data- with this process possibly going on ad infinitum. This paper also offers suggestions and recommendations for studies in future, along with insights on how marketing researchers and practitioners could remain relevant within today's technologically infused business landscapes.

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