BIOMARKETING: UNDERSTANDING BRAND PERCEPTION THROUGH BIOLOGICAL PROCESS, AND USER-FRIENDLY MATERIALS AND PLATFORMS

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ABSTRACT

The aim of this work is to provide a cogent review of biomarketing. This review work will pave the way for the study of how brand engagement and buying decision could be understood through the biological perspective by holistic and strategic marketing communications. The methods used was the mining of relevant literature and websites on marketing with perspective of biology. Biomarketing is an emerging discipline that traverse the fields of social and biological science. Biomarketing pose that the interactions between salespeople and customers can be studied from a biological perspective. The emerging research in marketing studies of buyer-seller interactions has explored the role of genes, hormones, and pleasure and pain processes. Clarity in health communication aid customer understanding of brand information. Future work in biomarketing field would be to investigate the mechanistic association of biomarkers in brain and blood of customers with the brand and the market benefits.

KEYWORDS:

Biomarketing, brand perception, biological process, social platforms, communication

1. Introduction

Biomarketing is an emerging discipline that crisscross the fields of social and biological sciences. Biomarketing is defined as the marketing of bio-relevant products and services within the global biosphere which is at the intersection of the market (economy and environment), life (human) and power (authority – regulatory or monopoly). In global public health, the biomarket is a globalised market where the people are responsible for managing their biological life by contractual agreements

with market-based entities, in which the role of global institutions and market mechanisms are unique and crucial (Maruthappu & Williams, 2013). Regulatory agencies such as the European Medicines Agency (EMA) and the US Food and Drug Administration (FDA), are responsible for marketing authorization of pharmaceutical and biotech products, based on all-inclusive data and information gathered during animal studies and human clinical trials conducted at the various phases of development, and purposeful commitments

to post-marketing studies as a condition for approval.

The American Marketing Association (AMA), has described marketing as the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large (Keefe, 2008). Marketing provides guidance to the management in order to ensure that development process is driven strategically and that the product sustains viability in a continuously ever-changing environment (DeRitis, 2002). The biotech, pharma, medical device, and diagnostic industry, have been and will continue to go through a lot of changes as a result of influence by politics (biopolitics), innovation (bioinnovation), economics (bioeconomics) and informatics (bioinformatics).

2. Biomarketing biology

Biomarketing pose that the interactions between salespeople and customers can be studied from a biological perspective, where hardwired biological processes underpin the psychological processes, which are shaped by evolution and interact with the social environment in a process called reciprocal determinism, can be studied using methods from neuroscience, endocrinology, and genetics (Bagozzi & Verbeke, 2014). The principle of reciprocal determinism declares that a behavior could be determined through the shared influence that can occur between biological and social variables. This naturally occurs recursively rather than simultaneously, for instance, when social variables influence psychological variables through their effects on neural, hormonal, and / or genetic variables (Bagozzi & Verbeke, 2014).

Pleasure and pain processes engage largely distinct brain regions (Lieberman & Eisenberger 2009), and has found relevance in the studying of buyer–seller interaction, where dopamine from the ventral tegmental area to the brain regions plays a key role in regulating pleasure (Bagozzi & Verbeke,

2014). Researches in the endocrinology of social relationships, have shown the role of hormones in mediating and supporting the formation, maintenance, and quality of social relationships (Ellison & Gray 2009). Cortisol, testosterone, oxytocin and vasopressin, were listed as the four hormones which are important parts of neurochemical underpinnings of social behavior (Bagozzi & Verbeke, 2014).

The emerging research in marketing studying buyer–seller interactions has explored the role of three gene which are dopamine receptor (*DRD2* and *DRD4*), serotonin transport, and oxytocin receptor genes (Bagozzi & Verbeke, 2014). The 7-repeat variant of *DRD4* gene was found related to curiosity and explorative behavior during interactions with customers, and reward sensitivity, the characteristics that closely associated with novelty seeking, opportunity recognition, and commercial success (Bagozzi et al., 2012). A molecular genetics study has found an association between the G variant of the dopamine receptor *DRD3* and becoming an entrepreneur (Nicolau et al., 2011).

3. Biomarketing core is marketing

Without marketing, the professionals (e.g physicians) and the consumers (e.g patients) would be ignorant of functional essence of the pharmaceutical and biotechnology industries, developmental process of biomedical devices and therapies, and thus unable to support the growth of the market accordingly (DeRitis, 2002). Without a marketing partner, first-to market product with best efficacy data, will foundered (Ku, 2015).

The Pharmaceutical Research and Manufacturers of America (PhRMA), has described an appropriate marketing of medicines as one that guarantee patients an access to the products they need and promote adherence to correct use of the products for maximum patient benefit (PhRMA, 2008). In biomarketing, the 4Ps namely, product, price, place, and

promotion, are very important for commercial success and sustainable profit. The price of a product at a given place per period is the customer-effective amount of money of the total cost involved from mass-production to promotion. In the healthcare biotechnology industry; Dogramatzis (2011) has described the 4Ps, (i) product is a mass-produced good purposed for public use (such as drug, vaccine or biotechnological diagnostic tool), (ii) price is the expected amount of money a customer must pay when purchasing a product per time; (iii) place is the location or premise where the customer can purchase the products (at retail locations, an outpatient clinic, a hospital, etc), and (iv) promotion is every process of communication used in making the products known to the public, which can be centered on either the physicians who prescribe them, or the patients who use them, or potential patients and relatives. Moreover, marketing strategies that are poorly executed will cut into the profits of the business (Ku, 2015), whether for-profit or not-for-profit organization. Right strategies executed at the right time is required for success in an emerging market, in that emerging markets carry high hopes for investors (Tannoury & Attieh, 2017).

4. Experiential biomarketing

Experiential marketing merge art and science to produce corporate dramatic or storytelling moment that blend a brand message, a targeted audience, elements of interactivity, and delivered in a live setting that generate a defined outcome (Kerry & Dan, 2016). Moreover, Gheorghe et al. (2017), have studied the elements that constitute experiential marketing in healthcare services with a focus on Y-generation demographics, and proposed a model to evaluate the outcome effect. They identified interpersonal communication and loyalty as the vital effect, while the elements consist of sensorial, cognitive, affective, physical and relationship experience.

Experiential marketing is a countertrend to the traditional marketing. The value of face-to-face communications and the solutions which are associated with environ-mentality which are obtainable by experiential marketing is changing the marketing 4Ps (company-led marketing management) to the marketing 4Es – Engagement, Experience, Exclusivity, and Emotions (customer-led marketing management). Experiential marketing makes it possible for the companies to rely on information from customers and not just about customers. Market exclusivity of new biopharmaceuticals is derived from patent protection (Dogramatzis, 2011). Exclusivity used to be the key to being a strong brand for the individualized consumer, whereas collabranding is used for the collective intelligence of the digitally connected consumer (Yenicioglu & Christodoulides, 2014). According to Fatoki and Fatoki (2021), experiential marketing has significant positive effects on the brand, customer / consumer, and the market in terms of engagements and experiences. Experiential marketing provides a lively brand experience that gives consumers the chance to engage with the brand.

4.1. Brand information

Despite the fact that scientific research is evidently the basis on which bioscience companies are established, the need for bioscience companies to communicate is of paramount importance. Clarity in health communication aid customer understanding of brand information. Brands should strive to provide relevant and credible information to health consumers in order to satisfy and positively impact their behavior (Verywell, 2020). Credibility, relevance, ease, and empathy of brand information are the important factors that promote a positive online health experience, and consequently stimulated decision for health actions. Brand information must be presented in an understandable voice, deciphering and

simplifying complex health verbiage, and delivering the most truthful data and material empathetically in such a way that empowers decisive action (Verywell, 2020).

Study has shown that majority of consumers choose health materials that are written clearly and presented in a simple, orderly, and easy-to-read format (Davis et al., 1996). The reading ability of the consumer is a stronger indication of health status than any other socio-demographic factors such as age, race, and education level (AMA, 1999). The principles for clear health communication were found invaluable for advertising and marketing professionals with college degrees that engages in development of biopharm products' instruction leaflets (Doak & Doak, 2004). Also, brand information should have an anti-racism orientation, capture and relate to wider scope of consumers health and well-being, regardless of socio-demography, geography and biography. Mass communication in biomarketing requires understanding of collabranding. According to Yenicioglu and Christodoulides (2014), collabranding is about co-creating brand related content that is often experimental, experiential, and relevant together with consumers by tapping into their collective intelligence in the digital age of connectedness.

4.2. Brand promotion

Biomarketing planning involves market segmentation, profiling, targeting and positioning (Dogramatzis, 2011). Positioning deals majorly with the brand and activities which are associated with it. Brand management is explicitly focused on the application of all relevant marketing techniques in order to boost the perceived value of bio-relevant product to the customers. Brand building involves selection of a brand identity (name, images, colors, associated trademark, sounds, and other elements) used to create an enjoyable

and memorable experience. Biomarketers aim to increase the product's profitability and sustainability by judiciously and steadily building a valuable brand (Dogramatzis, 2011). Building a valuable brand increases customer value perception, promotes product quality, and rises eventual profitability (Dogramatzis, 2012). The biopharma's brand sometimes undergoes rationalization, repositioning (or rebranding) and orientation in order to maintain sustainable growth and profitability. Corporations that have a strong brand name accomplish healthier performance and marketing proficiencies (Jannesari et al., 2014).

In biopromotion, the two different approaches commonly used for brand promotion are known as push and pull strategies. Kerry and Dan (2016) wrote that brands can either be a push action (that is, attempting to follow up and be where customers are going, and adapting messages to the medium) or a pull action (that is, tapping into the core of human inherent trait and virtually enforcing target audiences to stop, take notice, and participate). A brand with pull action is the essential principle of experiential marketing, and it is a prevailing strategy often used by leading brands to create right customer engagement that delivers quantifiable results. A push strategy seeks to promote competitive advantages of a product by promoting of its unique selling points, whereas a pull strategy makes use of market segment which is characterized with unmet needs such as low disease diagnosis, lack of therapeutic innovation, lack of patient awareness of available effective treatments and other factors (Dogramatzis, 2011). A push strategy could be described as a strategy of group performance with further products being added to the existing group while sustaining the same volume of sales and increasing the use of marketing infrastructures (Ku, 2015).

4.3. Brand advertising

Most specialty pharma usually operates a business model that is based on direct to patients marketing (Ku, 2015). Liang and Mackey (2011) have studied online direct-to-consumer advertising (DTCA) marketing practices and found that global top ten pharmaceutical companies are present on social networking platforms such as Twitter, Facebook, and others. Moreover, companies which include AstraZeneca, Abbott Laboratories, Astellas, Bayer Schering, Boehringer-Ingelheim, Bristol-Myers Squibb, Daiichi-Sankyo, Eli Lilly & Co., Gilead Sciences, GlaxoSmith Kline, Johnson & Johnson, Merck & Co., Mylan, Novartis, Otsuka Pharmaceutical, Pfizer, Sanofi, Takeda Pharma, Teva, etc., are all on Facebook, where they engage with the patients and professionals (Shankar & Li, 2014).

Physicians are utilizing social media to harness the patients, in order to post health information, success therapeutic outcome of patients, as well elucidate medical actions to the patients (Shankar & Li, 2014). Quite number of physicians have used online search to inform changes in patient's medication or introduced new treatment (Dolan, 2010). The increasing presence of patients and physicians on the social network demands that pharmaceutical companies need to revise their strategic plan of marketing resources allocation and responsibly leverage the impetus created and carried by social media (Shankar, 2008).

Moreover, Vakratsas and Kolsarici (2014), have reported that DTCA has slight impact on brand sales, significant market expansion effect, causes no increase prices; possibly rise the treatment after diagnosis, substantial effect on compliance with little economic impact and positive spillover effects on compliance for associated brands. According to Liu and Gupta (2014), the presence of upright observational marketing data has increased, covering the "causal" variables (advertising) such as Kantar Media (<http://www.kantarmedia.com>), and the "effect" variables (e.g., prescription sales) such as IMS Health (<http://www.imshealth.com>) and ImpactRx (<http://www.impactrx.com>).

5. Biomarketing education

Healthcare marketing (biomarketing) companies are different from regular marketing agency, in that they know the marketing and the science. Biomarketing executives do digital strategy and integrated marketing the right way based on the knowledge of the drugs (prescriptions / products), the doctors (professionals), the doctrines (principles) and the dialect (parlance). Biomarketing companies provide (i) patient support solutions that centered on empowering healthcare providers and patients through education, training, and ongoing health coaching, and (ii) digital strategy, integrated marketing, market analytics, patient identification and acquisition, patient retention and adherence programs, and medical affairs supports.

According to Saint Joseph University of Beirut (USJ), biomarketing postgraduate program should aim at training professionals and build an executive profile for scholars in the field of Natural Sciences and Marketing, in order to become strategic decision-makers that are adroit to analyze markets dynamics, provide business intelligence and development, and holistically explicate marketing, communication, and media plans. Successful outcome of the program should provide acquisition of scientific and technical skills which are useful for bio-relevant products as well as application of marketing and communication skills to different sectors such as health / pharmaceutical, agriculture / food, economics / financial, and environment / social.

6. Conclusion

The knowledge of mechanism of hypersegmentation of cells in biology and personalized medicine could be positively mirrored in marketing, in term of hyperpersonalization of customers and personalized marketing. Biomarketing is a scientific field of study that traverse the fields of social sciences (marketing, and customer relationship management) and biological sciences (biochemistry, and

neuroscience), which has not been explored and translated to industrial use. This review work will pave the way for the study of how brand engagement and buying decision could be understood through the biological perspective by holistic and strategic marketing communications. Biomarketing experts should take marketing as a trigger of biological responses through the (i) acquired traits/experiences which have naturally selected set of genes that are

associated with memory and learning *in the* customer, (ii) scale of preference based on current and expected financial capacity *of the* customer, and (iii) prospective benefit, satisfaction and health to be derived *by the* customer. Future work in biomarketing field would be to investigate the mechanistic association of biomarkers in brain and blood of customers with the brand and the market benefits.

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