Public Perception on Pharmaceutical Marketing Practices in India — An Exploratory Study

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Abstract

Pharmaceutical marketing practices are primarily designed to address the needs of healthcare practitioners in promoting good health. However, this focus has led to information asymmetry between the public (stakeholders) and the pharmaceutical industry, resulting in both positive and negative perceptions of pharmaceutical marketing practices among the Indian public. A Systematic review of literature (SLR), applying the TCCM (Theory, Characteristics, Context, Method) framework, bibliometric analysis, and science mapping using VOSviewer, was conducted to review four decades of existing literature (1980-2021) to identify knowledge gaps and areas for further research on public perception of pharmaceutical marketing practices in India. Using an inductive approach guided by conventional grounded theory and theoretical sampling, data collected from the public were analyzed using descriptive statistics to arrive at findings and conclusions. A public perception model, based on the Machiavellian concept, is proposed using PLS-SEM with a random sample from the collected primary data (survey). This study may help regulatory agencies and the pharmaceutical industry assess and remodel their marketing practices according to the prevailing perceptions of the public, the largest stakeholders in the pharmaceutical business.

Keywords: Indian Public Perception, Machiavellian, Pharmaceutical Marketing Practices

Introduction

BBC World News on 18th March 2021 citing The New York Times, stated that only 20% of the public in France had confidence in the most widely distributed AstraZeneca Covid19 vaccine (Cohen, 2021), which would have shocked many not only in India but world over. As per the YouGov poll report on 22nd March 2021, 61% of people in France and 55% of people in Germany think the AstraZeneca vaccine is unsafe (Smith, 2021). Bernie Sanders, a lawmaker in the USA tweeted, "Pfizer and Moderna became $10 billion richer as the news about the Omicron variant spread and it's time these pharmaceutical companies share their vaccines with the world and start controlling their greed". Both Pfizer and Moderna have unreasonably increased the price of vaccines supplied to the governments of the UK and South Africa. (Wion Gravitas News, 2021). If most components of confidence emanate from perception, what and why is this perception of the public on the pharmaceutical organizations/industry at this time for most trust amidst the most treacherous pandemic? To accomplish the goal of this study (to know whether the Indian public perceives pharmaceutical marketing practices to be manipulative, exploitative and devious), SLR (Systematic Literature Review), TCCM framework analysis and science mapping using Vosviewer were undertaken to ascertain the gap in extant literature. Primary data is analysed to infer, conclude with the proposition and suggest a public perception model on pharmaceutical marketing practices. Future research scope, managerial application and limitations of this study are briefed.

Public Perception of the Pharmaceutical Industry, an Idea and a Concept

Perception as per neuroscience is a functional assessment of internally structured sensorimotor images with real-time sensory information from the immediate environment (Petrina, 2019). Simply defined, perception is the mind's first point of contact with the world (Pautz, 2021). Most public perceptions about the pharmaceutical industry are that it is a market-driven, research-driven, lifesaving drug provider and always a profit-making industry (Johar, 2013). The pharmaceutical industry world over had slipped 37 points (sharing the bottom ranking with oil and tobacco industries) as reported in the public positive attitude survey on industries by Gardiner

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Harris (Johar, 2013) and been even demonized (Hollon, 1999).

Justification and Purpose of the Study

The unique subtle nuance of pharmaceutical marketing is that, it never gets to know its consumer or the customer unless and until the consumer suffers adverse effects of medicine/drug, the healthcare practitioner (Doctor/ Nurse/Pharmacist) is informed and prevailed to be brought to the notice of pharmaceutical organization. A Landmark public survey conducted in Oct 2006 at the behest of the USA FDA (Food and Drug Administration) titled, Consumer Perceptions on Drug Safety after the heightened public concern on drug safety of Vioxx and an anti-depressant drug use in children, concluded that USA public perceived there to be safety emergency with regards to drug safety. Between 2005 and 2009 three studies were undertaken to capture public perception of the pharmaceutical industry. They were, The PriceWaterhouseCoopers study in 2007 (Karacsony & Rosenbaum, 2009), Kaiser Health Poll of 2005 (Kaiser Health Poll Report, 2005) and "The Harris Interactive survey" reported in 2007 (Harris Interactive, 2009). All three studies concluded that not only the public had lost trust in the pharmaceutical industry but had developed substantial distrust. When already few studies related to public perception of marketing practices of the pharmaceutical industry from the USA are available, then why is it needed to study public perception in the Indian context if information processing machinery is fixed and universal as per the basic assumption on human cognition and perception? Perception, highly influenced by culture, cannot be concluded as a process that is universally the same across all people at all times (Nisbett & Miyamoto, 2005). Hence a study on public perception of pharmaceutical marketing practices in India is justified.

Review of Literature

Review (research) methodology can be compared to strategy and it is to state how such and such methods are best methods available to suit the purpose of the study as well as to show how and why doing it is unavoidable in the context of the study. Formulating a review's Research Question (RQ) adds clarity to the review of literature by guiding the process of review, extraction of data and synthesis of evidence, thus forming an important step in the review of literature (Petticrew & Roberts, 2006). The review's research questions primarily derived from the researcher's interests are

RQ1: Is there any study on public perception of pharmaceutical marketing practices in India?

RQ2: If so, what are its contributions to extant literature?

RQ3: Is there a scope for the study of public perception of pharmaceutical marketing in India?

PRISMA Framework

The PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) was conceived to assist systematic review of literature in precisely reporting the purpose, outcome of review and theory/ context of the reviewed articles (why, how and what of the review work undertaken). In this article, the PRISMA 2009 template (Moher *et al.*, 2009) is applied as in Figure 1.

Review Method/Steps

Focusing on literature that is most pertinent to the research questions, the period of the search was confined to four decades (1980-2021) considering the emergence of heightened awareness of the public on the pharmaceutical industry, economic medicalization (Moynihan, 2002) and increased intervention of regulatory authority on the functioning of the pharmaceutical industry. Search terms initially used to spot the relevant articles from selected journals were "public perception", "pharmaceutical marketing practices" and " Machiavellianism" "ethics" using Boolean connectors. The quality of the studies (article) was evaluated based on the minimum bias, maximum internal and external validity (Khan & Ter, 2001), number of citations of the article and relevance to the review's research question as mentioned in table 1.

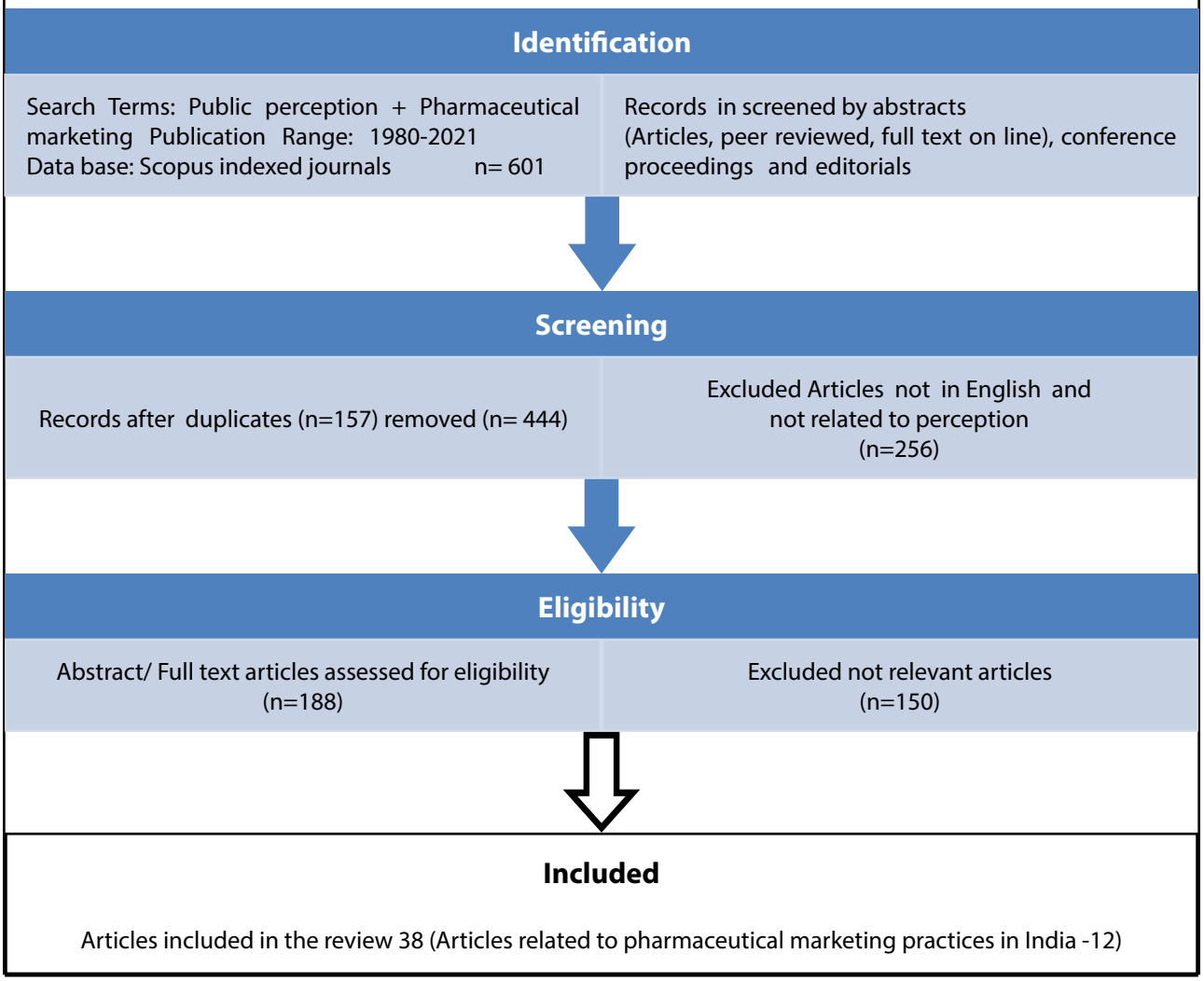
TCCM Analysis on Articles from India

TCCM framework analysis aids in linking the lacuna (research gaps) identified in the earlier study/work and even offers guidance for future scope (Rajan *et al.*, 2020) apart from providing a precise understanding of dominant theories, context, characteristics and methods of identified studies leading to fertile areas for future (Bhattacharjee *et al.*, 2021). In a way limitations arising from SLR and bibliometric study can be addressed by TCCM (Paul & Rosado-Serrano, 2019).

Theories (T)

Out of the identified twelve articles published in India, most had applied perception theories (Quader & Radhika, 2019; Singh & Kuar, 2017; Lad *et al.*, 2017; Srivastava *et al.*, 2014; Chandy *et al.*, 2013). Only one article titled, "Intellectual capital and corporate performance in Indian pharmaceutical industry" applied RBV theory (Kamath, 2008). One article used sustainability theories, business model innovation theories (Vihari & Rao, 2013) and another sales model theory (Mathew & Srivastava, 2012). No article had

Figure 1. PRISMA framework



applied the Machiavellian concept as a theoretical base which is applied in this study on public perception of pharmaceutical marketing practices in India.

Characteristics (C)

In the selected relevant articles from India, three articles considered healthcare providers as characteristics of perception (Quader & Radhika, 2019; Singh & Kuar, 2017; Lad *et al.*, 2017; Chandy *et al.*, 2013). Promotional tools were the antecedents in the study related to retail chemists (Srivastava *et al.*, 2014). Pharmaceutical packaging as an antecedents impacting perception of doctors from major metros, studied in an article (Mathew & Srivastava, 2012). Price, quality, safety and trust had not been addressed as antecedents in any of the studies from India leaving a gap for such a study.

Context (C)

From the SLR it is noted that more than 75% of reviewed studies were from other than India but most were related to perception and none in the context of public. Most studies were around the context of health care practitioners (Jofre, 2014), (Moynihan, 2002), (Brown & Calnan, 2012), (Sofaer & Firminger, 2005), (Sillup & Porth, 2008), (Marmat *et al.*, 2020). Performance, community pharmacies, packaging, competition, sustainability and digital marketing are the only contexts cited in the selected articles about perception (on pharmaceutical marketing practices) from India which points to a knowledge gap in the public perception context of pharmaceutical marketing practices.

Methods (M)

Out of the twelve studies from India cited by bibliometric analysis, two studies applied regression (Vihari & Rao, 2013; Kamath, 2008) and the rest are narrative and descriptive which point to the scope for an empirical investigation in the Indian context on the topic of public perception.

TCCM framework indicates few studies and application of few theories in the extant literature. None of the

Table 1: List of Authors, Title, and Sources of Articles from India

S. No.	Authors	Title	Year	Journal name
1	Quader S.A., Radhika R.	Relevance of perception in health care industry	2019	International Journal of Scientific and Technology Research
2	Abhinaya N, *et al.*	A research on effective management of manufacturing defects to avoid product recalls: A challenge to pharmaceutical industry	2019	Research Journal of Pharmacy and Technology
3	Singh H., Kaur G.	Effects of Drug Pricing on Medication Choice: A Study with Reference to Drug Prescribing in Chronic Ailments	2017	Journal of Health Management
4	Attri R.	Anju Pharmaceuticals: riding the herbal wave	2017	Emerald Emerging Markets Case Studies
5	Lad P., Muragundi P., Ligade V.S.	Digitalize pharmaceutical marketing: Medical representative perspective	2017	Research Journal of Pharmacy and Technology
6	Vihari N.S., Rao M.K.	Business model innovation and organizational mindfulness as determinants of corporate sustainability: An empirical study	2013	International Journal of Business Innovation and Research
7	Srivastava V., Handa M., Vohra A.	Pharmaceutical retailers and promotion by pharmaceutical companies in India	2014	Journal of Medical Marketing
8	Chandy S.J, *et al.*	Antibiotic use and resistance: perceptions and ethical challenges among doctors, pharmacists and the public in Vellore, South India.	2013	Indian journal of medical ethics
9	Mathew T., Srivastava R.K.	Strategic Implication of Pharmaceutical Packaging to Enhance Prescription from Indian Doctors - A Study on the Four Metro Cities	2012	Business Perspectives and Research
10	Sharma M., Sood B.	A banana or a syringe: Journey to edible vaccines	2011	World Journal of Microbiology and Biotechnology
11	Basak S.C., Van Mil J.W.F., Sathyanarayana D.	The changing roles of pharmacists in community pharmacies: Perception of reality in India	2009	Pharmacy World and Science
12	Bharathi Kamath G.	Intellectual capital and corporate performance in Indian pharmaceutical industry	2008	Journal of Intellectual Capital

articles in the extant literature had been on public perception of pharmaceutical marketing practices in the Indian context, per se. Hence this review of extant literature on public perception of pharmaceutical marketing practices is of social interest and the proposed research agenda is significant

The precipitates out of review of literature, bibliometric analysis (Table 1, 2 and Figure 2) and TCCM analysis answers the review of literature, research questions of the study adequately as in Table 3.

Table 2: Documents/Articles Country-Wise

S. No.	Name of Country	No. of Articles/ Documents
1	U S A	47
2	U K	17
3	India	12
4	Germany	10
5	Australia	10

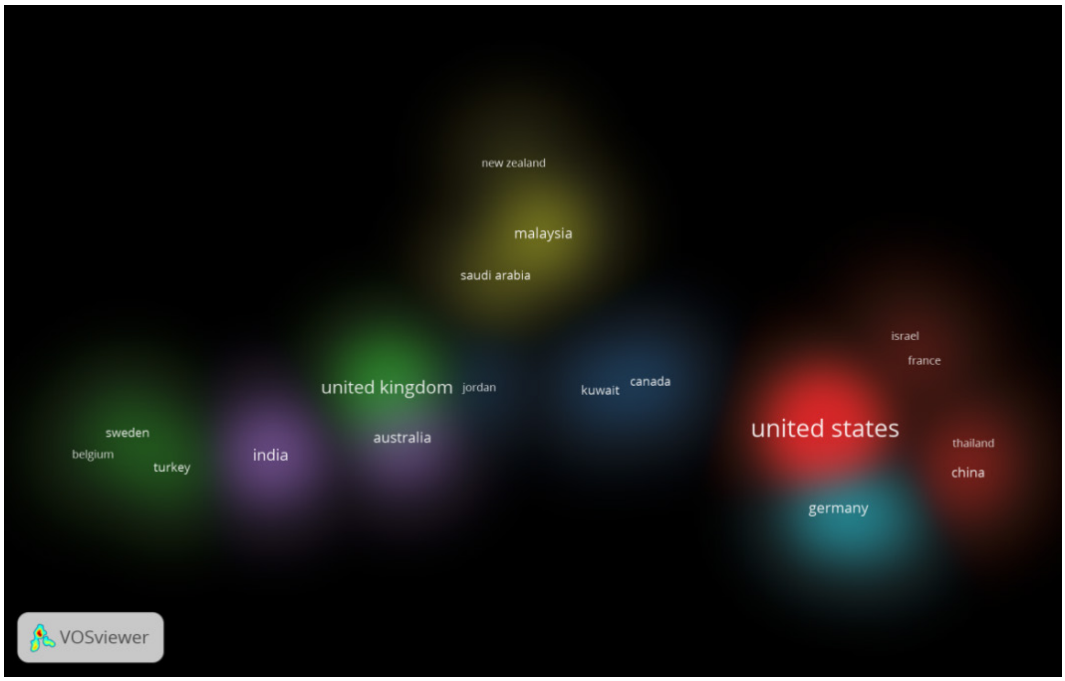
Conceptual Framework

Renaissance Italian philosopher, Niccolo Machiavelli is the most referred political thinker of the contemporary business world (Bragues, 2008). Machiavellianism, as derived into business and defined by Calhoon (Fraedrich *et al.*, 1989), is a philosophy that checks idealist impulses by appreciating competitiveness as essential to human existence and the need to use morally questionable methods in pursuit of a goal. The three concepts (emanating from greed, selfishness and human desire) associated with Machiavellianism are manipulation (unreasonably aggressive), exploitation (less fulfilment to others) and deviousness (roundabout/not straightforward) which are viewed as amoral though can

Table 3: The Review Research Questions Adequately Answered

Research Question No.	Review research question	Answer to review research question
1	Is there any study on public perception of pharmaceutical marketing practices in India?	No, as reflected in TCCM analysis, and bibliometric analysis
2	If so, what are its contributions to extant literature?	No contribution to public perception of pharmaceutical marketing practices in India
3	Is there a scope for a study of public perception of pharmaceutical marketing practices in India?	Yes

Figure 2: Bibliometric Coupling - Country Density Visualization



Source: Author

be seen as ethical as per the content theory of motivation (Fraedrich *et al.*, 1989). The three concepts which form the core of Machiavellian behaviour are the conceptual framework for this study.

Research Methodology

Conclusive answers to the three systematic reviews of literature questions confirm the research gap in the extant literature about public perception of pharmaceutical marketing practice in India. In this study "Grounded Theory" (GT) methodology is used as it is one of the most applied qualitative research designs (Bryant & Charmaz, 2010). Out of the current models of qualitative sampling, targeted/selective sampling is the one which can substitute probabilistic sampling design and hence for this study targeted/selective sampling is used (Robinson *et al.*, 2006; Watters & Biernacki, 1989. For structural equation modelling using SmartPLS3, random samples were taken from the primary data collected from the public.

The perception assessment scale was completed by 604 subjects (via Google Forms, 429 and via manual enumeration, 175). Sample saturation was achieved as per the theoretical sampling concept of grounded theory when planned demographic sample elements were captured. All the participants were above 18 years of age and were informed of the nature and purpose of the study and the conditions of their participation. Participation was by free intent and as per norms of informed consent. Out of 604 responses, two were filtered out and 602 responses were considered fit for analysis. Ninety random endorsements (samples) were obtained by using an Excel spreadsheet for Structural Equation Modeling (SEM) by Smart PLS3 (evaluation of PLS- SEM model shown in Table10). The distribution of data was checked for descriptive analysis as shown in Table 4 for reliability, Table 5 shows the demographic distribution of a sample, Table 6 shows the sample age distribution, Table 7 shows descriptive statistics of items and Table 8 shows the perception scale endorsement of the total sample.

Data Analysis and Interpretation

The findings from the descriptive analysis of primary data to gather public perception of the manipulative, exploitative and deviousness of pharmaceutical marketing practices are shown in Table 9.

Deviousness

As per data, 59% of the population are of the perception that pharmaceutical marketing practices are not transparent in nature (devious) with regards to pharmaceutical industry interaction with medicine regulatory authority. 85% of survey respondents perceive the pharmaceutical industry to be employing roundabout/unethical (devious) ways in their marketing practices to get doctors to prescribe their brand of medicine.

Manipulation

84% of respondents perceive that by using unethical aggressiveness in marketing/promotion to doctors, the pharmaceutical industry is manipulative in achieving its corporate objectives. 61% of sample endorsements agree that generic medicine will deter manipulative marketing practices of the pharmaceutical industry.

Table 4: Detailed Reliability of Instrument

Perception statements	Cronbach's alpha
The pharmaceutical industry is promoting economic medicalization (common conditions being promoted as medical conditions needing pharmacological treatment for business growth and profit)	0.760
Branded medicine promotion motivates Doctors to prescribe/suggest a particular brand of medicine	0.750
There are other considerations apart from disease condition, safety and price while medicines are prescribed by Doctors	0.754
The influence of pharmaceutical organizations plays an important role in Doctors' choice of brand	0.746
Government regulatory authorities are more favourable to the pharmaceutical industry than public welfare	0.761
Availability of only generic medicine for chronic illness (no branded medicine) will deter manipulative exploitive pharmaceutical marketing practices	0.752

Table 5: Demographic Distribution of Sample

Profile	Urban	Rural	Total
Gender			
Women	196	133	329
Men	157	116	273
Age			
18-30	58	69	127
31-45	121	67	188
46-60	101	57	158
61 and above	73	56	129
Education*			
12 Std	34	90	124
Graduate	152	79	231
Post Graduate	165	64	229
Social Status			
Student	24	31	55
Unemployed	49	53	102
Employed	209	115	324
Retired	71	50	121
Health Status			
Med. Depend	149	122	271
No Med. Depend	204	127	331
*Level of education not endorsed by 2 from urban and 16 from rural of sample			

Table 6: Sample - Age Distribution

S. No	Age Group	Sample Size	Percentage
1	18-30	127	21
2	31-45	188	31
3	46-60	158	26
4	61 and above	129	22

Exploitation

71% of respondents are of the opinion that the pharmaceutical industry's marketing practices are exploitative (less fulfilling public, the major stakeholder of the pharmaceutical industry) as it offer unacceptable considerations in getting doctors to prescribe their brands. 66% of the sample perceive the pharmaceutical industry exploiting the lack of specialized knowledge of the public on health and medicine to their advantage by marketing medicines for conditions which are natural in aging human organisms in connivance with doctors.

Machiavellian Factors of Study Evaluation of the PLS-SEM Model of Machiavellianism

The three steps in the evaluation of the PLS-SEM model are model specification, outer or measurement model evaluation and structural or inner model evaluation. Specifying of model, involving specifying inner (constructs of model and their relationship) and outer (construct and its indicator relationship) models is as per the context of study, theory and logic. In this study on public perception of pharmaceutical marketing practices (whether they are exploitative, manipulative and devious - latent constructs), the measures/ indicators are representative of three (latent variable) constructs and hence are reflective constructs. Table 10 shows the aspects evaluated and their parameters with standards, study observation, evaluation of the study and the reference cited to substantiate the evaluation.

Discussion

The three-step review of literature points to a lacuna in extant literature about public perception from

Table 7: Descriptive Statistics of Items

Perception statements	Mean	S. D	Skewness	Kurtosis
The pharmaceutical industry is promoting economic medicalization (the common condition being promoted as a medical condition needing pharmacological treatment for business growth and profit)	3.832	0.946	-0.618	0.209
Branded medicine promotion motivates Doctors to prescribe/suggest a particular brand of medicine	4.064	0.840	-1.135	1.813
There are other considerations apart from disease condition, safety and price while medicines are prescribed by Doctors	3.852	0.997	-0.791	0.148
The influence of pharmaceutical organizations plays an important role in Doctors' choice of brand	4.199	0.903	-1.369	2.024
Availability of only generic medicine for chronic illness (no branded medicine) will deter manipulative exploitive pharmaceutical marketing practices	3.641	0.950	-0.619	0.323
Government regulatory authorities are more favorable to the pharmaceutical industry than public welfare	3.667	0.990	-0.440	-0.288

India of pharmaceutical marketing practices in general and more specifically about the Machiavellian behaviour of the pharmaceutical industry. Output from Vosviewer indicates the scope for a public perception assessment study on the pharmaceutical industry from developing and underdeveloped nations (as shown in Table 2). Analysis of data indicates 71% of the Indian public perceives pharmaceutical marketing practices to be manipulative, exploitative and devious (as shown in Table 9). The three concepts linked to Machiavellianism, exploitation, manipulation and deviousness are a cohesive whole emanating from one element of competitiveness to achieve the goal by questionable tactics and or inseparable (Fraedrich *et al.*, 1989). However, deviousness (not being straight forward, adopting round about ways) can be termed as a catalyst (mediator/ influencer) in manipulation and exploitation behaviours as shown in Figure 3, the Machiavellian model. Machiavellianism, linked to the doctrine of moral expediency and deviousness is viewed as amoral rather than immoral (Ramsay, 2012). Since in the study by Fraedrich *et al.* (1989) significant results were obtained for the concept of deviousness, deviousness was used as a center point in building this exploratory Machiavellian model for public perception on pharmaceutical marketing practices. Further permutation combinations of three concepts of Machiavellianism may be applied to build/propose Machiavellian models in pharmaceutical marketing practices in future. Deviousness's influence on exploitation is stronger than that of manipulation's influence on exploitation even though it is exploitation which is perceptibly perceived. The term exploitation refers to less fulfilling to customers and what is less fulfilling to others in business is not ethical and is mostly by adopting morally questionable tactics, which by definition is Machiavellianism. Further study needs to be undertaken to assess the level of impact of each one of the elements of Machiavellianism on other elements.

Managerial Application

The hallmark of managerial application is in achieving sustainability of business and at the center of sustainability is consumer perception about the brand or organisation or industry. Both descriptive analysis and SEM of this study have unravelled hitherto unknown facet of public perception of pharmaceutical marketing practices. More than 70% of the Indian public perceive that they are deviously manipulated and exploited (68%) warranting the imminent need for pharmaceutical marketing practices to be more transparent to the public. The top 20 pharmaceutical organisations which contribute to more than a fourth of the total Indian pharmaceutical market (IQVIA TSA Dataset, 2022), while adhering to international laws relating to marketing practices in their international operations, need to apply the same international/ ethical code in their operations in India. The Indian pharmaceutical industry needs to take cognisance of the public perceiving their marketing practices as exploitative, manipulative and devious (Machiavellian in nature)

Table 8: Perception Scale Endorsement - Total Sample

Perception statements	Strongly disagree	Disagree	Neither disagrees Nor agree	Agree	Strongly agree	Total
The pharmaceutical industry is promoting economic medicalization (the common condition being promoted as a medical condition needing pharmacological treatment for business growth and profit)	13	29	163	238	159	602
Branded medicine promotion motivates Doctors to prescribe/suggest a particular brand of medicine	8	28	62	323	181	602
There are other considerations apart from disease condition, safety and price while medicines are prescribed by Doctors	13	56	104	263	166	602
The influence of pharmaceutical organizations plays an important role in Doctors' choice of brand	11	27	50	257	257	602
Availability of only generic medicine for chronic illness (no branded medicine) will deter manipulative exploitive pharmaceutical marketing practices	19	43	175	263	102	602
Government regulatory authorities are more favourable to the pharmaceutical industry than public welfare	13	59	173	227	130	602

Table 9: Perception Endorsement from Sample

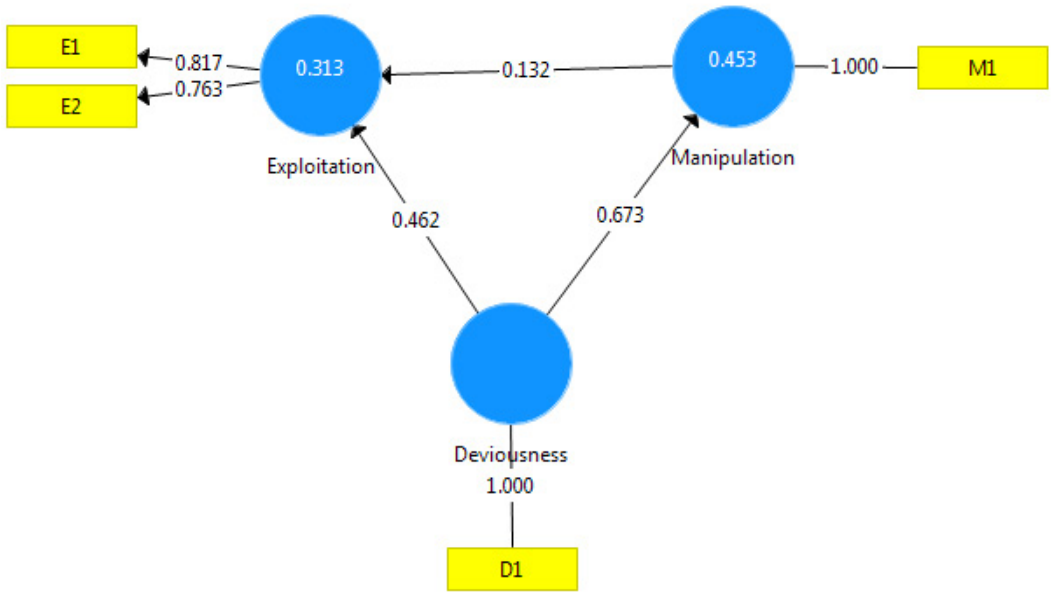
S. No.	Demographic segment	Size	**Deviousness** Regulatory favouring pharma	**Deviousness** Influence of pharma on Dr choice of brand	**Manipulation** Branded medicine promotion motivates Dr	**Manipulation** deter manipulative exploitive pharma mkt. practices	**Exploitation** Other considerations for prescribing medicine	**Exploitation** Economic medicalization
1	Rural	249	57%	87%	83%	60%	73%	64%
2	Urban	353	61%	85%	84%	61%	70%	68%
3	Women	329	57%	86%	84%	57%	71%	64%
4	Men	273	63%	86%	84%	64%	72%	70%
5	Geriatric	129	61%	87%	86%	66%	71%	67%
6	Med. Depend	271	65%	81%	82%	62%	71%	63%
7	Not Med. Depend	331	55%	85%	85%	60%	71%	68%
8	Total Sample	602	59%	85%	84%	61%	71%	66%

Table 10. Evaluation of PLS-SEM Model of Machiavellianism (Three Constructs of Study Are Deviousness, Exploitation and Manipulation)

Evaluation stage	Evaluation aspect	Parameter and standard	Study observation	Evaluation of the study	Reference
Evaluation of the outer model or measurement model for reflective construct of an exploratory study	Reliability	Indicator loading >0.708	All 3 constructs have indicator loading values above >0.708 indicating constructs explain>50% of indicator variance	Model is reliable	(Hair *et al.*, 2019)
		Composite reliability Values between 0.70 and 0.90 range from satisfactory to good for exploratory study. >0.95 indicates items are redundant	All 3 constructs values are 1.0, 0.769 and 1.0 respectively. No item is redundant	The model has internal consistency and reliability	(Drolet & Morrison, 2001)
	Validity Convergent validity	AVE (average variance extracted) >0.50 indicate construct explains >50% of the variance of items that make up the construct	All 3 constructs' values are 1.0, 0.624 and 1.0 pointing that 2 constructs explain 100% of the variance of items that make up the construct and one >60%	The model has convergent validity	(Hair *et al.*, 2019)
	Discriminant validity	HTMT (heterotrait-monotrait ratio) <0.90 for the constructs conceptually similar	HTMT ratios are 0.870, 0.673 and 0.696	The model has discriminant validity	(Henseler *et al.*, 2015)
		Cross Loading -Loading of each indicator to its construct to be higher (>0.7) than the cross loading on other constructs	All 4 indicators load 1.0, 0.817, 0.763 and1.0 to their construct more than they load on other constructs	Model has discriminant validity	(Garson, 2016)
Evaluation of inner model or structural models	Collinearity test	VIF value ≤3 indicate no collinearity issues	Construct and indicator values <3	Collinearity is not an issue in the model	(Hair *et al.*, 2019)

	Coefficient of determination (R^2). In sample predictive power	0.75, 0.5, and 0.25 are considered substantial, moderate and weak respectively	R^2 values of the study are > 0.25	The predictive power of the model is between moderate and weak	(Hair *et al.*, 2011)
	Cross-validated redundancy measure (Q^2)	Q^2> 0, 0.25 and 0.5 indicate small, medium and large predictive relevance	LV prediction summary values Q^2 are between 0.198, 0.160 and 0.434	The predictive relevance of the model is between medium to large	(Hair *et al.*, 2019)
	Relevance of path coefficients	Range of -1 and +1	+0.132 to + 0.673	Acceptable	(Hair *et al.*, 2019)

Figure 3: Machiavellianism Model Based on Public Perception of Pharmaceutical Marketing Practices



Limitations of Study and Future Research Scope

Primary data via electronic medium had been from eight states while primary data by enumeration had been from three rural areas of Karnataka and Tamil Nadu due to pandemic restrictions. While the descriptive analysis was based on the total data set, a random sample of size ninety was selected using Excel for PLS-SEM modelling using the SmartPLS3 student version. Though one perceptible advantage of PLS-SEM is that a small sample size does not impact the outcome result, to have better in-sample explanatory power of the model, a study with more data is proposed using the SmartPLS3 professional version. A broader and wider study of a similar nature may lead to the formation/ reinforcing of propositions on Machiavellianism in pharmaceutical marketing practices. A study to capture the perception of healthcare practitioners (influencers) on pharmaceutical marketing practices (with regards to manipulation, exploitation and deviousness) may further unravel Machiavellianism embedded in pharmaceutical marketing practices in India.

Conclusion

The machiavellian concept checks the idealistic impulse by endorsing the need to be competitive for human existence and the need for morally unagreeable actions in pursuit of the achievement of the goal. The behaviours associated with the Machiavellian concept are exploitative, manipulative and devious behaviours. Descriptive analysis of the data points that more than 72% of sample respondents consider pharmaceutical marketing practices targeted towards doctors and health regulatory authorities are not transparent and straightforward (devious in nature). 84% of respondents think that marketing practices by pharmaceutical organisations do not respect the rights of their customers but manipulate doctors (the influencers) of their business. 68% of respondents are of the perception that pharmaceutical marketing practices are less satisfying to customers/patients, the largest of stakeholders. From the PLS-SEM model, it can be proposed that devious marketing practices contribute to exploitative and manipulative marketing practices. It can be further proposed that deviousness contributes more to manipulative behaviour than exploitative behaviour. It is also possible to propose from the model though exploitative marketing behaviour is influenced both by devious and manipulative marketing practices, there are other mediating factors influencing exploitative pharmaceutical marketing practices (education, healthcare practitioners' influence, etc). From the analysis of data, it can concluded that the Indian public perceives pharmaceutical marketing practices as exploitative, manipulative and devious in nature and that three concepts linked to Machiavellian behaviour are seen significantly in pharmaceutical marketing practices prevailing in India about which the government and pharmaceutical industry need to be vigilant.

References

Bhattacharjee, D. R., Pradhan, D., & Swani, K. (2021). Brand communities: A review of literature and future research agendas using TCCM approach. *International Journal of Consumer Studies, 46*, 3-28. https://doi.org/10.1111/ijcs.12758

Bragues, G. (2008). The Machiavellian challenge to business ethics. *American Society of Business and Behaviour Science Conference* (pp. 01-03). Las Vegas: American Society of Business and Behaviour Science Conference. https://doi.org/10.2139/ssrn.1093345

Brown, P., & Calnan, M. (2012). Braving a faceless new world? Conceptualizing trust in the pharmceutical industry and its products. *Health, 16*(1), 57-75. https://doi.org/10.1177/1363459309360783 PMid:21169205

Bryant, A., & Charmaz, K. (2010). Grounded theory: Methods and practices. In A. Bryant, & K. Charmaz, *The Sage handbook of grounded theory* (pp. 01-28). Los Angeles: Sage. https://doi.org/10.1016/B978-0-08-044894-7.01581-5

Chandy, S. J., Mathai, E., Thomas, K., Faruqui, A. R., Holloway, K., & Lundborg, C. S. (2013). Antibiotic use and resistance: Perceptions and ethical challenges among. *Indian Journal of Medical Ethics, 10* (1), 20-27.

Cohen, R. (2021, March 17). *The New York Times*. http//www.nytimes.com

Drolet, A., & Morrison, D. (2001). Do we need multiple item measures in service research? *Journal of Service Research, 3*(3), 196-204. https://doi.org/10.1177/109467050133001

Fraedrich, J., Ferrell, O., & Pride, W. (1989). An empirical examination of three Machiavellian Concepts: Advertisers vs. The general public. *Journal of Business Ethics, 8*, 687-694. https://doi.org/10.1007/BF00384206

Garson, G. D. (2016). PLS-SEM in SmartPLS. In G. D. Garson, *Partial Least Square: Regression and Structural Equation Models* (pp. 35-86). North Carolina: Statistical Associates Publishing.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 02-24. https://doi.org/10.1108/EBR-11-2018-0203

Hair, J., Ringle, C., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice, 19*(2), 139-151. https://doi.org/10.2753/MTP1069-6679190202

Harris Interactive. (2009). *Harris Interactive.* http://www.harrisinteractive.com/news/allnewsbydate

Henseler, J., Ringle, C., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-1354. https://doi.org/10.1007/s11747-014-0403-8

Hollon, M. (1999). Direct to consumer marketing of prescription drugs: Creating consumer demand. *JAMA, 281(4),* 382-384.

IQVIA TSA Dataset. (2022). *Market Feedback Report.* IQVIA, Bengaluru.

Jofre, S. (2014). GSK faces accusations of bribing doctors in Poland. *British Medical Journal, 348* (g2768), 1-4. https://doi.org/10.1136/bmj.g2768 PMid:24733722

Johar, K. (2013). An insider perspective: Defence of the pharmaceutical industry's marketing practices. In J. Candidate (Ed.) *Albany Law Review, 76*(1), 299-334.

Kaiser Health Poll Report. (2005, Feb). *Kaiser Family Foundation.* http://www.kff.org/healthpollreport/

Kamath, B. G. (2008). Intellectual capital and corporate performance in Indian pharmaceutical industry.

Journal of Intellectual Capital, 9(4), 684-704. https://doi.org/10.1108/14691930810913221

Karacsony, A., & Rosenbaum, J. (2009). *Price Waterhouse Coopers.* http://www.pwc.com/extweb/pwcpublications

Khan, K. S., & Ter, R. (2001). *Understanding systematic review of research on effectiveness. CRD's guidance for those carrying out or commissioning reviews.* CRD Report Number 4 (2nd Edition), York.

Lad, P., Muragundi, P., & Ligade, V. S. (2017). Digitalize pharmaceutical marketing: Medical representative perspective. *Research Journal of Pharmacy and Technology, 10*(7), 2179-2182. https://doi.org/10.5958/0974-360X.2017.00384.5

Marmat, G., Jain, P., & Mishra, P. N. (2020). Understanding ethical/unethical behavior in pharmaceutical companies: A review of literature. *International Journal of Pharmaceutical and Healthcare Marketing, 14*(3), 367-394. https://doi.org/10.1108/IJPHM-03-2018-0016

Mathew, T., & Srivastava, R. K. (2012). Strategic implication of pharmaceutical packaging to enhance perception from Indian doctors - A study on the four etro cities. *Business Perspectives and Research, July-December*, 61. https://doi.org/10.1177/2278533720120106

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). *Prisma-statement.* www.prisma-statement.org

Moynihan, I. H. R. (2002). Selling sickness: The pharmaceutical industry and disease mongering in the pharmaceutical industry and its products. *British Medical Journal*, 886-890. https://doi.org/10.1136/bmj.324.7342.886 PMid:11950740 PMCid:PMC1122833

Nisbett, R. E., & Miyamoto, Y. (2005). The influence of culture: Holistic versus analytic perception. *Trends in Cognitive Sciences, 9*(10), 467-473. https://doi.org/10.1016/j.tics.2005.08.004 PMid:16129648

Paul, j., & Rosado-Serrano, A. (2019). Gradual internationalization vs Born-Global/international new venture models: A review and research agenda. *International Marketing Review, 36*(6), 830-858. https://doi.org/10.1108/IMR-10-2018-0280

Pautz, A. (2021). What is the puzzle of perception? In P. Adam, *Perception* (pp. 01-04). Routledge, New York. https://doi.org/10.4324/9781315771939

Petrina, S. (2019). *The University of British Columbia*. http://blogs.ubc.ca

Petticrew, M., & Roberts, H. (2006). *Systematic Reviews in the Social Sciences: A Practical Guide.* Blackwell Publishing, Oxford. https://doi.org/10.1002/9780470754887

Quader, S. A., & Radhika, R. (2019). Relevance of perception in the health care industry. *International Journal of Scientific and Technology Research, 8*(12), 178-184.

Rajan, R., Dhir, S., & Sushil. (2020). Alliance termination research: as bibliometric review and research agenda. *Journal of Strategy and Management, 13*(3), 351-375. https://doi.org/10.1108/JSMA-10-2019-0184

Ramsay, M. (2012). Machiavellianism. In R. Chadwick, *Encyclopedia of Applied Ethics* (Second ed., pp. 01-09). Elsevier, Leeds. https://doi.org/10.1016/B978-0-12-373932-2.00270-2 PMCid:PMC4780976

Robinson, W. T., Risser, J. M., McGoy, S., Becker, A. B., Rehman, H., Jefferson, M., *et al*. (2006). Recruiting injection drug users: A three-site comparison of results and experiences with respondent- driven and targeted sampling procedures. *Journal of Urban Health, 83*(7). https://doi.org/10.1007/s11524-006-9100-3 PMid:16933101 PMCid:PMC1705501

Sillup, G. P., & Porth, S. J. (2008). Ethical issues in the pharmaceutical industry: An analysis of US newspapers. *International Journal of Pharmaceutical and Healthcare Marketing, 2*(3), 163-180. https://doi.org/10.1108/17506120810903953

Singh, H., & Kuar, G. (2017). Effects of drug pricing on medication. *Journal of Health Management, 19*(3), 01-06. https://doi.org/10.1177/0972063416666350

Smith, M. (2021). *YouGov*. http://www.yougov.co.uk

Sofaer, S., & Firminger, K. (2005). Patient perceptions of the quality of health services. *Annual Review of Public Health, 26*, 513-559. https://doi.org/10.1146/annurev.publhealth.25.050503.153958 PMid:15760300

Srivastava, V., Handa, M., & Vohra, A. (2014). Pharmaceutical retailers and promotion. *Journal of Medical Marketing, 24*(2-3), 74-80. https://doi.org/10.1177/1745790414556562

Vihari, N. S., & Rao, M. K. (2013). Business model innovation and organisational mindfulness as determinants of corporate sustainability: an empirical study. *International Journal of Business Innovation and Research, 13*(2), 238-252. https://doi.org/10.1504/IJBIR.2017.10004382

Watters, J. K., & Biernacki, P. (1989). Targeted sampling: Options for the study of hidden populations social problems. *Social Problems, 36*(4), 416-430. https://doi.org/10.1525/sp.1989.36.4.03a00070

Wion Gravitas News. (2021). *Big Pharma's Vaccine Blackmail.* Wion, New Delhi.